

STATE BANK OF INDIA, CHENNAI CIRCLE

REQUEST FOR PROPOSAL (RFP)
FOR EMPANELMENT OF VENDORS

HAVING EXPERTISE

IN

INSTALLATION AND MAINTENANCE OF

(a) FIRE ALARM SYSTEMS (b) SECURITY ALARM SYSTEMS
(c) CCTV SYSTEMS (d) FIRE EXTINGUISHERS AT VARIOUS BRANCHES OF STATE BANK
OF INDIA, CHENNAI CIRCLE (BRANCHES/OFFICES IN TAMILNADU AND PUDUCHERY)

DATE OF COMMENCEMENT : 18/02/2021

LAST DATE & TIME OF SUBMISSION OF TENDER DOCUMENTS 12/03/2021 - 2.00 P.M

ADDRESSED TO

ASSISTANT GENERAL MANAGER (SECURITY)
CIRCLE SECURITY DEPARTMENT
STATE BANK OF INDIA
LOCAL HEAD OFFICE
'CIRCLE TOP HOUSE'
16, COLLEGE LANE
CHENNAI - 600006

OPENING OF APPLICATIONS: 12/03/2021- 4.00 P.M

DISCLAIMER

1. This RFP is not an offer by State Bank of India, but an invitation to receive responses from the eligible applicants. No contractual obligation, whatsoever, shall arise from the RFP process unless and until a formal contract is signed and executed by duly authorized official(s) of State Bank of India with the selected applicant.
2. The purpose of this RFP is to provide the applicant(s) with information to assist in the formulation of their proposals. This RFP does not claim to contain all the information each Manufacturers / Firms / Companies / Dealers / Vendors may require. Each Manufacturers / Firms / Companies / Dealers / Vendors should conduct their own investigation and analysis and should check the accuracy, reliability and completeness of the information in this RFP and wherever necessary, obtain independent advice/clarifications. Bank makes no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this RFP. Bank may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information in this RFP.
3. The Bank, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Manufacturers / Firms / Companies / Dealers/ Vendors or Applicant under any law, statute, rules or regulations or tort, for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the RFP and any assessment, assumption, statement or information contained therein or deemed to form or arising in any way for participation in the Empanelment process.
4. The Bank also accepts no liability of any nature, howsoever caused arising from reliance of any Applicant upon the statements contained in this RFP.
5. The issue of this RFP does not imply that the Bank is bound to select an applicant or to appoint the selected applicant, as the case may be, for the project and Bank reserves the right to reject all or any of the applicants or applications for Empanelment without assigning any reason whatsoever.
6. The applicant is expected to examine all instructions, forms, terms and conditions and specifications in the RFP. Failure to furnish all information required in the application for Empanelment or to submit an application for Empanelment not substantially responsive to the application for Empanelment in all respect will be at the applicant's risk and may result in rejection of the application for Empanelment.

2. SCOPE OF WORK

The Circle Security Department of State Bank of India (SBI), Chennai Circle intends to prepare a panel of reputed and established vendors for Supply, Installation, Commissioning and Maintenance / repair of a) Fire Alarm Systems b) Security Alarm Systems c) CCTV Systems & d) Fire Extinguishers at branches/offices located in Tamil Nadu and Puduchery. We are looking for vendors who have expertise and established themselves in this field. Applicants who fulfill the eligibility criteria as detailed below need only apply. The indicated work would include maintenance and shifting of existing systems and also installation, commissioning and maintenance of new systems conforming to Bank's given specifications. The proposed prequalification exercise is meant for enlisting qualified and competent vendors for the followings:

i) For comprehensive AMC in respect of Fire Alarm / Security Alarm / CCTV systems / Fire Extinguishers. It may be noted that all SBI branches in Chennai Circle are equipped with Security / Fire Alarm / CCTV Systems & Fire Extinguishers and the main task will be to undertake AMC for the same.

ii) To undertake fresh supply, installation, commissioning and maintenance of Fire Alarm / Security Alarm / CCTV systems / Fire Extinguishers, wherever warranted, as per the new specifications given by the Bank (as per requirement in future).

iii) RFP for a) Fire Alarm Systems b) Security Alarm Systems c) CCTV Systems & d) Fire Extinguishers to be given separately with independent credential in respective cover.

Duly completed applications in the prescribed format with required documents etc. should be submitted by 2.00 pm on 12/03/2021 addressed to the Circle Security Officer (CSO), Circle Security Department, State Bank of India, Local Head Office, 'Circle Top House', No. 16 College Lane, Chennai - 600006. In the event of the specified last date for submission of applications being declared a holiday for the Bank, the applications / documents will be received up to the appointed time on the next working day.

iv) Period of validity: The empanelment of vendors will be for a period of three years.

2. The technical specifications stipulated by the Bank for installation of Security Alarm, Fire Alarm, CCTV Systems & Fire Extinguishers are given at **Annexures C, D, E & F.**

3. ELIGIBILITY CRITERIA

SI No	Parameter	FAS	BAS	CCTV	Fire Extinguishers
1	To have an office in Tamil Nadu/Puduchery (Proof-Lease agreement/Telephone bill copy to be submitted)	Yes	Yes	Yes	Yes
2	Experience in the line of business (Work order copies including atleast one order of year 2014, January or before to be submitted) in public sector. The applicant should have carried out supply &	7 Years	7 Years	7 Years	7 Years

	maintenance of similar equipment in the last 7 years				
3	Minimum average turnover during last three years (audited balance sheet for the last three years to be submitted)	30 lakhs	30 lakhs	30 lakhs	30 akhs
4	Firm to be making profits during the last three years (P & L statement for the last three years to be submitted)	Yes	Yes	Yes	Yes

4. OTHER CONDITIONS

- (i) The applicant should furnish their PAN No., GSTIN/UIN, Registration details of firm/company with PIN No., TIN No. etc.
- (ii) The applicant must have a full-fledged office in Tamil Nadu/Puduchery. The list of service centers with contact details and staff details must be attached. Preference will be given to those who have service centers at major towns in Tamil Nadu/Puduchery.
- (iii) The applicant must enclose a copy of Certificate of Registration / Incorporation of firms/companies.
- (iv) The applicant must have a valid Class-III digital certificate.

4.1. Applicant shall furnish the documentary evidence as a part of the applications establishing the applicant's eligibility to supply the material. The applicant shall also submit documentary evidence in the form of literature, drawing & data on the goods that would be offered. Evaluation will be done on the basis of the documents submitted along with the bid without any further reference to the applicant.

4.2. The products proposed by the applicant should be UL (Underwriters Laboratories Inc.), FC or CE ("European Conformity") or ERTL certified. The make of the products to conform to Bank's requirement and must be specified by the company.

4.3 The equipment to be supplied shall be new, unused and free from all defects and faults. The equipment offered shall conform to the specifications as given in tender/work order and there shall be warranty against defective design, defective quality material supplied, manufacturing defects etc., for a minimum period of 12 months from the date of supply.

4.4 All security equipment must be connected through Branch/Office UPS. Earthing arrangements for all the equipment shall be the responsibility of the vendor and to be carried out as per standard procedures.

4.5 Deviation of any technical specification or commercial terms and condition will not be entertained under any circumstances. If such issues persist, then action including blacklisting of the vendor may also be initiated.

4.6. The applicant should either be the original equipment manufacturer of the proposed system or a subsidiary company of a manufacturer company for such system or an authorized supplier / channel partner of a manufacturer, of the proposed system.

4.7. The applicant should submit an Authorization Letter from the principals / OEM whose products are proposed.

4.8. If the applicant is an authorized supplier of the equipment, he shall have back-to-back agreement with each of the equipment manufacturer, so that direct support for maintenance, spares and upgrades are available for at least 3 years. Software updation will be carried out without any cost to Bank.

4.9. The Manufacturer of the equipment must have a sound and well documented Quality Framework. Applicant is permitted to submit a valid ISO certificate or equivalent for the manufacturer in support of this clause.

4.10. The selected vendors should be prepared to open offices with technical personnel at Zonal Office /RBO centers, from the perspective of providing 24/7 post implementation support.

4.11. Vendor should comply with all statutory and Labour laws, rules and regulation of State and Central Government.

4.12. Training to be provided by the manufacturer at site to the Bank Officials. Operator level training should be provided by the applicant.

4.13 Bank is not responsible for accidental injury of any of the operating personnel involving in the AMC/SITC work in Bank premises.

4.14 The applicants will be bound by the details furnished by them to the Bank, while submitting the RFP or at a subsequent stage. In case, any of such documents furnished by the vendor is found to be false at any stage, it would be deemed to be a breach of Terms of Contract, making the vendor liable for legal action besides termination of contract.

4.15 Failure to enclose any/all of the necessary documents and to submit the RFP in the required format etc., may disqualify the applicant. Bank reserves the right to reject the offer without assigning reason or whatsoever.

4.16 Corrigendum if any, will be published in Bank's website only.

5. DELIVERY/INSTALLATION SCHEDULE & PENALTY FOR DELAYED DELIVERIES / INSTALLATIONS

5.1 Delivery and installation of Security and Fire safety equipment should be within 15 days from date of placing of work order.

5.2 In the event of the equipment not being delivered, installed, tested and commissioned within a period of **15 days** from date of Work Order, a penalty of **one (1) percent** of the total consideration for each week or part thereof for the delay, subject to maximum amount of **five (5) percent** of the total consideration will be charged to vendor.

5.3 This amount of penalty so calculated shall be deducted at the time of making final payment after successful installation and commissioning of Security and Fire Safety equipment.

5.4 In the event of further delay (beyond 4 weeks) in delivery, installation or maintenance visit, the Bank reserves the right to cancel the Work Order / AMC and forfeit the EMD/Security Money Deposit. In the event of such cancellation, the vendor is not entitled to any compensation. **Please note that the installation / maintenance schedule shall be followed strictly as stipulated. Any delay shall be viewed seriously, and penalties levied.**

6. PENALTY

6.1 Bank will levy penalty for any deficiency in services or quality of materials supplied without prejudice to any of BANK's other rights and remedies.

The penalty will be calculated as per the Service Level Agreement (SLA) measure given in the table below:

S. No.	SLA Measure	Target Penalties	System
1	Availability/Uptime of Security System including its accessories 100% (Availability/Uptime will be calculated on quarterly basis)	<ul style="list-style-type: none"> • 100.00% = NIL • 98.00% to 99% = 1 % • 97.00% to 97.99% = 5 % • 96.00 to 96.99% = 10 % • 95.00 to 95.99% = 15 % • Less than 95% = 25 % <p>Penalty will be deducted from the AMC amount payable for the quarter</p>	
2	Poor quality of pictures or Face Recognition System	Rs. 1000/- per instance	For CCTV System
3	Adequate number of days recording not available	Rs. 100/- for each day < 90	For CCTV System
4	Complaint resolution during warranty period	Within time limit as per RFP – Nil Delay of each day in complaint resolution – Rs. 100/- per day	
5	Complaint resolution during AMC	Rs. 500/- for every week of delay or part thereof	

6	Not carrying out Quarterly visits during AMC	25% of AMC amount for each branch where AMC visit is not carried out in a quarter. This amount will be deducted from the quarterly AMC payments payable to the vendor. The quarter starts from the date of signing of the agreement.	
7	Penalty, once the maximum penalty reached.	Bank may terminate the contract and forfeit the Retention Amount submitted as Performance Bank Guarantee.	
8	Not keeping required manpower as per SLA	Rs. 1000/- per technician, at every instance	

6.2 In the event of deficiency being such that the 25% penalty ceiling is breached, the vendor shall become liable for further penal actions to the extent of termination of his contract with forfeiture of EMD/ SMD as deemed fit and reasonable by the Bank.

6.3 However, this penalty shall also not apply in case of delays in restoration of system caused by Natural calamities or so called acts of God, War, Earthquake, Tsunamis, Riots, Bandhs, Civil Disturbances, any of which affect either the Vendor's nearest service centre or the site of installation.

6.4 Appropriate Penalties will be recovered from the quarterly payment if successful bidder is not able to achieve required Service levels as mentioned above

6.5 Any penalty due during the Warranty period will be adjusted against the 10% Retention Money held by the respective branch for defect liability period or in the security deposit retained by the Bank.

7. PREVENTIVE MAINTENANCE

The VENDOR shall conduct Preventive Maintenance (including but not limited to inspection, testing, satisfactory execution of all diagnostics, cleaning and removal of dust and dirt from the interior and exterior of the equipment, and necessary repair of the equipment) quarterly of newly installed as well as existing Security and Fire Safety equipment.

7.1 VENDOR will arrange for all necessary authorization certificates for back to back support for maintenance of the existing Security and Fire Safety systems from the manufacturer of the equipment. During the term of the contract, the VENDOR will maintain the equipment in perfect working order and condition and for this purpose will provide the following repairs and maintenance services:

- 7.2 Free maintenance services as and when required during the period of warranty. Professionally qualified personnel who have expertise in the hardware and system software supplied by the vendor will provide these services.
- 7.3 The VENDOR shall rectify any defects, faults and failures in the equipment and shall repair/replace worn out or defective parts of the equipment during working hours of the Bank. on all working days. In case any defects, faults and failures in the equipment could not be repaired or rectified during the said period, the engineers of the VENDOR are required to accomplish their duties beyond the said schedules in case of any situation, if it warrants.
- 7.4 The VENDOR shall ensure that the full configuration of the equipment is available to the Bank in proper working condition viz. uptime of 99% of the time on a 24x7x365.
- 7.5 In the event of the equipment not being repaired or a workable solution not provided during Warranty period, a penalty of **1% percent** of the total consideration for each week or part thereof the delay, subject to maximum amount of **five (5) percent** of the total consideration will be charged to vendor. The vendor may provide temporary equivalent replacement which should be in working condition as a workable solution to avoid the above penalty.
- 7.6 Qualified maintenance engineers totally familiar with the equipment shall perform all repairs and maintenance service described herein.
- 7.7 The Bank shall maintain a Security Register at its site in which, the Bank's authorized official / any other nominated staff by the Branch/Office/Cell, shall record each event of failure and/or malfunction of the equipment. The Vendor's engineer shall enter the details of the action taken in such register. Additionally, every time a preventive or corrective maintenance is carried out, the Vendor's engineer shall make, effect in duplicate, a field call report which shall be signed by him and thereafter countersigned by the Bank's authorized official. Maintenance visit will be only counted when in the report system and all its accessory will be marked as working properly. The original of the field call report shall be handed over to the Bank's official.
- 7.8 The VENDOR shall provide replacement equipment of similar brand or similar brand with higher make if any equipment is taken out of the premises for repairs.
- 7.9 The obligations expressed under the warranty above shall include all costs relating to labour, spares, maintenance (preventive, unscheduled), and transport charges from site to manufacturer's workstation and back.
- 7.10 Repair/adjustment or replacement at site of any part of the equipment which under the normal and proper use and maintenance proves defective in design, material or workmanship or fails to conform to the specifications given by the Bank to VENDOR.

- 7.11 VENDOR shall further ensure that the EQUIPMENT is not down at any time for want of spare parts.
- 7.12 VENDOR shall provide repair and maintenance service, **in response to oral, including telephone, notice by the Bank, immediately and also provide a complaint number for tracking the complaint status.** VENDOR shall ensure that faults and failures intimated by the Bank at above are set right **within 48 hours** of being reported.
- 7.13 During the period of contract due to any reason, if there is any shortage of spares or the selected model is not available in the market, then the vendor will provide another model of same brand with equivalent configuration or higher on same rates and terms and conditions which should be accepted by the Bank.

8. SELECTION PROCESS

8.1. Bank will evaluate the RFP's and based on the criteria set forth will shortlist qualified applicants. The shortlisted applicants will be asked to submit the indicative price bid. Only the shortlisted applicants would then be invited by the Bank to participate in the e-reverse auction. An EMD amount for each category of the Security/Fire Safety equipment, which will be prescribed by the Bank subsequently after shortlisting shall be deposited by the Vendor who has been shortlisted and wishes to participate in the e-tendering process in the form of a Demand Draft in favour of State Bank Of India, **SBI, LHO, Chennai** payable at **Chennai**. The shortlisted applicants should make a presentation on their capabilities and their proposed methodology for execution of this project. Bank reserves the right to visit the offices and installations of the vendors, at its discretion, and call for additional information/document as part of the evaluation process. Bank also reserves the right to reject the applications of those vendors whose services have been found to be deficient and unsatisfactory at their client locations and / or based on feedback received.

8.2. The 'Eligibility Criteria' considered for empanelment will be mainly based on the experience on supply, installation, testing & commissioning of system well within time frame, maintenance of the system / equipment within 24 hours to maximum 48 hours, resource & stock of materials, skilled technical team with experience, proper service center at different locations in the Circle, experience of similar work executed, financial position, other mandatory documents, etc.,

8.3. For further clarification if any, please contact

(a) Email: cso.che@sbi.co.in

(b) Tel: 044-28308470/71/9445865817

8.4. Bank reserves the right to reject or accept any or all the applications without assigning any reasons and also to cancel the empanelment later by giving one month notice.

8.5. Document/Application form for RFP may be downloaded from Bank's website <http://www.sbi.co.in>> SBI in the News> Show more> Empanelment of vendors during the period 18/02/2021 to 11/03/2021. Prebid meeting will be held at SBI, Local Head Office, No. 16 College lane, Chennai - 600 006 at 3.00 pm on 03/03/2021. Opening of applications will be at 4.00 pm on 12/03/2021 at the above venue in the presence of available vendors / their authorized representatives.

8.6. Incomplete applications and those received late will be rejected by the Bank. Bank is not responsible for late receipt due to postal delay, strikes or any other reasons. The decision of

State Bank of India to accept or reject any application for pre-qualification will be final.

a) If at any stage the information furnished by the applicant is found to be incorrect at a later stage, he shall be liable to be debarred from participating in the tender.

b) State Bank of India will not enter into any correspondence with the applicant(s) except in respect of clarifications sought by them with regard to this document before due date.

c) The applicant shall agree and authorize the Bank to obtain confidential report from the clients to verify the work executed by them.

8.7. The application for Expression of Interest must be submitted separately, in sealed envelopes, super scribed "**Request for Proposal for a) Fire Alarm Systems b) Security Alarm Systems c) CCTV Systems d) Fire Extinguishers**" along with the vendor's profile and the relevant certificates / documents, duly filled, signed with seal on all pages, so as to reach the following address positively on or before 2.00 p.m. on 12/03/2021:

**Assistant General Manager (Security)
Circle Security Department
State Bank of India
Local Head Office
'Circletop House'
No. 16, College Lane
Chennai-600006**

**STATE BANK OF INDIA
LOCAL HEAD OFFICE, CIRCLE SECURITY DEPARTMENT, 'CIRCLE TOP HOUSE'
16, COLLEGE LANE, CHENNAI-600006**

**APPLICATION FOR EMPANELMENT OF VENDORS FOR SUPPLY, INSTALLATION,
TESTING, COMMISSIONING AND MAINTENANCE OF FIRE ALARM / SECURITY ALARM/
CCTV SYSTEMS & FIRE EXTINGUISHERS AT BRANCHES/OFFICES IN CHENNAI CIRCLE**

1	Empanelment sought for	Please tick the option applied for (Please give separate application for each item) a) Fire Alarm Systems b) Security Alarm Systems c) CCTV Systems d) Fire Extinguishers
2	Name of the Applicant	
3	Address for correspondence	
4	Telephone Nos. including Mobile No.	
5	Fax No. & e-mail Id.	
6	Year of Establishment	
7	Whether individual, partnership or company (certificate to be enclosed)	
8	PAN, TIN, GSTIN/UIN registration details, ST details of company	
9	ISO certification, if available	
10	Name of Partners/Associates/Directors	
11	Details of major works of similar nature completed during last 7 years in PSU/Banks/Govt. Organisations/other places. Details to be given in enclosed format	As per Annexure A

12	List of Service Centers with address and contact details of Service Personnel employed in service centers in Tamil Nadu/Puduchery. (Details to be given in enclosed format)	As per Annexure B
13	Escalation matrix of the company	
14	Banker's Name	
15	List of Registration/Empanelment with other Organizations	
16	Product Certification (Valid for the current year) Mention UL/ CE/ FCC / ERTL (Enclose copy)	
17	Authorization Letter from OEM (Mention Yes/No), Attach a copy of letter separately,	
18	Whether any litigation/arbitration cases pending against the firm	
19	Have you been blacklisted by any organisations in the past? If yes, furnish the details	

20. Annual turnover for the last 3 years Rs. in Lakhs (copy of audited P&L statement, Balance Sheet and IT Returns for the last three years to be submitted).

Year ended	31.03.2018	31.03.2019	31.03.2020
Annual Turnover			
Profit			

NOTE: Separate sheets, documents, etc. in support of above can be enclosed.

We have read and understood all the terms and conditions stipulated by the Bank for all categories of equipment and do hereby agree to each and every item indicated therein. We understand that State Bank of India reserves the right to accept or reject any or all applications without assigning any reason whatsoever. We are agreeable to all the terms and conditions, specifications and requirements.

Date:

Place:

Signature of Authorized Signatory with Seal

ANNEXURE - A

PARTICULARS IN RESPECT OF MAJOR WORK ORDERS FOR THE LAST 7 YEARS
(WORK ORDERS COPIES TO BE ENCLOSED)

Sl. No.	Name of the work/project address	Description of work executed and value	Name and address of the clientele	Time of Completion (work completion certificate to be enclosed)
1	2	3	4	5

(Signature of the Authorized Signatory with Seal)

ANNEXURE –B

OTHER RELEVANT INFORMATION

Details of Technical Staff						
Sl. No.	Service center with address	No. of staff	Name & Designation	Contact Details	Qualification	Experience
1						
2						
3						
4						
5						

(Signature of the Authorized Signatory with Seal)

SECURITY/BURGLAR ALARM SYSTEM

1. Components of Security Alarm System in Branches

- a) Control Panel with Integrated Auto-dialer (PSTN or GSM Based)
- b) In built Auto-dialer
- c) Wiring
- d) PIR Sensors
- e) Hooters – External and Internal
- f) Magnetic Sensors
- g) Vibration Sensors
- h) Panic Switches

2. Technical Specification for Security Alarm System

(a) Micro-Processor based Control Panel with inbuilt LED indication & with integrated Auto-dialer (preferably GSM Based. However, if mobile network is not available, PSTN based)

i) External Body Features –

- (aa) Protected from dust, water, vermin etc.
- (ab) Acrylonitrile Butadiene Styrene (ABS) / 18 SWG M S Cabinet, epoxy coated
- (ac) Locking of panel by Allen Head screw on sides / internal lock
- (ad) Bracket mounted
- (ae) Provision for battery compartment inside the panel.

ii) Micro-Processor based Control Panel with inbuilt LED indication & push button to show the status/health of the system (Data Logger System). The panel should indicate the health of the system (Fault, power failure and battery status indicator).

iii) Option to add wireless module having provision for Cordless Switch to activate the alarm system

iv) Real Time Clock with accuracy of +/- 15 seconds per day.

v) In the event of any zone getting faulty or switch getting isolated, it should give indication on the LCD display and the system to remain functional.

- vi) The system should automatically (arming & disarming) change from Day to Night mode & vice-versa as per the real time clock (programmable) and also have option to change manually with existing keypad.
- vii) Sounding of hooters gets automatically put off after a period of 3 minutes (programmable with the help of keypad) and thereafter the entire system should get reset).
- viii) The system shall have programmable 0 - 90 seconds time delay to activate the sounding of hooters for panic switches and entry and exit time delay from 0 to 90 sec for PIR.
- ix) The system should have in-built auto-dialer (PSTN based or GSM based).
- x) System operating on Mains and battery backup (12V 7Ah) with recharging facility.
- xi) Should support two external hooters besides the internal one.
- xii) It should be compatible with PIR sensors, Magnetic sensors, Vibration sensors, Light sensors and have one zone for fire detector (smoke sensor) etc. and capable to put on the lights when activated during night mode.
- xiii) Auto Reset after activation – 03 minutes (Day & Night mode)
- xiv) Any wire cut should activate the alarm system for 120 seconds and thereafter the affected switch / zone to get isolated/ bypassed with display / blinking of LCD panel indicating the defect.
- xv) ON/OFF function of the system should only be with the help of keypad.

(b) In-built Auto Dialler:

- i) It should be compatible with GSM / PSTN connection of any service provider.
- ii) Provision for storage and dialing minimum five (5) Telephone / mobile numbers with recording message up to 20 Seconds duration.
- iii) Message should be repeated at least twice before dialing the 2nd number. In case number not responded, facility to re-dial the number after completing the cycle.
- iv) Should have message recording facility at local end (Branch end)
- v) In-built GSM auto-dialler should have the ability to generate SMS alerts in addition to auto-dialing the pre-fed numbers.
- vi) Provide signal strength and status indication on display screen.

(c) Wiring

- i) 2 Core and 4 Core Multi strand .75 sq. mm, flexible, ISI marked (Finolex/Plaza/Polycab/ RR Cable or similar quality), PVC insulated copper wire for connection of panic switches and other sensors respectively.
- ii) Rigid PVC conduit 2 mm ISI mark. Fixed with metal saddling at every 02 ft distance.

(d) PIR SENSOR

- i) Dual Technology (IR & Microwave)
- ii) Detection coverage horizontal angle 110 degrees
- iii) Detection Range: Up to minimum 10 Mtrs
- iv) Sensitivity range: Low/ Med/ High
- v) Wall mounting facility
- vi) Pet / rodents immunity
- vii) Provision for calibration to adapt changes in ambient temperature due to various seasons

(e) Hooter

- i) Min 90 dB for internal and 110 dB for External (CE & UL certification)
- ii) 4 wired with tamper loop (Cutting of hooter wire should trigger other hooter)
- iii) ABS body
- iv) Weatherproof
- v) Wall mounting facility
- vi) Operates on 12 Volt DC

(f) Magnetic Sensor

- i) ABS body
- ii) 4 wired with tamper loop (NC circuit)
- iii) Operating Gap: 15mm

(g) Multi-Function Sensor

- i) Capable of vibration detection, metal cutting and glass breaking
- ii) ABS body
- iii) Sensitivity range: Low/ Med/ High

(h) Panic Switches

- i) Sturdy built
- ii) Micro Switch Technology
- iii) In-built tamper Switch

ANNEXURE –‘D’

**TECHNICAL SPECIFICATIONS OF AUTOMATIC FIRE DETECTION & ALARM SYSTEM
(AFD&AS)**

Sl. No.	Item	List
1	Specifications: Panel and Battery	Annexure-D 1
2	Specifications: MCP, Hooter, R1 and Cable	Annexure-D 2
3	Specifications: Various Detectors	Annexure-D 3
4	Maintenance of Automatic Fire Detection & Alarm System (AFD & AS)	Annexure-D 4

ANNEXURE –D-1

SPECIFICATIONS: PANEL AND BATTERY

1. Main Control Panel	Technical Specifications
(a) Primary Function	The primary function of the control panel shall be to automatically respond to the operation of one or more detectors to give fire alarm and to indicate area (zone) from where the devices are activated.
(b) Specifications	Minimum 4 (Four) Zone Microprocessor based Control Panel as per IS-2199- 2008 specifications. UL/EN approved, Approved / tested by ERTL/ ETDC or any Third party Laboratory/ Test House recognized by Bureau of Indian Standards for this purpose.
(c) Electrical \ Electronics	i) Built in power supply arrangement with AC/DC ON, system ON visual indicators. ii) Automatic changeover arrangement to standby supply with built-in battery charger, low battery, charger fail, reverse polarity, AC/DC fail visual indicators. iii) Built-in panel sounder with Acknowledge switch, lamp test and reset switches, evacuation alarm. iv) Zone indicators for Fire, Open, Short, Isolate and Test Facility. v) On fault i.e, open / short condition, buzzer must sound and indicator lamp (LED) glow. This audible alarm should be distinct from the Fire Alarm. Trouble reminder. vi) Built-in Digital Ammeter, Digital Voltmeter, Air Conditioning turn-off relays and facilities for connecting Auto dialer
(d) Power Supply	The fire panel shall operate from a 230 v + / - 10 % 50 Hz mains supply and in case of power failure shall automatically switch over to a built-in sealed maintenance free battery rated at 24V DC 7 AH with a switch over time of less than 100 ms. Deep discharge arrangement should be there.
(e) Power Consumption	Less than 200 mA idle current and 1 –2 Amps on full activation.
(f) AC Voltage at Input	Single Phase 50 Hz, 150-260 V. Auto cut-off protections for over and under current / voltage

(g) DC Voltage for System	24 Volts
(h) Type of indicator lamps	LED (Different colors)
(i) Body	
(i) Type	Wall mounting, plug in modular type.
(ii) Overall dimensions	Suitable size to accommodate 4 zones, other control components, and 2 X 12V 7 AH Battery.
(iii) Thickness of body and colour	16 SWG. Powder coating.
iv) Opening of the Body/panel	Suitable locking arrangement through Key/Allen Screws
v) Cable glands	Cable glands should be provided
(j) Additional facilities:	It should have the following additional facilities /provision:
	(i) Auto dialer should have capacity to register at least 5 (five) telephone numbers, be integrated within Main Control Panel
2. BATTERY UNIT	
(a) Make	Standard ISI make
(b) Type	Sealed, maintenance free
(c) Voltage	12 Volts: 2 units.
(d) AH Capacity	7 AH capable of providing hrs stand by supply in case of AC failure as per IS 2189-2008.
(e) Location	Both the batteries will be located within the Main Control Panel

ANNEXURE –D-2

SPECIFICATIONS: MCP, HOOTER, RI AND CABLE

3. MANUAL CALL POINT:	
(a) Make as per BIS	As per IS 2189-2008. with hammer and chain
(b) Material of body	M.S., Powder coated with approved P.O red
(c) Thickness of body	1.5 mm.
(d) Material of fragile element	Glass of 2mm thickness
(e) Contact making breaking	Breaking for alarm
(f) Dimension	100 mm x 100mm
(g) Size of fragile element	70 mm x 70mm
(h) Type of indicator lamp	LED
4. ELECTRONIC HOOTER/SOUNDER:	
(a) Make	As per IS 2189-2008.
(b) Watt/ capacity	6 Watts (Dual tone) of Min 65 db output
(c) Type of sound emitted	Intermittent / Dual
(d) Material of the body	Fabricated from either spun aluminium or moulded PVC
5 . RESPONSE INDICATOR	
(a) Make	As per IS 2189-2008 or equivalent as per prevalent trade and practice, acceptable to the Bank
(b) Type of indicator lamps	LED
(c) Material of the body	Fabricated from either spun aluminium or moulded PVC or MS 16 SWG
6 . CABLE	
(a) Make	Standard ISI mark
(b) Specification	IS 1554-Part-1 1976
(c) Type	2 core, 1.5 sq. Mm/core; Armoured Cable

SPECIFICATIONS: VARIOUS DETECTORS

7. DETECTOR	
i) IONISATION SMOKE DETECTOR:	
(a) Operation Principle	Ionization (Apollo 65 and its equivalent other makes as listed below.
(b) Make	
(c) Specification	IS 11360-1985/UL-217/EN-54/FM/ LPCB
(d) Voltage range	24 V DC, 20-30V
(e) Type of Indicator lamp	LED
(f) Compatible to work with	Optical and Heat and Multi Sensor
ii) OPTICAL SMOKE DETECTOR:	
(a) Operation Principle	Light Scattering or obscuration (Apollo 65 and its equivalent other makes as listed below.
(b) Make	
(c) Specification	IS-11360-1985/UL/BS/FM/LPCB
(d) Type of Indicator lamp	LED
(e) Compatible to work with	Ionization and Heat and Multi Sensor
iii) HEAT DETECTOR:	
(a) Operation principle	Rate of rise cum fixed temperature type.
(b) Make	
(c) Specification	IS-11360/UL/BS/FM/LPCB
(d) Type of Indicator lamp	LED
(e) Compatible to work with	Ionization and Optical and Multi Sensor

ANNEXURE –D-4

MAINTENANCE OF AUTOMATIC FIRE DETECTION & ALARM SYSTEM (AFDAS)

1.AMC will be awarded after completion of warranty period counting from the date of handing over the system to the branch/office/cell.

2. **SCOPE OF WORK**: Quarterly (Once in three months) i.e. four visits in a year.

- (a) Checking, cleaning and testing of all components of the System i.e. Control Panel, Detectors, Response Indicators, Manual Call Points, Auto Dialer and Batteries etc. for its serviceability and healthiness.
- (b) Testing of Auto dialer, programming i.e. changing and feeding of telephone numbers in consultation with Branch Managers wherever required.
- (c) Rectification of defects noticed in the system.
- (d) During each visit representative of the firm will give training to the Bank's staff in operation and maintenance of the system.
- (e) Apart from the above quarterly visits all complaints / breakdown calls will have to be attended free of cost within 24 hours for city / local branches and within 72 hours for outstation branches. An alternative serviceable unit may be provided in case the existing unit has to be taken out for necessary repairs and the original unit / part shall be refitted after repairs at the earliest.

ANNEXURE-‘E’

TECHNICAL SPECIFICATIONS OF CCTV SYSTEM

a) **NVR FOR 4/8/16/32 Channel**

SI No	Parameter	Specification	Remarks
1.	Compatibility	IP Cameras	
2.	Main Processor/ Operating System	Embedded	
3.	System Resources	Pentaplex function, recording, play back, live view, back up, remote access over IP network	
4.	Recorder Control Options	Video Front Panel, IR based remote control, Keyboard (Both RS232c and IP), IP network, USB Mouse	
5.	IP Camera Input	Minimum 4/8/16/32 IP channel/ RJ 45 port (PoE)	
6.	IP Camera Input	2MP/1080 P (Minimum 4 channel, exclusive of the other HD Analog channels)	Should support upto 8 MP
7.	Recorder Video Output	Minimum 1 VGA,1 HDMI	
8.	Recorder Audio input	Minimum 1 audio channel, RCA	Requisition only if Audio support in Camera is being asked
9.	Recorder Audio Output	1 audio channel, RCA	Requisition only if Audio support in camera is being asked
10.	Recorder Bidirectional talk	1 channel input, BNC,1 channel output, RCA	Requisition only if Audio support in Camera is being

			asked
11.	Display Screen Mode	1,4,8,9,16,32 ALL (Window)	
12.	Camera Scheduling	Supported	
13.	On screen Display	Date, Time, Camera Title, Video loss alert, motion detection alert, recording, camera lock alert, camera tampering, camera masking	
14.	Video/Audio compression	Minimum H.265 or better/G.711 respectively (One channel) or higher	
15.	Image resolution	1080 P (2 MP) or higher, real time recording @ 25 fps per channel in all channels with selectable fps simultaneously	
16.	Encoding stream	2MP should support 25 fps real time recording in all channels simultaneously. Should support upto 8 MP	
17.	Video encoding bit rate	IP video: 32~ 4096 Kb/s or higher	
18.	Image quality	6 levels (VBR) or equivalent	
19.	Recording Mode	Manual, Schedule, Regular, Motion detection, Camera blank, Video loss. Stop recording	FIFO and auto overwrite facility to be added
20.	Recording priority	Manual: Alarm: Motion Detection & Regular	
21.	Recording interval	Prerecord 1 sec to 30 sec, Post record 10 sec – 5 minutes	
22.	Alarm Input	Supported Minimum 4	
23.	Relay Output	Supported Minimum 1	
24.	Water Marking	Supported	

25.	Playback Channel	1,2,4,16,32	
26.	Recorded Search Mode	Video Time & Data, Exact search (with Date, Hour, Minute and Second accuracy), Motion Detection, Alarm	
27.	Playback Options	Play, Digital Zoom (any size), Pause, Rewind, Slow Motion, shift to next file, shift to previous file, one click previous camera, one click next camera, Full Screen Mode, Replay, Backup selection, Fast forward, Shuffling	
28.	Operation Over Network	Monitor, Playback, File download, Log information, System setting	
29.	Hard Drive Storage Option	For 4 Channel – 2 SATA, 8 Channel - 2 SATA, 16 Channel – 4 SATA Should support up to 8 TB per SATA port	
30.	USB interface	Minimum 2 Ports (one should be 3.0)	
31.	Serial interface	RJ 45 interface	
32.	Power supply	AC 100 ~ 240 V, 50/60 Hz	
33.	Working environment	All indoor weather conditions	
34.	Duplex type	Recorder should be able to playback recorded footage without having to stop recording	
35.	Certificate	UL & BIS	
36.	Compatibility	Onvif registered for relevant profiles	
37.	HDD quality	Surveillance (4 TB/ 6 TB/ 8 TB)	

b) **HD DVR/HVR for 4 / 8 /16 Channel - Specification for 16 Channel DVR with inbuilt 4TB Hard Disk**

SI No	Parameter	Specification	Remarks
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1.	Compatibility	Analog cameras (mandatory), AHD, CVI, TVI (minimum one out of the three other than itself)	
2.	Main Processor / Operating System	Embedded	
3.	System Resources	Pentaplex function: recording, playback, live view, backup, remote access over IP network	Catalogue must be provided
4.	Recorder Control Options	Video Front panel, IR Based remote control, Keyboard (Both RS232c and IP), IP Network, USB mouse	
5.	Analog / HD Camera Input	Minimum 4/8/16 Video channel; BNC	
6.	IP Camera Input	1080P; 720P; D1; CIF IP Camera (Maximum 2 Channel, exclusive of the other HD Analog Channels)	
7.	Recorder Video Output	Minimum 1 VGA, 1 HDMI	
8.	Recorder Audio Input	Minimum 1 audio channel, BNC or RCA	Requisition only if Audio support in camera is being asked
9.	Recorder Audio Output	1 audio channel, BNC or RCA	Requisition only if Audio support in camera is being asked
10.	Recorder Bidirectional Talk	1 channel Input, BNC, 1 channel Output, BNC or RCA	Requisition only if Audio support in camera is being asked
11.	Display Screen Mode	1,4,8,9,16, ALL (Window)	
12.	Camera Scheduling	Supported	

13.	On Screen Display	Date, Time, Camera Title, Video loss alert, motion detection alert, recording, camera lock alert, camera tampering, camera masking.	
14.	Video/Audio Compression	H.264/G.711 respectively (One Channel) or higher	
15.	Image Resolution	CIF; 2CIF; 4CIF; HD1; D1; 720P or higher, real-time recording @ 25 fps in all channels with selectable fps simultaneously.	All channel HD
16.	Encoding Stream	CIF; 2CIF; 4CIF; HD1; D1; 720P or higher, real-time recording @ 25 fps in all channels with selectable fps	
17.	Video Encoding Bit Rate	Analog video: 32~2048Kb/s or higher, IP video: 32~4096Kb/s or higher	
18.	Image Quality	6 levels (VBR)	
19.	Recording Mode	Manual, Schedule, Regular, Motion detection, Camera blank, Video loss. Stop Recording	FIFO and auto overwrite facility to be added
20.	Recording Priority	Manual; Alarm; Motion Detection & Regular	
21.	Recording Interval	Prerecord: 1sec to 30 sec., Post record: 10sec ~ 5 minutes	
22.	Alarm Input	Supported Maximum 2	
23.	Relay Output	Supported Maximum 2	
24.	Water Marking	Supported	
25.	Playback Channel	1,2,4,16	
26.	Recorded Data Search Mode	Video Time & Date, Exact search (with Date, Hour, Minute and Second accuracy), Motion Detection, Alarm	

27.	Playback Options	Play, Digital zoom (any size), Pause, Rewind, Slow motion, shift to Next file, shift to Previous file, one click Previous camera, one click Next camera, Full screen mode, Replay, Backup selection, Fast forward, Shuffling	
28.	Operation Over Network	Monitor, Playback, File download, Log information, System setting,	
29.	Hard Drive Storage Option	For 4 Channel – 2 SATA, 8 Channel – 4 SATA, 16 Channel – 8 SATA. Should support up to 6 TB per SATA port.	
30.	USB Interface	Minimum 2 Ports (one should be 3.0)	
31.	Serial Interface	1 RJ45 RS-232 interface; 1 RS-485 interface; 1 RS-485 keyboard interface	
32.	Power Supply	AC 100~240 V, 50/60 Hz	
33.	Working Environment	All Indoor weather conditions	
34.	Duplex type	Recorder should be able to playback recorded footage without having to stop recording	
35.	Certificate	UL/FCC & CE & ERTL	
36.	HDD quality	Surveillance (1 TB / 2 TB / 4 TB)	

c) **2 Megapixel IP IR Dome Camera with Motorised Lens (IP Camera)**

SI No	Feature	Specification	Remarks
1.	Image Scanner	2 Megapixel progressive scan CMOS or higher	
2.	Effective pixels	1920(H) x 1080 (V) or higher	
3.	Electronic Shutter	Auto/Manual, 1/3 (4) ~ 1/10000s	
4.	Video Frame Rate	25 fps @ 2 Mega Pixel	

5.	Scanning System	Progressive	
6.	Mini Illumination	0.01 Lux/ F 1.4 (Colour); 0 Lux/ F1.4 (IR on)	
7.	S/N ratio	More than 50dB	
8.	Min. IR LEDs Length	30m	
9.	Day/Night	Auto (ICR)/ Colour/ B/W	
10.	Black Light compensation	True WDR (Minimum 120 dB or higher)	
11.	White Balance	Auto/Manual	
12.	Focal length (lens)	2.8 ~ 12 mm (Motorised)	
13.	Video compression	H.265 or higher	
14.	Resolution	2MP (1920 x 1080) or higher	
15.	Frame Rate (Triple Stream)	All streams 2MP @ 25fps fully configurable	
16.	Bit rate	H.265H: 40K ~ 8192	
17.	Network Ethernet	RJ-45 (10/100 Base –T)	
18.	Protocol	IPv4/Ipv6, HTTP, HTTPS, SSL, TCP/IP, UDP, UpnP, ICMP, IGMP, SNMP, RTSP, RTP, SMTP, NTP, DHCP, DNS, PPPOE, DDNS, FTP, IP Filter, QoS	
19.	Compatibility	ONVIF	
20.	Power Supply	DC 12V, PoE (802.3af)	
21.	Working Environment	-30° C ~ +60° C / Less than 95 % RH (no condensation)	
22.	Ingress Protection	Min IP66	

23.	Vandalism Protection	IK 10 rated	
24.	Video Analytics	Should support Line crossing and loitering	
25.	Certification	UL & BIS	
26.	Memory Card	Up to 256 GB	
27.	Mac ID	Should be in the name of OEM	

d) **High Resolution Pin Hole IP Camera**

SI No	Feature	Specification	Compliance
1	Image Sensor	2MP CMOS	
2	Effective Pixels	1920 X 1080 Pixel (or Above)	
3	Resolution	1920 X 1080	
4	Sync System	Progressive	
5	Min. Illumination	Colour - 0.01 Lux B/W 0.001 Lux	
6	S/N ratio	50 dB	
7	Electronic Shutter	Auto, 1/50, 1/10,000 sec	
8	Lens	3.6 mm (2.8 mm optional)	
9	WDR	120 dB or higher	
10	BLC	On/Off	
11	Temper Proof & Motion Detection	Yes	
12	White balance	Set/Manual/Indoor/Outdoor/Auto	
13	AGC	Off/Low/Middle/High	
14	Day & Night	Color/ B/W/ Auto level adjust	
15	Video Output	RJ 45	
16	Power Supply	DC 12V	

17	Power Consumption	Upto 5 Watts max	
18	Certification	UL & BIS	

e) **HD Varifocal IP Bullet Camera**

SI No	Parameters	Specifications	Compliance
1	Image sensor	2MP progressive Scan CMOS	
2	Effective Pixels	1920 (H) * 1080 (V)	
3	Min. Illumination	0.01 Lux @ (F1.2, AGC ON), 0 Lux with IR	
4	Shutter Time	1/25 (1/30) s to 1/10,000 s	
5	Lens	2.8-12 mm motorised	
		Angle of view: 80° – 27.2°	
6	Sync System	Internal	
7	White Balance	Automatic	
8	WDR	120dB or higher	
9	Day & Night	Automatic	
10	Synchronization	Internal Synchronization	
11	Video Frame Rate	25fps @ 2MP	
	Video Compression	H.265 or higher	
12	S/N Ratio	More than 50 dB	
13	Working Temperature / Humidity	-40°C to – 60°C (-40°F to – 140 °F)	
		Humidity 90 % or less (non-condensing)	
14	Power Supply	12V DC	
15	Power consumption	10 Watts max	
16	Weatherproof	Min IP66	

	ratings		
17	Vandalism proof	IK 10 rated	
18	Mac id	Should be in the name of OEM	
19	IR range	≥30 mtr	
20	Certifications	UL & BIS	
21	Memory Card	Up to 256 GB	
22	Compatibility	Onvif Registered for relevant profiles	

f) **HD Varifocal lens IR Dome Camera**

SI No	Parameters	Specification	Remarks
1	HD Technology	AHD, CVI, TVI	
2	Image Sensor	1 /3"720P CMOS Sensor /CCD or better	
3	Signal System	PAL	
4	Effective Pixels	1280 x 720 or higher	
5.	Mini. Illumination	0.01Lux@F1.2, AGC ON, 0 Lux with IR	
6.	Video Output	720P or higher @ 25 fps	
7.	Display Resolution	720P or higher @ 25 fps	
8.	Recording Resolution	720P or higher @ 25 fps	
9.	Frame Rate	50Hz:720p or higher @25fps	
10.	SNR	≥52dB (AGC OFF)	
11.	Audio Input	-	If felt necessary then an audio chip can be connected to the normal camera since inbuilt audio input cameras are quite

			expensive.
12.	Sync System	Internal	
13.	White Balance	Automatic	
14.	Day & Night	Automatic	
15.	Shutter	Automatic	
16.	Auto Gain Control (AGC)	Automatic	
17.	Noise Reduction (NR)	2D NR	
18.	IR Range	≥ 20 mtr	
19.	Lens	2.8-12mm (manual)	
20.	WDR	DWDR (ON/OFF)/ True WDR with OSD	True DWDR is only for the cameras facing the Entry/Exit, Parking or those which are exposed to bright light (substantial increase in cost)
21.	Input Voltage	DC12V±10%	
22.	IP Rating	IP66 (weatherproof) / IK 10 (Vandal Proof)	Not required for cameras inside the branch. Discretion may be used for either or both standards for the cameras to be placed outside the branch for parking etc.
23.	Operation Temp	0° to +50° C	
24.	Storage Humidity	90% or less	
25.	Certification	CE and UL or FCC	

g) **1.3 Megapixel IP IR Dome Camera with VF lens (IP Camera)**

S.No	Feature	Specification	Remarks
1.	Image Sensor	1/3" 1.3Megapixel progressive scan CMOS or better	
2.	Effective Pixels	1280(H)x960(V) or better	
3.	Electronic Shutter	Auto/Manual, 1/3(4)~1/10000s	
4.	Video Frame Rate	25 /50 fps @ 1.3 Mega Pixel	
5.	Scanning System	Progressive	
6.	Mini. Illumination	0.01 Lux/F1.4(Color); 0Lux/F1.4(IR on)	
7.	S/N Ratio	More than 50dB	
8.	Min. IR LEDs Length	30 m	
9.	Day/Night	Auto (ICR) / Colour / B/W	
10.	Back Light Compensation	DWDR	
11.	White Balance	Auto/Manual	
12.	Focal Length (lens)	2.7~12mm or more	
13.	Video Compression	H.264/ H.264H/ MJPEG	
14.	Resolution	1.3M(1280x960)/720P (1280x720)/D1(704x576/704 x 480)/CIF (352 x 288/352x 240)	
15.	Frame Rate (Dual Stream)	Mainstream (1.3M/720P (1 ~ 25/30fps)) & Sub stream: D1/CIF (1 ~ 25/30fps)	
16.	Bit Rate	H.264H: 40K ~ 8192Kbps; MJPEG: 40 K~16384Kbps	
17.	Network Ethernet	RJ-45 (10/100Base-T)	
18.	Protocol	IPv4/IPv6, HTTP, HTTPS, SSL, TCP/IP, UDP, UPnP, ICMP, IGMP, SNMP, RTSP, RTP, SMTP, NTP, DHCP, DNS, PPPOE, DDNS, FTP, IP	

		Filter, QoS,	
19.	Compatibility	ONVIF, PSIA, CGI	
20.	Power Supply	DC12V, PoE (802.3af)	
21.	Working Environment	-30°C~+60°C / Less than 95%RH (no condensation)	
22.	Ingress Protection	IP66 and IK 10	
23.	Certification	CE, FCC, UL	
24.	Memory Card	128 GB	

h) **High resolution pin hole camera**

SI No	Feature	Specification	Remarks
1.	Image Sensor	2MP CMOS	
2.	Effective pixels	1920x1080 Pixel or Above	
3.	Resolution	1920x1080	
4.	Sync system	Progressive	
5.	Min. illumination	Colour-0.01Lux B/W 0.001Lux	
6.	S/N ratio	52 dB	
7.	Electronic shutter	Auto, 1/50, 1/100,000 sec	
8.	Lens	3.6mm Pin Hole (2.8mm optional)	
9.	WDR	120db or higher	
10.	BLC	On/Off	
11.	Temper proof & Motion detection	Yes	
12.			
13.	White balance	Set/Manual/Indoor/Outdoor/ Auto	

14.	AGC	Off/Low/Middle/High	
15.	Day & Night	Colour/B/W/Auto level adjust	
16.	Video output	RJ45	
17.	Power supply	DC12V	
18.	Power consumption	3 Watts max	
19.	Certification	CE, FCC, UL	

i) **HD Varifocal IR Bullet Camera**

SI No	Parameters	Specifications	Remarks
1.	Image Sensor	1/3" Progressive Scan CMOS	
2.	Effective Pixels	1280(H)*720(V)	
3.	Min. Illumination	0.01 Lux @ (F1.2, AGC ON), 0 Lux with IR	
4.	Shutter Time	1/25(1/30) s to 1/50,000 s	
5.	Lens	2.8 - 12 mm @ F1.4	
		Angle of view: 80° - 27.2°	
6.	Sync System	Internal	
7.	White Balance	Automatic	
8.	WDR	DWDR (ON/OFF)/ True WDR with OSD	True DWDR is only for the cameras facing the Entry/Exit, Parking or those which are exposed to bright light (substantial increase

			in cost)
9.	Day & Night	Automatic	
10.	Synchronization	Internal synchronization	
11.	Video Frame Rate	720p@25fps/720p@30fps	
12.	HD Video Output	1 Turbo HD output	
13.	S/N Ratio	More than 52dB	
14.	Working Temperature/ Humidity	-40 °C - 60 °C (-40 °F - 140 °F)	
		Humidity 90% or less (non-condensing)	
15.	Power Supply	12V DC	
16.	Power Consumption	Max. 4.5W	
17.	Weatherproof Ratings	IP66	
18.	IR Range	≥ 20 mtr	
19.	Certifications	UL, CE, FCC	

j) **m-DVR up to 4 CCTV cameras**

S.No	Parameter	Specifications	Remarks
1.	Video Format	PAL	
2.	Number of Video Inputs	4 Channels	
3.	Number of Video Outputs	1	
4.	Video Compression Standards Supported	H.264, MPEG-4 and M-JPEG	
5.	Audio Compression	G.711 and G.726	

	Standards Supported		
6.	Number of streams	Dual streams, both streams independently configurable for each camera resolution and frame rate	
7.	Recording Resolutions	4CIF/2CIF/CIF/QCIF (can be set independently for each channel, for both streams)	
8.	Video Frame Recording Rate	1 to 25 fps for all channels at 4CIF (total 100 fps at 4CIF) – resolution and frame rate can be set independently for each camera, for both streams	
9.	Alarm Sensors	Minimum 4 inputs (NO/NC, configurable) 2 outputs	
10.	Storage	1TB, 2.5" SATA Hard Disk Drive or Solid state Drive with suitable ant vibration mechanism	
11.	Recording Modes	Normal, Schedule based, Alarm triggered, Motion detection	
12.	Event Based Recording and Tagging	Pre-recording – 1 to 15 minutes Post-recording – 1 to 60 minutes	
13.	Shut Down Delay	Configurable shut down delay after ignition off – 5 min to 4 hours	
14.	Power Input	8 to 32 volts, spike/surge protection	
15.	Power output	Regulated power to CCTV cameras and Microphones	
16.	Working Temperature	-10 to 60 degree Celsius	
17.	Working Humidity	0% to 95% relative humidity non-condensing	
18.	Network/Communication	LAN – 1 RJ45 interface	
19.	Interfaces	Wi-Fi – 802.11/b/g/n Built-in 3G/4G module, supporting both 3G and 4G, Support for SMS, Voice, Data, GPRS,	

		TCP/IP	
20.	External Interfaces	1 USB 2.0 ,1 SIM slot	
21.	Image quality	1 to 5 (configurable)	
22.	Watermark	Tamper-proof Watermark	
23.	Configurable Video Overwriting	<p>Video over-writing to be configurable to support:</p> <p>(a) Cyclic overwriting (oldest recording to be overwritten)</p> <p>(b) Event tagged recording not to be overwritten for a longer period (7 to 30 days, configurable)</p>	
24.	Connections	<p>All input and output connections to be vibration/shock resistant and locking</p> <p>Desirable: Aviation Connectors</p>	
25.	LED Indicators	Power, Recording, 3G/ GPRS Network	
26.	Vibration resistance	EN 60068 or equivalent	
27.	Shock resistance	EN 60068 or equivalent	
28.	Motion Detection	<p>Configurable sensitivity levels</p> <p>Motion Detection zones to be configurable independently for each camera</p>	
29.	RTC (Realtime clock)	Built-in RTC, drift not more than 10 seconds at any time	
30.	Data Download	M - DVR should provide video and audio download facility for the desired date/time and duration. It should be possible to connect a laptop to m-DVR through network cable on RJ45 port and open m-DVR's user interface in a standard browser using a standard URL.	

31.	Data Transfer on 3G and 4G/ GPRS	In case the vehicle moves to an area where 3G coverage is not present, the m-DVR will automatically shift to GPRS (2G) connectivity to send the health status data.	
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Note: In addition, m-DVR should have inbuilt GPS Module, capable to provide video with GPS Co-ordinates

k) **Analog Camera for Cash Van**

S.No.	Parameter	Recommended Specs	Remarks
1	Type	Analog Colour Camera	
2	Video Format	PAL	
3	Lens	Fixed 3.6mm	
4	Camera Resolution	700 TVL, 752(H) X 582 (V) or better	
5	Image Sensor	1 /3" CCD or better	
6	Minimum Illumination	0.01 Lux at F1.2 with IR Off 0.0 Lux with IR On	
7	Shutter Time	1 /50 sec to 1/100,000 sec	
8	Infrared Capability	Built-in Infrared LEDs with range of minimum 10 meters Auto Day/Night	
9	Camera Ruggedness	Rugged, vibration, shock and tamper proof housing. Vibration resistance as per EN 60068 or equivalent Shock resistance as per EN 60068 or Equivalent	
10	IP Rating	IP66	
11	Operating Temp	-10 to 60 degree Celsius	
12	Operating Humidity	0 % to 95% RH	
13	Audio	Built-in Microphone or separate	

		microphone	
14	Image Enhancement	Auto-tracking White Balance (ATW), Automatic Gain Control, Wide Dynamic Range (WDR) and automatic Backlight Compensation (BLC)	
15	Input Power	Power from MDVR	
16	Motion Detection	Automatic Motion Detection	

l) **Other components of CCTV**

SI No	Item Name	Specifications
1	Hard Disk Drive (SATA II or III)	Samsung / Seagate / WD / Hitachi. Video Surveillance Series (Rated for 24x7 operation) 32 ~ 64 MB cache, 3 Mb – 6 Mb per second data transfer rate, Spindle speed 7200 RPM or more
	Capacity	4TB/6TB/8TB (Tera Bytes)
2	MONITOR	Anti-glare Surveillance grade 24X7 working LED with TCO 03 or higher certification
	Screen Size	22" to 40 "diagonal LED
	Warranty	05 years
	Video	PAL
	Resolution (min)	Full HD (FHD)
	Power Input	12/24 V DC
	Viewing angle	140 degree H.,130 degree V
	Power consumption	NOT EXCEEDING 40 Watts/3 star minimum
3	Cable- Video	
	Category	Category -6 (Armoured)
	Mutual Capacitance @ 300 MHz	5.60nF/100 mtrs max.
	DC resistance @	9.38 ohm/100 mtrs max at 20 deg C

	300MHz	
	Impedance at 300 MHz	100+/- 15 ohm
	Insulation	High density Polyethylene
	Sheath	Fire Retardant PVC compound (FRPVC)
	Standards	TIA/EIA 568 B.2-1
	Acceptable quality	Make – Finolex/Polycab/D-link or equivalent
4	Cable – Power	
	Category	2 core power cable (Armoured)
	Type	2 core 1 Sq.mm each
	Acceptable quality	ISI marked (IS-694,1990) Make – Finolex/Incab/Polycab or equivalent
	Insulation	PVC Insulated
5	PVC Conduits for cabling	
	Specifications	IS-9537-1983: Internal Dia 20mm, Wall Thickness- 4.2 - 5mm
	Acceptable quality	ISI marked. Make –AKG/Polycab/Finolex or equivalent
	Grade	Medium
6	6 U Rack – (Wall Mount)	Dimension: 630 mm X 500 mm depth Power strip: 6 socket power supply: 1 no. Equipment Mounting Tray: 1 No Mounting screws & studs: 1 pack Transparent front door with Lock, Fan tray with 2 Fans, Provision for cable routing at the bottom of the rack.
7	I/O Box	Per Camera
8	Network Switch	
	Type	Unmanaged (Plug and play type) with PoE Ports,10/100 Mbps
	No. of Input PoE ports	4/8/16/32 RJ 45 (10/100 Mbps)

	Uplink Ports	2, RJ 45 (10/100 Mbps)
	Network protocol compliant	IEEE 802.3i, IEEE 802.3u, IEEE 802.3x IEEE 802.3af, IEEE 802.3at, IEEE 802.3az
	Led indicators	Power ON (System), Activity/ Link, Speed, Power fault/ Fail (Each PoE Port)
	Input voltage	230 V AC
	Surge Protection	2 KV for Ports and 6 KV for Power supply
	Operating Temperature	0° Centigrade to 40° Centigrade
	Power Transmission	328 Ft with compatibility for Poe extender

TECHNICAL SPECIFICATIONS OF FIRE EXTINGUISHERS

S.No	Item	List	Page No
1.	CO ₂ Portable Fire Extinguishers 3 KG & 4.5 KG	<u>Annexure-F 1</u>	
2.	DCP Fire Extinguishers (Cartridge Type) 6KG & 9 KG	<u>Annexure-F 2</u>	
3.	DCP Fire Extinguishers (Stored Pressure)	<u>Annexure-F 3</u>	
4.	Water CO ₂ Fire Extinguishers	<u>Annexure-F 4</u>	

TECHNICAL DETAILS OF CO₂ PORTABLE FIRE EXTINGUISHERS

Sl. No.	Details	Particulars	Requirement	Requirement
			3 Kg	4.5 Kg
1.	General			
(a)	Standard Code		Conforming to IS: 15683	Conforming to IS: 15683
(b)	Type		Portable	Portable
(c)	Fire Rating		13 B	13 B
(d)	Suitable for class of fire		Class B & Class C	Class B & Class C
(e)	Working Temperature		-20 ⁰ to 55 ⁰ C	-20 ⁰ to 55 ⁰ C
2.	Material of Construction for Body			
(a)	Material		Seamless Manganese Steel Tube as per IS 7285	Seamless Manganese Steel Tube as per IS 7285
(b)	Size			
(i)	Height		525 mm \pm 5	700 to 710 mm
(ii)	Diameter		140 mm \pm 5	140 mm \pm 5
(iii)	Thickness		4.2 mm As per IS 15683:2006	4.2 mm As per IS 15683:2006

3.	Pressure Requirement			
(a)	Service Pressure		60-65 Kg/cm ²	60-65 Kg/cm ²
(b)	Testing Pressure		250 Kg/cm ²	250 Kg/cm ²
4.	Neck Ring			

(a)	Threads		As per IS 3224	As per IS 3224
(b)	Type		Wheel type / Squeeze grip type as per IS: 3224:2002	Wheel type / Squeeze grip type as per IS: 3224:2002
(c)			Wheel type IS 3224 Aluminum	Wheel type IS 3224 Aluminum
5.	Valve	Working pressure	158 Kg/cm ²	158 Kg/cm ²
6.	Hose			
(a)	Material		Wire Braided Rubber	Wire Braided Rubber
(b)	Size			
(c)	I.D.		10 mm	10 mm
(d)	Length		-	1 m
(e)	Working Pressure		150 Kg/cm ²	150 Kg/cm ²
(d)	Bursting Pressure		275 Kg/cm ²	275 Kg/cm ²

7.	Discharge Tube		Made of M.S., Swivel joint type with rubber cover, free rotation in 360 angle	NA
8.	Discharge Horn			
(a)	Property		Non conductive	Non conductive
(b)	Material		Fiber glass / Polyethylene	Fiber glass / Polyethylene

(c)	Size			
(i)	Length		250 mm	400 mm
(ii)	O.D.		42 mm	62 mm
9.	Charge			
(a)	Extinguishing Media		Carbon Dioxide conforms to IS 15222	Carbon Dioxide conforms to IS 15222
(b)	Filling Ratio		0.667	0.667
(c)	Weight / Volume		3 Kg	4.5 Kg
10.	Washer			
(a)	Material		Teflon / Nylon	Teflon / Nylon
(b)	Size			

(c)	O.D.		19 mm	19 mm
(d)	I.D.		9 mm	9 mm
(e)	Thickness		3 mm	3 mm
11.	Performance Test			
(a)	Bulk Range Discharge		Not less than 2 Mtr.	Not less than 2 Mtr.
(b)	Minimum Effective Discharge Time		8 sec	8 sec
(c)	Throw of Jet		2 Mtr	2 Mtr
(d)	Discharge %		10 to 20 sec. Not less than 95 %	10 to 25 sec. Not less than 95 %

12.	Weights			
(a)	Empty Weight		9 to 10 Kg	12 to 14 Kg
(b)	Full Weight		12 to 13	16.5 to 18.5 Kg
13.	Wall Mounting Bracket		Mild Steel (Powder coated)	Mild Steel (Powder coated)
14.	Maintenance		As per IS 2190	As per IS 2190

15.	Refilling		Once in 5 years. Return to authorized recharger for recharging with Hydraulic Pressure test	Once in 5 years. Return to authorized recharger for recharging with Hydraulic Pressure test
16.	Hydraulic Pressure Test		Once in 5 years. At the time of refilling.	Once in 5 years. At the time of refilling.
17.	Life of Extinguisher		15 years	15 years
18.	Painting		Fire Red Fire Red, conforming to shade No. 536 of IS: 5	Fire Red Fire Red, conforming to shade No. 536 of IS: 5

19.	Marking			
(a)		Standard marking	IS: 15683	IS: 15683
(b)		Name of the manufacture r or trade mark if any		
(c)		Year of manufacture		
(d)		Serial number		
(e)		Type of extinguisher	CO ₂ Type	CO ₂ Type

(f)		Capacity of extinguisher	3 Kg	4.5 Kg
(g)		A declaration to the effect that the body of the extinguisher has been tested to a pressure of	250 Kg/cm ²	250 Kg/cm ²
(h)		Picture showing method of operation		
(i)		Method of operation in prominent letters		
(j)		The extinguisher shall be marked with letter indicating their suitability for respective classes of fires indicating their suitability for respective classes of fires	Class B & Class C	Class B & Class C

TECHNICAL DETAILS OF DCP FIRE EXTINGUISHERS (CARTRIDGE TYPE)

Sl. No.	Particulars	Details	Requirement	Requirement
			DCP 6 Kg	DCP 9 Kg
1.	General			
(a)	Standard Code		Conforming to IS: 15683	Conforming to IS: 15683
(b)	Type		Portable	Portable
(c)	Fire Rating		21 B	34 B
(d)	Suitable for class of fire		Class B & Class C	Class B & Class C
(e)	Working Temperature		-30 ⁰ to 55 ⁰ C	-30 ⁰ to 55 ⁰ C
2.	Body			
(a)	Material		M.S. Sheet (IS 513)	M.S. Sheet (IS 513)
(b)	Size			
(c)	Height		500 to 510 mm	600 to 620 mm
(d)	Diameter		150 to 160 mm	175 to 190 mm
(e)	Thickness		Min 1.5 mm (As per IS 15683)	Min 1.5 mm (As per IS 15683)
3.	Pressure Requirement			

(a)	Service Pressure		15 Kg/cm ²	15 Kg/cm ²
(b)	Test Pressure		30 Kg/cm ²	30 Kg/cm ²
(c)	Burst Pressure		45 Kg/cm ²	45 Kg/cm ²

4.	Neck Ring		Neck ring is welded with top of the body having mounting threads (G2-1/2 or M74 x 2)	Neck ring is welded with top of the body having mounting threads (G2-1/2 or M74 x 2)
5.	Cap	Material	Brass Forging (IS 6912)	Brass Forging (IS 6912)
6.	Cap Washer	Material	Rubber (IS 5382)	Rubber (IS 5382)
7.	Plunger	Material	Brass/Stainless Steel (IS 6528)	Brass/Stainless Steel (IS 6528)
8.	Spring	Material	Carbon Steel (IS 4454)	Carbon Steel (IS 4454)
9.	Siphon Tube	Material	Aluminum/ M.S. (IS 3601)	Aluminum/ M.S. (IS 3601)
10.	Discharge Assembly	Squeeze grip type having mounting threads to match with necking threads.		
a)	Discharge Nozzle	Material	Plastic Nozzle with Metallic insert fitted with hose.	Plastic Nozzle with Metallic insert fitted with hose.

b)	Hose			
(i)	Material		Braided Rubber / PVC	Braided Rubber / PVC
(ii)	Length		450 mm	450 mm
(iii)	Burst Pressure		50 Kg/cm ²	50 Kg/cm ²

11.	Extinguishing Media		Dry Chemical Powder (Sodium bi-carbonate) as per IS 4308	Dry Chemical Powder (Sodium bi-carbonate) as per IS 4308
12.	Expelling Media			
(a)	Gas		Carbon di oxide (CO ₂)	Carbon di oxide (CO ₂)
(b)	Gas Cartridge			
(i)	Material		Steel (IS 4947)	Steel (IS 4947)
(ii)	Capacity		120 gm	180 gm
13.	Performance Test			
(i)	Bulk Range Discharge		2 Mtr. (Minimum)	2 Mtr. (Minimum)
(ii)	Minimum Effective Discharge Time		8 sec (min)	8 sec (min)
(iii)	Throw of Jet		4 Mtr.	Not less than 6 m

(iv)	Percentage of discharge		90%	90%
(v)	Duration		25 sec max	30 sec max
14.	Weights			
(a)	Empty Weight		6 Kg (approx)	9 Kg (approx)
(b)	Full Weight		12 Kg (approx)	18 Kg (approx)
15.	Wall Mounting Bracket		Mild Steel (Powder coated)	Mild Steel (Powder coated)
16.	Maintenance		As per IS 2190	As per IS 2190
17.	Refilling	Once in 3 years. Refilling at site by changing powder and cartridge powder and cartridge	Once in 3 years. Refilling at site by changing powder and cartridge changing powder and cartridge	

18.	Hydraulic Pressure Test		Once in 3 years	Once in 3 years
19.	Life of Extinguisher		10 years	10 years
20.	Painting		Fire Red, conforming to shade No. 536 of IS: 5. Blue (5% of total surface area remaining in red)	Fire Red, conforming to shade No. 536 of IS: 5. Blue (5% of total surface area remaining in red)

21.	Marking			
(a)	Standard marking		IS: 15683	IS: 15683
(b)	Name of the manufacturer or trade mark if any			
(c)	Year of manufacture			
(d)	Serial number			
(e)	Type of extinguisher		Dry Chemical Powder BC (Squeeze Grip Cartridge Type)	Dry Chemical Powder BC (Squeeze Grip Cartridge Type)
(f)	Capacity of extinguisher		6 Kg	9 Kg
(g)	A declaration to the effect that the body of the extinguisher has been tested to a pressure of		30 Kg/cm ²	30 Kg/cm ²
(h)	Picture showing method of operation			
(i)	Method of operation in prominent letters			

(j)	The extinguisher shall be marked with letter indicating their suitability for respective classes of fires		Class B & Class C	Class B & Class C
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Annexure-‘F-3’

TECHNICAL DETAILS OF DCP FIRE EXTINGUISHERS (STORED PRESSURE)

Sl. No.	Particulars	Details	Requirement	Requirement
			DCP 6 Kg	DCP 9 Kg
1.	General			
(a)	Standard Code		Conforming to IS: 15683	Conforming to IS: 15683
(b)	Type		Portable	Portable
(c)	Fire Rating		21 B	34 B
(d)	Suitable for class of fire		Class B & Class C	Class B & Class C
(e)	Working Temperature		-20 ⁰ to 55 ⁰ C	-20 ⁰ to 55 ⁰ C
2.	Body			
(a)	Material		M.S. Sheet (IS 513)	M.S. Sheet (IS 513)
(b)	Size			

(c)	Height		Less than 600 mm	600 to 620 mm
(d)	Diameter		150 to 160 mm	175 to 190 mm
(e)	Thickness		Min 1.5 mm (As per IS 15683)	Min 1.5 mm (As per IS 15683)
3.	Pressure Requirement			
(a)	Service Pressure		15 Kg/cm ²	15 Kg/cm ²
(b)	Test Pressure		30 Kg/cm ²	30 Kg/cm ²
(c)	Burst Pressure		45 Kg/cm ²	45 Kg/cm ²

4.	Neck Ring		Neck ring is welded with top of the body having mounting threads (G2-1/2 or M74 x 2)	Neck ring is welded with top of the body having mounting threads (G2-1/2 or M74 x 2)
5.	Cap	Material	Brass Forging (IS 6912)	Brass Forging (IS 6912)
6.	Cap Washer	Material	Rubber (IS 5382)	Rubber (IS 5382)
7.	Plunger	Material	Brass/Stainless Steel (IS 6528)	Brass/Stainless Steel (IS 6528)
8.	Spring	Material	Carbon Steel (IS 4454)	Carbon Steel (IS 4454)
9.	Siphon Tube	Material	Aluminum/ M.S. (IS 3601)	Aluminum/ M.S. (IS 3601)
10.	Discharge Assembly	Squeeze grip type having mounting threads to match with necking threads.		

(a)	Discharge Nozzle	Material	Plastic Nozzle with Metallic insert fitted with hose or SS- 316 or Forged Brass as per IS: 6912	Plastic Nozzle with Metallic insert fitted with hose or SS- 316 or Forged Brass as per IS: 6912
(b)	Hose			
(i)	Material		Braided Rubber / PVC	Braided Rubber / PVC
(ii)	Length		450 -500 mm	450 -500 mm
(iii)	Burst Pressure		50 Kg/cm ²	50 Kg/cm ²
11.	Extinguishing Media		Dry Chemical Powder (Sodium bi-carbonate) as per IS 4308	Dry Chemical Powder (Sodium bi-carbonate) as per IS 4308

12.	Expelling Media		Nitrogen Gas (IS 1747)	Nitrogen Gas (IS 1747)
13.	Performance Test			
(a)	Bulk Range Discharge		2 Mtr. (Minimum)	2 Mtr. (Minimum)
(b)	Minimum Effective Discharge Time		8 sec (min)	8 sec (min)
(c)	Throw of Jet		4 Mtr.	Not less than 6 m
(d)	Percentage of discharge		90%	90%
(e)	Duration		25 sec max	30 sec max

14.	Weights			
(a)	Empty Weight		3 Kg (approx)	4 Kg (approx)
(b)	Full Weight		9 Kg (approx)	13 Kg (approx)
15.	Wall Mounting Bracket		Mild Steel (Powder coated)	Mild Steel (Powder coated)
16.	Maintenance		As per IS 2190	As per IS 2190
17.	Refilling		Once in 3 years. Return to authorized recharger for recharging with Hydraulic Pressure test	Once in 3 years. Return to authorized recharger for recharging with Hydraulic Pressure test
18.	Hydraulic Pressure Test		Once in 3 years	Once in 3 years
19	Life Extinguisher		10 years	10 years
20	Painting		Fire Red, conforming to shade No. 536 of IS: 5. Blue (5% of total surface area remaining in red)	Fire Red, conforming to shade No. 536 of IS: 5. Blue (5% of total surface area remaining in red)
21	Marking			
(a)	(a)	Standard marking	IS: 15683	IS: 15683
(b)	(b)	Name of the manufacturer or trade mark if any		

(c)	(c)	Year manufacture		
(d)	Serial number			
(e)	Type extinguisher		Dry Chemical Powder BC (Squeeze Grip Stored Pressure Type)	Dry Chemical Powder BC Squeeze Grip Stored Pressure Type)
(f)	Capacity extinguisher		6 Kg	9 Kg
(g)	A declaration to the effect that the body of the extinguisher has been tested to a pressure of		30 Kg/cm ²	30 Kg/cm ²
(h)	Picture showing method of operation			
(i)	Method of operation in prominent letters			
(j)	The extinguisher shall be marked with letter indicating their suitability for respective classes of fires		Class B & Class C	Class B & Class C

Annexure- 'F-4'

TECHNICAL DETAILS OF WATER CO₂ (9 LITRES) FIRE EXTINGUISHERS

Sl. No.	Particulars	Details	Requirement	Requirement
			Water Cartridge Type CO ₂	Water CO ₂ Stored Pressure Type
1.	General			
(a)	Standard Code		Conforming to IS: 15683	Conforming to IS: 15683
(b)	Type		Portable	Portable
(c)	Fire Rating		2 A	3 A
(d)	Suitable for class of fire		Class A	Class A
(e)	Working Temperature		0° to 55°C	+5° to 55°C
2.	Material of Construction for Body			
(a)	Material		M.S. Sheet (IS 513)	M.S. Sheet (IS 513)
(b)	Height		580 to 600 mm	580 to 600 mm
(c)	Diameter		180 to 190 mm	180 to 190 mm
(d)	Thickness		1.5 to 1.6 mm Epoxy Powder Coat (min. 0.05 mm) (As per IS 15683)	1.5 to 1.6 mm Epoxy Powder Coat (min. 0.05 mm) (As per IS 15683)

3.	Pressure Requirement			
(a)	Service Pressure		12 Kg/cm ²	12 Kg/cm ²
(b)	Test Pressure		30 Kg/cm ²	30 Kg/cm ²
(c)	Burst Pressure		45 Kg/cm ²	45 Kg/cm ²
4.	Neck Ring		Seamless M.S. Pipe (IS 1239) neck ring is welded with top of the body having mounting threads as per IS 2643	Seamless M.S. Pipe (IS 1239) neck ring is welded with top of the body having mounting threads as per IS 2643
5.	Cap		Brass Forging (IS 6912) having threads As per IS 2643	Brass Forging (IS 6912) having threads As per IS 2643
6.	Cap Washer	<i>Material</i>	Rubber (IS 5382)	Rubber (IS 5382)
7.	Pressure Gauge	<i>Properties</i>	23 mm series of Diaphragm, Brass Shelling nickel plated, Water proof	23 mm series of Diaphragm, Brass Shelling nickel plated, Water proof
8.	Siphon Tube	<i>Material</i>	Brass Plastic /SS/ M.S. (IS 3601)	Brass Plastic /SS/ M.S. (IS 3601)
9.	Snifter Valve	<i>Material</i>	Brass (IS 319)	Brass (IS 319)
10.	Discharge Assembly		Squeeze Grip type	Squeeze Grip type

11.	Discharge Nozzle			
(i)	Material		Aluminium Alloy (IS 617) Plastic (IS 7328)	Aluminium Alloy (IS 617) Plastic (IS 7328)

11a.	Hose			
(a)	Material		Braided Rubber / PVC	Braided Rubber / PVC
(b)	Size		Length: 400 mm (Minimum)	Length: 450 mm (Minimum)
(c)	Burst Pressure		50 Kg/cm ²	50 Kg/cm ²
12.	Safety Clip/Pin	Material	Steel (IS 2507)	Steel (IS 2507)
13.	Extinguishing Media		Pure Water	Pure Water
(a)	Weight / Volume		9 Ltr	9 Ltr
14.	Expelling Media		Gas Cartridge	Nitrogen gas at pressure 15 Kg/cm ²
(a)		Gas Cartridge		
(i)	Material		Steel (IS 4947)	NA
(ii)	Gas		CO ₂	NA

(iii)	Capacity		60 Gm	NA
(iv)	Stored Pressure Type		NA	Nitrogen gas at pressure 15 Kg/cm ²
15.	Performance Test			
(a)	Bulk Range Discharge		2 Mtr. (Minimum)	2 Mtr. (Minimum)

(b)	Minimum Effective Discharge Time		60 to 120 sec	60 to 120 sec
(c)	Throw of Jet		Not less than 6 m	Not less than 6 m
(d)	Percentage of discharge		90%	90%
16.	Weight			
(a)	Empty Weight		5.5 Kg (with cap, cartridge and discharge connection)	5.5 Kg (with cap, cartridge and discharge connection)
(b)	Full Weight		14.5 Kg	14.5 Kg
17.	Wall Mounting Bracket		Mild Steel (Powder coated)	Mild Steel (Powder coated)
18.	Maintenance		As per IS 2190	As per IS 2190

19.	Refilling		Once in 5 years Refilling at site by changing water and cartridge	Once in 2 years. Return to authorized recharge for recharging with Hydraulic Pressure test
20.	Hydraulic Pressure Test		Once in 3 years	Once in 3 years. At the time of refilling.
21.	Life of Extinguisher		10 years	10 years

22.	Painting		Fire Red, conforming to shade No. 536 of IS: 5	Fire Red Fire Red, conforming to shade No. 536 of IS: 5
23.	Marking			
(a)	Standard marking		IS: 15683	IS: 15683
(b)	Name of the manufacturer or trade mark if any			
(c)	Year of manufacture			
(d)	Serial number			
(e)	Type of extinguisher		Water CO2 Cartridge Type	Water CO2 Stored Pressure Type
(f)	Capacity of extinguisher		9 Ltr	9 Ltr

(g)	A declaration to the effect that the body of the extinguisher has been tested to a pressure of		30 Kg/cm ²	30 Kg/cm ²
(h)	Picture showing method of operation			
(i)	Method of operation in prominent letters			
(j)	The extinguisher shall be marked with letter indicating their suitability for respective classes of fires		Class A	Class A