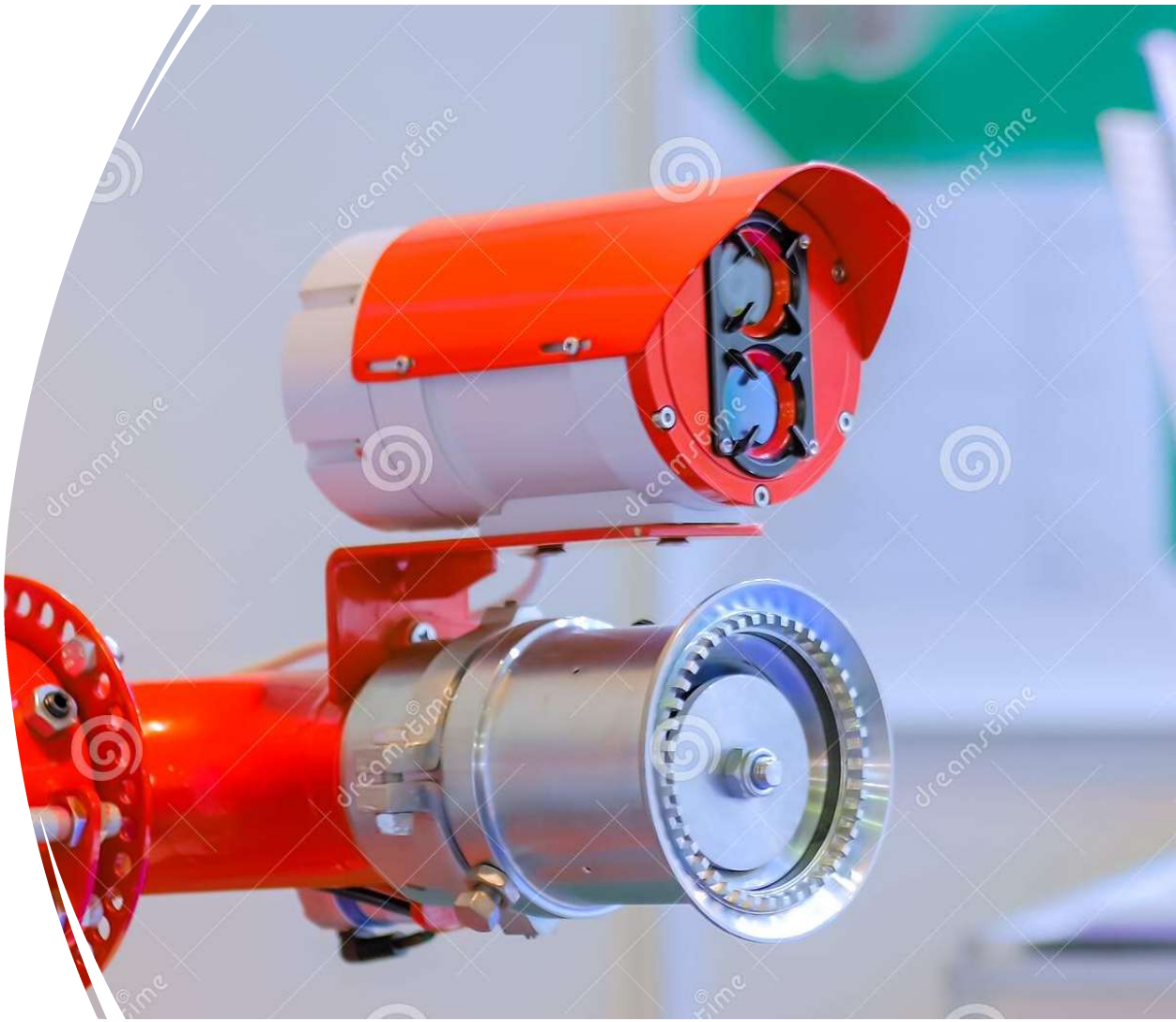
Fire Detection Alarms and Video Surveillance Systems

ECE 323 WEEK 3

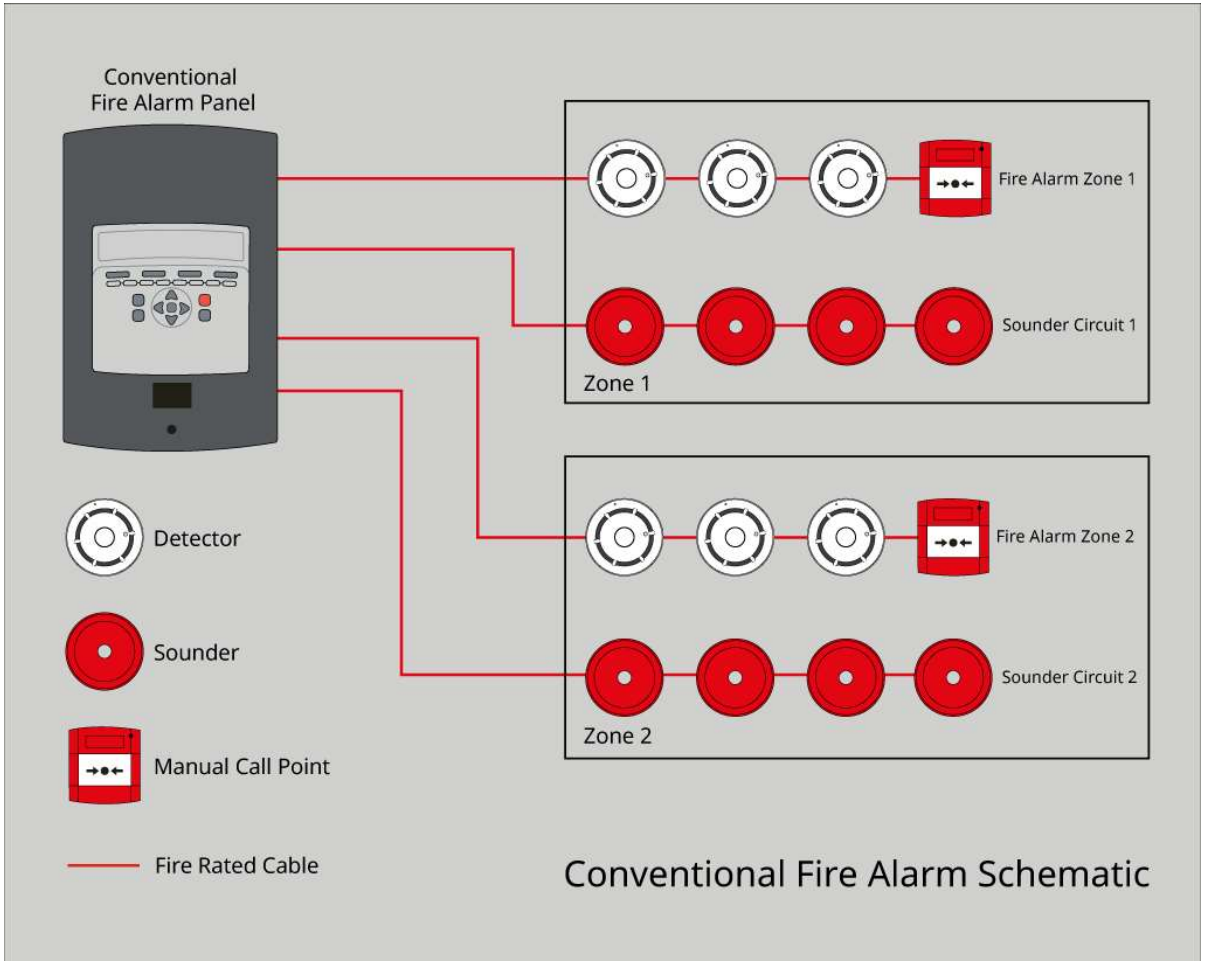


FIRE DETECTION AND ALARM SYSTEM (FDAS)

- A fire alarm system has several devices working together to detect and warn people through visual and audio appliances when smoke, fire, carbon monoxide, or other emergencies are present. These alarms may be activated automatically from smoke detectors, and heat detectors or may also be activated via manual fire alarm activation devices such as manual call points or pull stations. Alarms can be either motorized bells or wall mountable sounders or horns. They can also be speaker strobes which sound an alarm, followed by a voice evacuation message which warns people inside the building not to use the elevators.

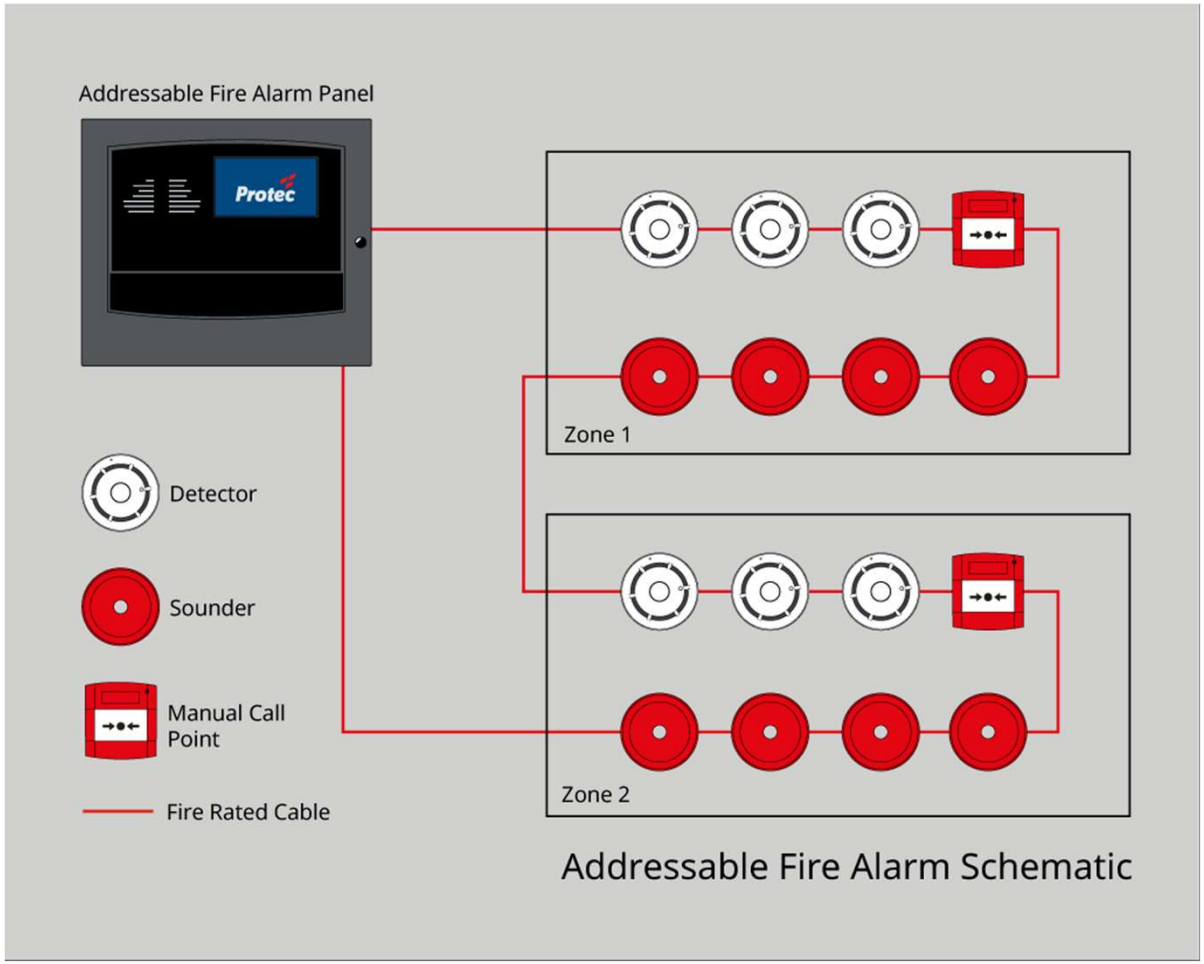
TYPES OF ALARM SYSTEMS

- Conventional Fire Alarm System
  - A conventional system is the simplest type of protected premises alarm system. When an alarm-initiating device, such as a smoke detector, sends a signal to the FACU, all the alarm-signaling devices operate simultaneously. Fire-alarm system annunciation enables emergency responders to identify the general location, or zone, of alarm device activation.



TYPES OF ALARM SYSTEMS

- Addressable Fire Alarm System
  - Fire alarm systems display the location of each initiating device on the FACU and an annunciator panel if provided. This connection enables emergency responders to pinpoint the specific device that has been activated. Addressable systems reduce the amount of time that it takes to respond to emergency situations. These systems also allow repair personnel to quickly locate and correct malfunctions in the system.



FDAS COMPONENTS

Fire Detection and Alarm System is composed of the following:

- Fire Alarm Control Panel also called "FACU".
- Initiating Devices; pull stations, heat detectors, carbon monoxide detectors, and smoke detectors.
- Manual Initiating Devices; Fire Alarm Full Station and Manual Call Point.
- Notification Devices; Bell, Siren, Horn, Strobe Lights, Speakers, etc.

FIRE ALARM CONTROL PANEL (FACP) ALSO CALLED AS FIRE ALARM CONTROL UNIT (FACU).

- This component, the hub of the system, monitors inputs and system integrity, controls outputs, and relays information. A fire alarm control panel (FACP), fire alarm control unit (FACU), or simply fire alarm panel is the controlling component of a fire alarm system.
- The panel receives information from devices designed to detect and report fires, monitors their operational integrity and provides for automatic control of equipment, and transmission of information necessary to prepare the facility for fire based on a predetermined sequence.
- The panel may also supply electrical energy to operate any associated initiating device, notification appliance, control, transmitter, or relay. There are four basic types of panels: coded panels, conventional panels, addressable panels, and multiplex systems.

CONVENTIONAL FIRE ALARM CONTROL PANEL AND ZONES

- A conventional fire alarm control panel employs one or more circuits, connected to initiating devices (usually smoke detectors, heat detectors, duct detectors, manual pull stations, and sometimes flame detectors) wired in parallel. These sensors are devised to dramatically decrease the circuit resistance when the environmental influence on any sensor exceeds a predetermined threshold. In a conventional fire alarm system, the information density is limited to the number of such circuits used. To facilitate location and control of fire within a building, the structure is subdivided into definite areas or zones. Floors of a multistory building are one type of zone boundary.
- Zones are usually made by dividing a building or area into different sections. Then depending on the specific zone, a certain number and type of device are added to the zone to perform its given job.

ADDRESSABLE FIRE ALARM SYSTEM.

- An addressable system gives each detector an individual number or address. Addressable systems allow the exact location of an alarm to be plotted on the FACP while allowing several detectors to be connected to the same zone. In certain systems, a graphical representation of the building is provided on the screen of the FACP which shows the locations of all of the detectors in the building, while in others the address and location of the detector or detectors in alarm are simply indicated.
- Addressable systems are usually more expensive than conventional non-addressable systems, and offer extra options, including a custom level of sensitivity (sometimes called Day/Night mode) which can determine the amount of smoke in a given area and contamination detection from the FACP that allows determination of a wide range of faults in detection capabilities of smoke detectors. Detectors become contaminated usually as a result of the build-up of atmospheric particulates in the detectors being circulated by the heating and air-conditioning systems in buildings

INITIATING DEVICES

- These devices act as inputs to the fire alarm control unit and are either manually or automatically activated. Examples would be devices such as pull stations, heat detectors, carbon monoxide detectors, and smoke detectors. Heat and smoke detectors have different categories of both kinds. Some categories are beam, photoelectric, ionization, aspiration, and duct.

COMMON INITIATING DEVICES

- Fire Alarm Pull Station - A fire alarm pull station is an active fire protection device, usually wall-mounted, that, when activated, initiates an alarm on a fire alarm system. In its simplest form, the user activates the alarm by pulling the handle down, which completes a circuit and locks the handle in the activated position, sending an alarm to the fire alarm control panel. After the operation, most fire alarm pull stations must be restored to the ready position using a special tool or key in order for the panel to be reset.

COMMON INITIATING DEVICES

- Manual Call Point - Also known as MCP, Manual call points are used to initiate an alarm signal and operate by means of a simple button press or when the glass is broken revealing a button. They can form part of a manual alarm system or an automatic alarm system. There will be an indicator on the monitoring unit for a visual indication to locate the call point easily, and there should be a visual identifier of the unit which triggered the alarm, typically a mechanical flag that operates on a latch and must be manually reset, e.g. by a key.

COMMON INITIATING DEVICES

- Smoke Detector - A smoke detector is a device that senses smoke, typically as an indicator of fire. Commercial security devices issue a signal to a fire alarm control panel as part of a fire alarm system, while household smoke detectors, also known as smoke alarms, generally issue a local audible or visual alarm from the detector itself or several detectors if there are multiple smoke detectors interlinked.

COMMON INITIATING DEVICES

- Heat Detector - A heat detector is a fire alarm device designed to respond when the convected thermal energy of a fire increases the temperature of a heat-sensitive element. The thermal mass and conductivity of the element regulate the rate flow of heat into the element. All heat detectors have this thermal lag. Heat detectors have two main classifications of operation, "rate-of-rise" and "fixed temperature". The heat detector is used to help in the reduction of property damage. It is triggered when the temperature increases.

COMMON INITIATING DEVICES

- Carbon Monoxide Detector - A carbon monoxide detector or CO detector is a device that detects the presence of carbon monoxide (CO) gas to prevent carbon monoxide poisoning.

NOTIFICATION DEVICES.

- This component uses energy supplied from the fire alarm system to inform the proximate persons of the need to take action, usually to evacuate. This is done by means of pulsing incandescent light, flashing strobe light, electromechanical horn, siren, electronic horn, chime, bell, speaker, or a combination of these devices.
- Notification Appliances utilize audible, visible, tactile, textual, or even olfactory stimuli (odorizer) to alert the occupants of the need to evacuate or take action in the event of a fire or other emergency. Evacuation signals may consist of simple appliances that transmit uncoded information, coded appliances that transmit a predetermined pattern, and or appliances that transmit audible and visible textual information such as live or pre-recorded instructions, and illuminated message displays.

NOTIFICATION DEVICES.

Speaker

Fire Alarm Strobe

Strobe/Horn

FIREFIGHTER'S PHONE SYSTEM.

- Firefighter's phone system is a stand-alone, Plain Old Telephone System (POTS) firefighter's phone uses no bell ringing voltage, no dial-tone, and you can't dial-up any other building. Instead of ringing, the phone at the fire command center just detects another phone plugged in and sounds an alert tone until answered.

Fire Fighters Telephone

FIRE SPRINKLER SYSTEMS.

- A fire sprinkler system is an active fire protection method, consisting of a water supply system, providing adequate pressure and flowrate to a water distribution piping system, onto which fire sprinklers are connected.
- Fire alarm systems monitor fire sprinkler water flow using electronic flow switches that notify the FACU when water is flowing through the system. This action may, in turn, cause the notification and signaling devices to function.

FDAS INSTALLATION GUIDELINES

1. 4 General Requirements

As required by this code and the relevant provision of RA 9514:

All buildings, facilities, houses, structures, and premises, except those stated in Clause 1.6.1, shall have FDAS that complies with the requirements of this code. The fire detection and alarm system shall be for the protection of life or property, or both, by detecting and notifying the existence of fire, smoke, heat, or other emergencies that impact and affect the protected premises.

The FDAS shall have one or more of the following functions:

- Automatic detection, and manual fire alarm signal initiation
- Activation of fire alarm notification appliances
- Emergency communications system
- Activation of annunciators
- Monitoring of abnormal conditions in fire suppression system
- Activation of fire safety functions
- Transmission of alarm signal to an off premises Central Station

FDAS INSTALLATION GUIDELINES

1.5 Use of Battery-Operated Smoke/Heat Detectors

Buildings, facilities, or premises that are not record and refer of fire protection code, more than 400 sq. m. in total floor area, nor more than two floors, and with a height of not more than 10m may choose not to install a FDAS. However, in its place, battery-operated, stand-alone detectors shall be installed. Each battery-operated detector shall cover a floor are of not more than 50 sq. m. Thus, buildings that exceeded the above size specifications are not allowed to use battery-operated detectors as a substitute of wired detectors in the FDAS.

FDAS INSTALLATION GUIDELINES

1.6 Areas Where Detection is Required

- Spaces under floor more than 600 mm in height
- Space above drop ceiling more than 1 meter in height
- Concealed spaces under the roof more than 1 meter in height
- Stairwells
- Return air ducts of air conditioning system
- Tunnels linking two or more buildings
- Vaults
- Vertical shafts

FDAS INSTALLATION GUIDELINES

1.7 Areas where detection is not required

- Toilet and or bathroom less than 4 sq. m.
- Exhaust ducts from toilets/ bathrooms
- Any walk-in type enclosure with a floor area not more than 1 sq. m
- The spaces under raised floor with a height of 250 mm or less
- The spaces above drop ceiling with a height of 1 meter or less
- Concealed spaces under the roof with a height if 1 meter or less
- Covered paths
- Areas under structures such as platforms and ducts

FDAS INSTALLATION GUIDELINES

1.8 Central Station Alarm Monitoring

All installed FDAS should subscribe to the alarm monitoring services of a central station. All alarm signals received by the monitoring central station shall be forwarded or redirected to firefighting authorities.

FDAS INSTALLATION GUIDELINES

2. 1 General Design Requirement

The purpose of a fire detection and alarm system is to detect fire at the earliest stage, and to give an alarm to alert the occupants so that appropriate action can be taken. Individual components shall be compatible with each other and shall be approved and listed by institutions recognized by the relevant authority and suitable for use in the Philippines. Detector selection shall be based on actual site conditions, site requirements, and ambient conditions. The detectors shall be located with at least a 1-meter radial distance to air blowers or air diffusers.

- Individual components shall be compatible with each other and shall be approved and listed by institutions recognized by the relevant authority.

FDAS INSTALLATION GUIDELINES

2.2 Personnel Qualifications

FDAS designer shall have the following qualifications:
1. A registered Professional Electronics Engineer (PECE)
2. Experienced in the proper design, application, installation, and testing of FDAS as certified by IECEP

The system designer shall develop plans and specifications in accordance with this Code and shall be identified in these system design documents as the Electronics System Designer.

FDAS INSTALLATION GUIDELINES

2.3 Single Panel Vs. Network of Panels

Each building shall have one fire alarm control panel (FACP). However, two or more panels networked together shall be required in the following instances:

1) If the number of buildings in a multi-building complex exceeds three, or;

2) If the total floor area of all the buildings in a multi-building complex exceeds 40,000 sq. m.

The FACP should be located ideally in a position clearly visible from the main entrance lobby or in the fire command center of the building.

FDAS INSTALLATION GUIDELINES

2.4 Conventional versus Addressable

If the total floor area more 8000 sq. m, a semi-addressable, or addressable system shall be used otherwise, a conventional system may be used.

FDAS INSTALLATION GUIDELINES

2.5 Automatic Detection

Automatic detection shall have a complete indoor coverage of the building or facilities including all rooms, halls, etc.

a. **Smoke detectors**: For smoke detectors, the performance characteristics of the detector and the area shall be considered when selecting smoke detectors. Smoke detectors shall not be installed in rooms with temperature below 5°C, above 45°C, and with relative humidity above 93%.

b. **Heat Detectors**: For heat detectors, temperature rating shall be set at least 11°C above maximum expected temperature and is spaced not more than 7.5m. it shall not be installed in locations where relative humidity is above 93% and if the ceiling height is more than 4 meters.

c. **Bean-Type Smoke Detector**: Beam-type smoke detector shall be used if ceilings are more than 6m in height and shall always be kept clear of opaque obstacles.

d. **Duct-Smoke Detectors**: Duct-smoke detectors shall be equipped in the air duct of all air handling units for centralized air-conditioning system. It shall be listed for use with air velocity, temperature, and humidity expected in the duct.

e. **Flame Detectors**: For Flame detectors, selection shall be based on the matching of spectral response of the detector to the spectral emissions of the fire to be detected to avoid nuisance alarms.

f. **Carbon Monoxide Detector**: Carbon monoxide detector shall be installed for dwelling units with attached garages and for units with a permanently-installed fuel-burning appliance. It shall not be installed for open parking garages and mechanically ventilated garages.

FDAS INSTALLATION GUIDELINES

2.6 Manual Detection

It is achieved through the manual activation of fire push or pull stations installed at a height of 1.4 m above floor and shall be easily seen and is accessible. It is usually colored red.
Manual fire alarm stations shall be located within 1.2m of each exit door on each floor.
Additional fire alarm stations shall not be more than 30m from each other, measured horizontally on the same floor.
- It is achieved through the manual activation of fire push or pull stations installed at a height of 1.4 m above floor and shall be easily seen and is accessible. It is usually colored red.

FDAS INSTALLATION GUIDELINES

2.7 Notification Appliances

Alarm shall be clearly audible throughout the floor and/or building where they are installed. It shall have a minimum of 65 dbA or 10 db higher than ambient room noise and a maximum of 115 dbA. In sleeping areas where audible notification is required, sound level shall be 15 dB above the average sound level, or 5 dB above the maximum level, or a maximum of 75 dBA whichever is greater measured at pillow level using A weighted scale. Visual notification shall be used along with audible notification for areas where hearing protection is worn.

FDAS INSTALLATION GUIDELINES

2.8 Central Station Alarm Monitoring

A one-way emergency communication sub-system shall be required for the following facilities

1. Airports
2. Seaports
3. Transportation terminals
4. Shopping malls
5. Hotels
6. Office buildings
7. Residential buildings or condominiums with floor area more than 25,000 sq. m or with more than 25 floors
8. Buildings with floor area greater than 15,000 sq. m or with more than 15 floors

FDAS INSTALLATION GUIDELINES

2.9 Two-way Telephone Communication Sub-System

Two-way telephone communication sub-system shall be required for conventional system with FACP of more than 10 zones and for addressable and semi-addressable system with more than 200 automatic detectors.

The primary display of fire point/zone annunciation shall be at the FACP of Fire Command Center. An LCD display can be used as a secondary display that annunciates the exact information shown on primary display. Room light indicator or annunciator are used in semi-addressable system that are installed in residential, hotels, etc. to indicate the actuation of the detectors inside the room or unit.

2.10 Fire Zone Annunciation

FDAS INSTALLATION GUIDELINES

2.11 Monitoring and Control of Other Equipment System

Each sprinkler flow switch, fire pump, jockey pump, and gas suppression panel shall be monitored by the FACP as one distinct alarm point or zone.
In the event of fire, each pressurization fan, exhaust or ventilating fan, smoke damper, air handling unit (AHU), and elevator shall be controlled by the FACP as one distinct output point or zone.
Each elevator will be automatically go to the ground floor and all the security doors will unlock in the event of fire.

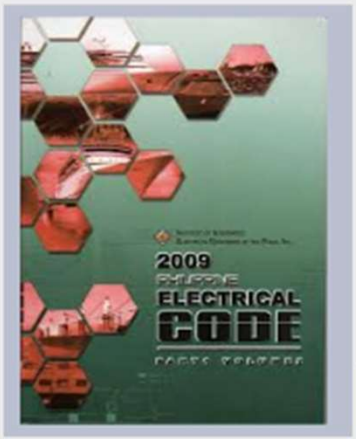
2.12 Power Supply

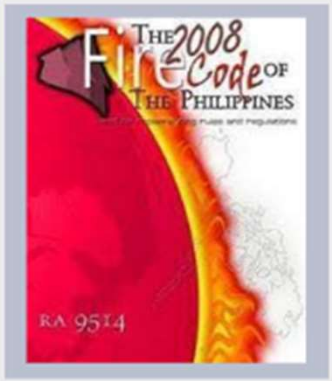
The primary power supply to the entire system shall be normally direct 220 – 240 VAC single phase. Its operating voltage shall not be more than VDC.
The capacity of the secondary power supply shall operate for a minimum of 24 hours.
Changeover form primary to secondary or vice-versa shall be automatic.

2.13 False Alarm

System designers shall comply with the design requirements under Chapter 2. Any adjustments shall subject to the approval of the PRC.
The owner of protected structures shall be responsible to prevent false alarms. Any alarm at the FACP shall be treated as a fire until proven to be a false alarm.

FDAS INSTALLATION GUIDELINES





3. 1 General Installation Requirements

Installation of FDAS shall comply with the requirements of the Philippine electrical code and of Chapter 3.3 to 3.8 and the Revised Fire Code of the Philippines 2008 and its implementing rules and regulation.

FDAS INSTALLATION GUIDELINES

3.3 Wires and Cables

The minimum wire gauge shall be 0.9 sq. mm.

All wires and cables shall be protected in a conduit pipe or flexible conduit or enclosed cable duct/tray/ladder or other raceways that provide protection against mechanical damage, corrosion, and fire.

FDAS INSTALLATION GUIDELINES

3.4 Wire Gauge

All wires and cables used shall have sufficient wire gauge to handle the maximum possible loading of the circuit.

The minimum wire gauge shall be 0.9 sq. mm.

FDAS INSTALLATION GUIDELINES

Conduit pipe (PVC) embedded in concrete containing FDAS wiring shall be made of metal of Polyvinyl chloride. All cable ducts/trays/ladders or other raceways containing FDAS wiring shall be made of metal. Metal conduit pipe shall be either intermediate metal conduit (IMC) or electrical metallic tubing (EMT) or rigid steel conduit (RSC). Used 75mm red color band for the minimum requirement and used 2 wraps every 3 meters.

3.5 Conduit Pipe, Flexible Conduit, Cable Tray, Cable Ladder, & Other Raceways

FDAS INSTALLATION GUIDELINES

3.6 Mounting of Devices and Panels

All equipment, devices and panels shall be installed securely and independently, and shall in no way be dependent on the wiring for mounting or hanging them in place. The front of the FACP shall have free space with a depth of at least 1 meter and a width of at least 1.5 times its width.

3.7 Splices, Terminations and Joints

At major junctions in the system like terminal cabinets, vertical riser cabinets, or cabinets housing FDAS modules, terminal blocks shall be used to interconnect wires and cables in a clean and orderly manner, these cabinets must be located in a well ventilated with ambient temperature not exceeding 35 .

FDAS INSTALLATION GUIDELINES

3.8 Radio Frequency Interference and Electromagnetic Interference

All FDAS equipment, especially automatic detectors, shall be resistant to radio frequency interference to prevent false alarms, and must not be located in places with high levels of electromagnetic interference to prevent damage and false alarms.

FDAS INSTALLATION GUIDELINES

3.9 System Testing

The FDAS shall be subjected to the following test conforming to applicable standards:

1. Testing the insulation resistance and continuity of wires
2. Verification of installed devices
3. Operation and response of FDAS
4. Testing the operation of initiating devices
5. Measuring sound pressure level generated by notification devices

3.10 Final Acceptance Testing

Final test shall be done on the whole system. Test parameters shall be based on applicable standards and requirements of the project.

FDAS INSTALLATION GUIDELINES

3.11 As-Built Drawings

As-built drawings of the complete installation including all floor plans and a single line diagram of the system shall be provided to the user before final inspection by the Bureau of Fire Department, and this copy shall be on hand at the Fire Command Center or near the FACP at all times.

3.12 Operation Maintenance Manual

Operation and Maintenance manuals of the equipment as well as As-built in drawings shall be provided to the user before final inspection by the Bureau of Fire Department. A copy shall always be on hand at the Fire Command Center or near the FACP.

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FDAS INSTALLATION GUIDELINES

4.1 General

The owner of a protected building shall enter into a maintenance contract with the manufacturer, or distributor, or a competent contractor to do regular maintenance of the installation. The following operating buttons should be prominently provided at the FACP: ACKNOWLEDGE, SIGNAL SILENCE, SYSTEM RESET and EVACUATE.

FDAS INSTALLATION GUIDELINES

4.2 Personnel Qualifications

A competent person shall supervise and handle all matters concerning FDAS. He/she shall be capable of reading and interpreting all signals displayed information correctly and take the appropriate actions. He/she shall be trained for FDAS maintenance and testing, as certified by the manufacturer, to do inspection, maintenance, repair, and testing of the system. The personnel who are factory trained for FDAS maintenance and testing (as certified by the manufacturer) do the inspection, maintenance, repair, and testing of the system is also qualified.

FDAS INSTALLATION GUIDELINES

4.3 Records

Every system shall keep the following documentation:

1. A complete set of operation and maintenance manuals of the manufacturer covering all equipment used in the system.
2. A complete set of as-built drawings
3. A written sequence of operation
4. Dully filled out Record of Completion
5. Log record book

FDAS INSTALLATION GUIDELINES

4.4 Testing

The owner of the protected building shall be responsible in ensuring that the installation is tested according to the requirements of this Clauses 4.3.1 to 4.3.4. The results should be recorded in the log records.
On a daily basis, the responsible person shall look at the panel to confirm that the system is in normal surveillance mode. If any troubles were observed, steps should be taken to immediately correct these by informing the organization responsible for servicing the system, the observations made shall be entered into the log record.

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On a **monthly basis:**
1) Simulate one fire and one trouble condition in every alarm zone of the system
2) Check batteries and ensure that they are in good condition
3) Check the function of all lamps on the panel
4) Check the operation of all notification appliances
5) Simulate both the failure and resumption of primary power to check if secondary power is working normally
6) Check and ensure that all panels, annunciators, and printers, if any, are clean and visible
7) Take corrective measures if abnormalities were observed in performing 1 to 6
8) All actions done and any trouble(s)/corrective works shall be entered into the log record.

On an **annual basis:**
1) The maintenance personnel should randomly check the operation of at least 25% of all detectors in the system each year. All detectors should be tested at least once every 4 years.
2) Conventional smoke detectors shall be cleaned at least once a year. Addressable smoke detector shall be cleaned upon indication in the panel for the need to clean particular detector.
3) Take corrective measures if abnormalities were observed in performing 1 and 2.
4) All actions done and any trouble(s)/corrective works shall be entered into the log record.

FDAS INSTALLATION GUIDELINES

4. 5 AHJ Annual Inspection

After the first year of the initial acceptance, the installation shall be inspected by the AHJ. Prior to this inspection, the system shall be tested and certified by personnel with the following qualification:

- Registered Professional Electronics Engineer or Electronics Engineer
- Experienced in the proper installation and testing of FDAS and is certified by IECEP

FDAS INSTALLATION GUIDELINES

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After the first year of the initial acceptance, the installation shall be inspected by the AHJ. Prior to this inspection, the system shall be tested and certified by personnel with the following qualification:

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FDAS SAMPLE PLANS

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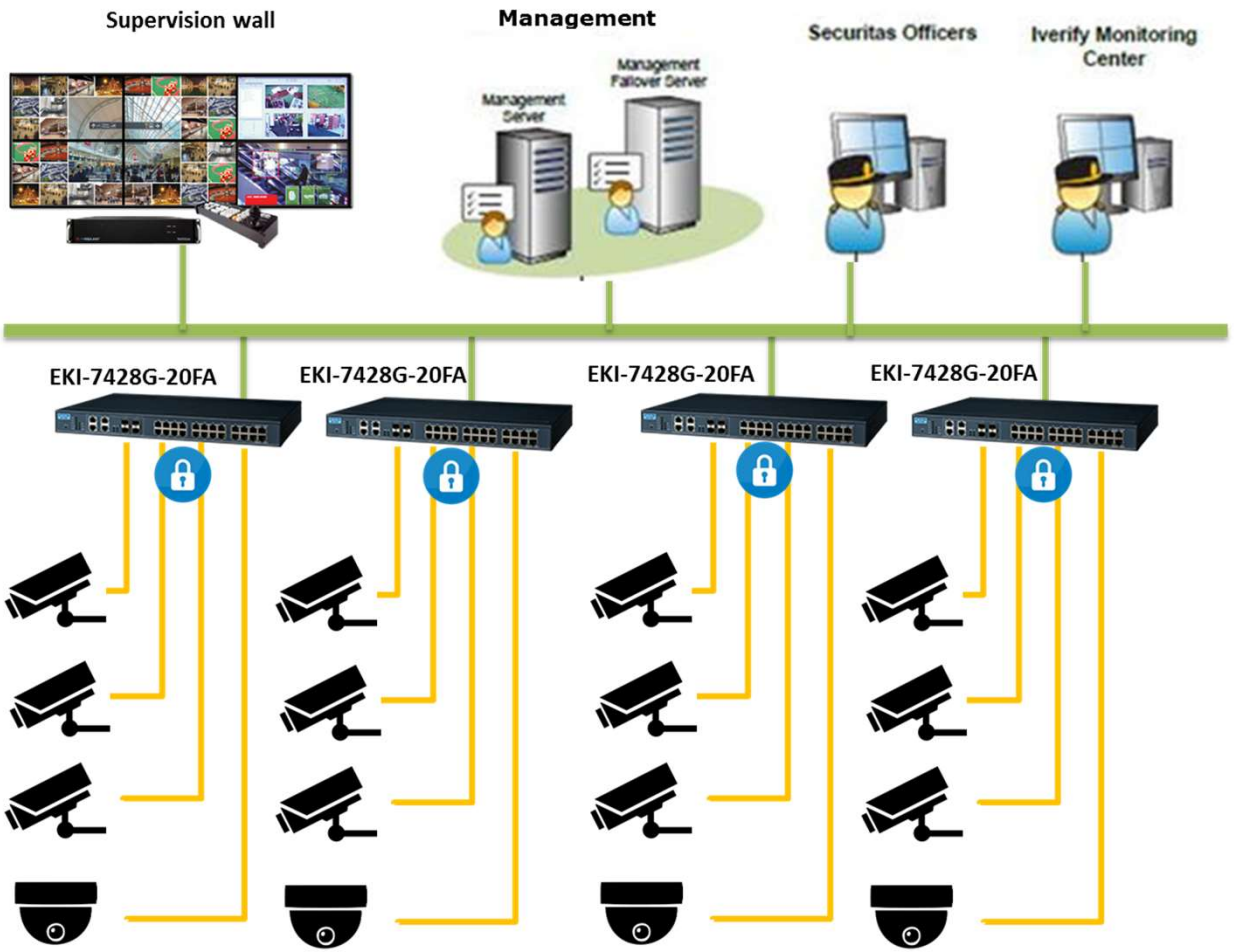
VIDEO SURVEILLANCE SYSTEMS

VIDEO SURVEILLANCE SYSTEM

- A video surveillance system is a network of cameras, monitors/display units, and recorders. Cameras can be either analog or digital with various features to explore, such as resolution, frame rate, color type, and more. Whether applied inside or outside the building, it operates 24/7, designed only for recording movement when necessary.
- Surveillance cameras may be in plain sight or hidden from view. The camera's purpose is to deter improper behavior, and the video footage can also serve as evidence for later review by security staff or law enforcement. Depending on your needs, there are many different video surveillance systems available, such as live monitoring, remote access via an IP system, and Digital Video Recorders (DVR) for recording footage.
- Most video surveillance systems are closed off so that signals will not be broadcast and accessible to other parties. Only authorized users can monitor the content of what has been recorded on it. However, others may have access if they are granted permission by an administrator with proper credentials who manages the live feed.

VIDEO SURVEILLANCE SYSTEM



VSS COMPONENTS

Camera

- If you're building a CCTV Camera System, you have two camera options: Internet Protocol (IP) or analog. IP is usually the preferred choice due to its compatibility with most devices. Many different types of cameras can be installed, for example - dome cameras, bullet cameras, covert cameras.

- Depending on how many angles you want to cover, how many cameras you will need in that specific area, how much resolution or detailing you require when you choose your preferred cameras.

TYPES OF CCTV CAMERAS

Dome CCTV Cameras

- A dome CCTV camera gets its name from the dome-shaped casing that the camera sits in. Whilst these are relatively discreet CCTV cameras in appearance, this doesn't stop them from deterring criminals. This is because the dome casing makes it difficult for people to see which direction the camera is pointing. This creates an air of uncertainty for potential thieves or vandals approaching from all directions.

TYPES OF CCTV CAMERAS

Main benefits

- Unobtrusive design means it's easy to fit
- Suitable for indoor and outdoor use
- Vandal resistant dome means it is harder to interfere with the camera
- 360-degree rotation of the camera so you can cover all angles

Ideal uses

- This is the best type of CCTV camera for shops, restaurants, casinos, hotels and other hospitality businesses because the design allows you to monitor a wider angle at your premises. Many also consider this option to be the best indoor CCTV camera as it can be placed on a strategic point of the ceiling to cover all angles of the room without being intrusive in design.

TYPES OF CCTV CAMERAS

Bullet CCTV Cameras

Overview

Bullet CCTV cameras have an iconic design that is highly visible. They are cylindrical in shape and can observe long distances. Bullet cameras are most placed outdoors, so their casings are made resistant to water, dust and dirt.

Main benefits

- Highly visible so acts as a deterrent to criminals
- Resistant to dirt in challenging environments
- Provides surveillance over long distances
- Casing also protects against glare and rain

TYPES OF CCTV CAMERAS

Bullet CCTV Cameras

Ideal uses

Bullet cameras can be used to good effect in a range of industries such as manufacturing, property management and farming. They not only record good quality pictures but also send out a message to passers-by that your premises is under surveillance. That's why they have traditionally offered the best CCTV for outside operation.

TYPES OF CCTV CAMERAS

C-Mount CCTV Cameras

Overview

C-Mount CCTV cameras are the ideal option for those who may wish to adapt the field of vision. They are equipped with detachable lenses that can be switched around to monitor varying distances. C-Mount cameras are typically bulky so, like bullet cameras, act as a visible deterrent to criminal activity.

TYPES OF CCTV CAMERAS

Main benefits

- Special lenses can be fitted to the camera to extend its range beyond 40 feet
- Highly visible appearance that deters criminals
- Rugged camera casing can be added to protect the camera in cold environments
- Weatherproof housing makes it ideal for outdoor use

Ideal uses

This is the ideal camera for observing a stretch of road on the approach to your premises. It is therefore popular in the utilities and logistics industries. Those operating in the food and manufacturing industries may also elect for this option, due to the camera's reliability in extreme temperatures.

TYPES OF CCTV CAMERAS

PTZ Pan Tilt & Zoom Cameras

With a PTZ (Pan Tilt & Zoom) camera, your security team can have complete control over what is recorded. At the touch of a button, the camera lens can pan left and right, tilt up and down or zoom in and out. It's the ideal choice if you have a security guard who is monitoring a live video feed on site.

Main benefits

- Optical zoom on these cameras means you can focus closely in on subjects
- Pan and tilt feature provides 360 degree field of vision
- Image resolution is usually impeccable so facial features can be distinguished

TYPES OF CCTV CAMERAS

Ideal uses

This is the best CCTV camera for remote viewing. It is really popular in large retail environments and is regarded as the best CCTV for business premises that have a specific valuable object to protect. For example, a museum could program the camera to pan to a particular entry or exit point when it detects movement. So even when it is not being controlled remotely, the camera can cover a much larger area and do the same job of several static cameras.

TYPES OF CCTV CAMERAS

Day and night CCTV camera

These cameras have been built specifically to operate effectively, regardless of how well lit their environment is. During both daytime and night-time, they will record clear video images that will not be obscured by differing light conditions. This is achieved through their extra sensitive imaging chips.

Main benefits

- Clear recording in low light
- They usually record in both colour and black and white
- Can function despite glare, direct sunlight, reflections and poor lighting
- Casing protects the camera against the elements for outside surveillance

TYPES OF CCTV CAMERAS

Ideal uses

There are various CCTV camera types suited to outside use, but the extra sensitive imaging of both day and night imaging modes makes this one camera type unique. It is therefore the ideal CCTV system for business premises that require around the clock CCTV monitoring in an outdoor environment with varying light conditions.

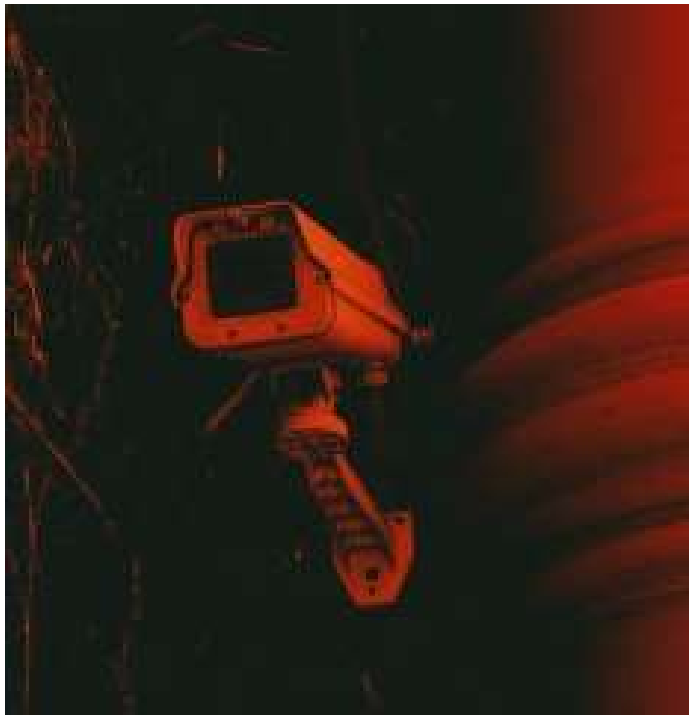
TYPES OF CCTV CAMERAS

Infrared CCTV camera

As the name suggests, these cameras are designed to operate optimally in pitch black conditions. They achieve this by using infrared technology. Infrared models are more expensive than day/night cameras and those opting for this option usually do so because night recording is vital to the security of their business.

Main benefits

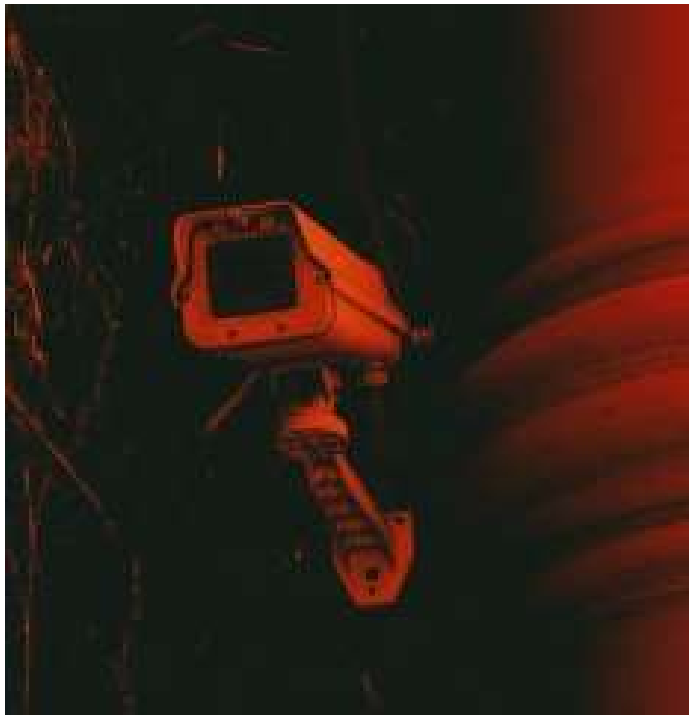
- Infrared LEDs allow clear recording even in pitch black environments
- An infrared cut filter activates in the daytime for clear images in lighter conditions
- Can capture images even in the presence of fog, dust or smoke
- Records colour imagery in the daytime and black and white at night



TYPES OF CCTV CAMERAS

Ideal uses

This is the best CCTV camera for night vision functionality. It’s therefore the ideal choice for those who need ultra-reliable recording in complete darkness. For example, banks, farms and manufacturing plants.



TYPES OF CCTV CAMERAS

Network/IP CCTV Cameras

These cameras share live footage across the internet so images can be easily accessed from anywhere on the globe. The bandwidth of the video is compressed, in order to make the online feed reliable. Archive footage is stored on network video recorders (NVRs) or on secure software for later access.

Main benefits

- Footage can be viewed online from anywhere in the world
- Easily accessible archive footage
- Easy setup as co axial cables and a computer station are not required
- Low maintenance

TYPES OF CCTV CAMERAS

Ideal uses

A network or IP CCTV camera is the ideal choice for business owners who are often away from site and on the move. Footage can be viewed from anywhere in the world, via a smart device such as a PC, laptop or mobile phone

TYPES OF CCTV CAMERAS

Wireless CCTV Cameras

Wireless CCTV cameras were created to minimise installation time. They also make the appearance of the camera much tidier, which may be an important factor for locations such as churches, museums or stately homes.

Main benefits

- Easier to install than your average CCTV system
- Discreet and tidy appearance and a less obtrusive fitting
- Images transmitted over the internet so can be viewed anywhere
- Secure storage and easy access of archive footage

TYPES OF CCTV CAMERAS

Ideal uses

If a spotless presentation is important in your industry, wireless CCTV cameras are a great security option. Their discreet appearance helps them to blend into the interior. What's more, there is less set up and camera maintenance required, and footage is transferred via the internet for convenient access.

TYPES OF CCTV CAMERAS

High Definition (HD) CCTV Cameras

. HD CCTV cameras offer an unrivalled picture quality that delivers high clarity images. Depending on your budget, they can deliver resolutions of 720p, all the way up to 4K. Therefore, there's no danger that the subject of recordings will ever appear grainy or distorted

Main benefits

- High definition pictures capture subjects in perfect clarity
- Extra clarity can also be achieved with zoom function
- Available on most CCTV models such as domes and bullets
- Crystal clear imagery provides undeniable criminal identification

TYPES OF CCTV CAMERAS

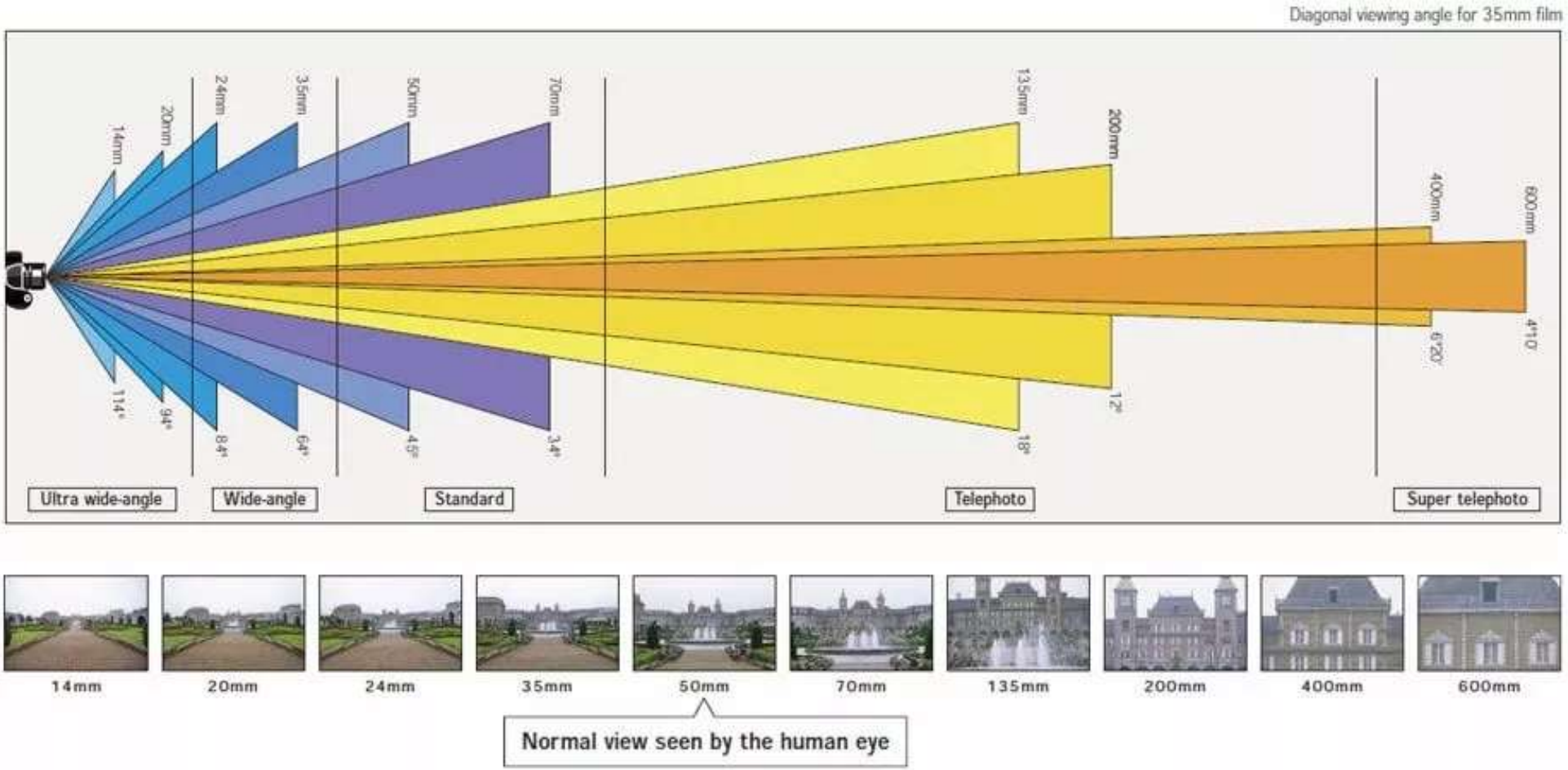
Ideal uses

High-definition cameras are particularly useful for use in environments where there is a high risk of theft. Businesses such as banks and casinos should opt for HD cameras, in order to ensure that visitors to their premises are captured in perfect clarity. The footage recorded will be able to provide undeniable identification in the event of a crime being committed.

CAMERA VIEWING ANGLE

A security camera viewing angle is how much a camera can “see” of the 180 degrees in front of it. It’s closely connected to the size of the lens. The bigger the lens, the smaller the field of view, but the more detail you’ll be able to capture.

CAMERA VIEWING ANGLE

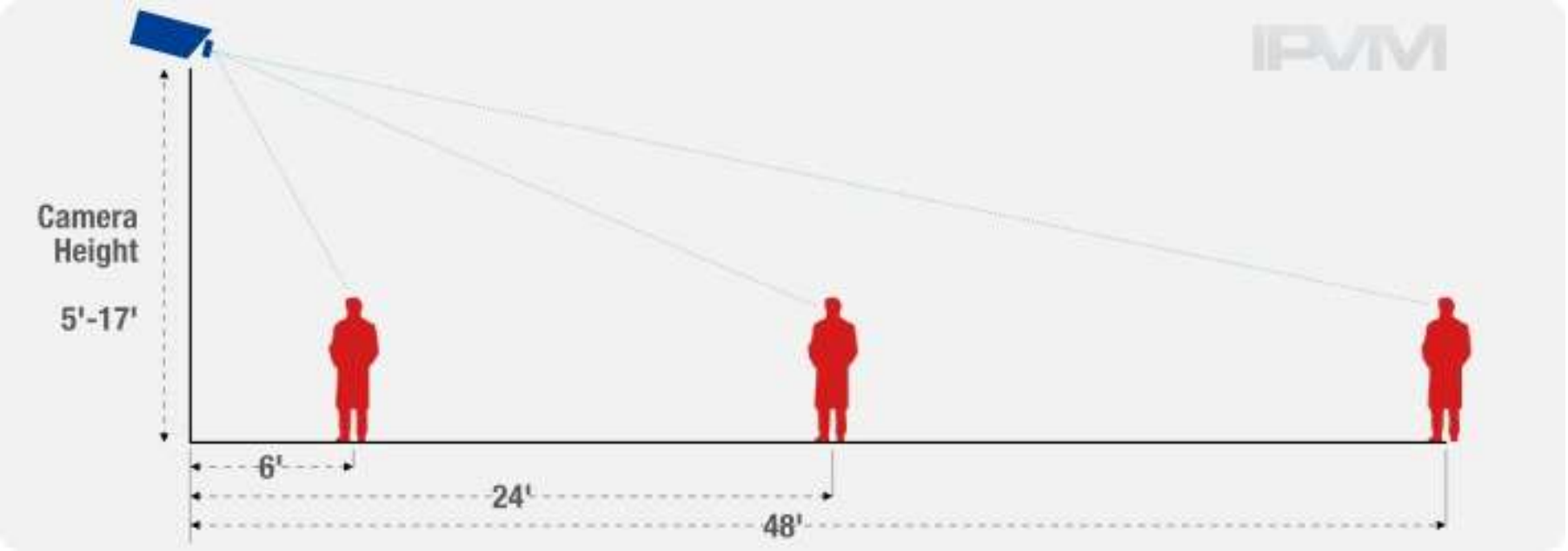


CAMERA VIEWING ANGLE

An approximate guide to the optical range of different lens cameras is the distance at which a number plate or a person can be identified using standard definition CCTV. For HD1080P systems you can double these figures.

2.8mm lens	1.5 metres
3.6mm lens	3 metres
6mm lens	5 metres
9mm lens	6 metres
12mm lens	7 metres
22mm lens	12 metres
60mm lens	35 metres

CAMERA VIEWING ANGLE (HEIGHT)

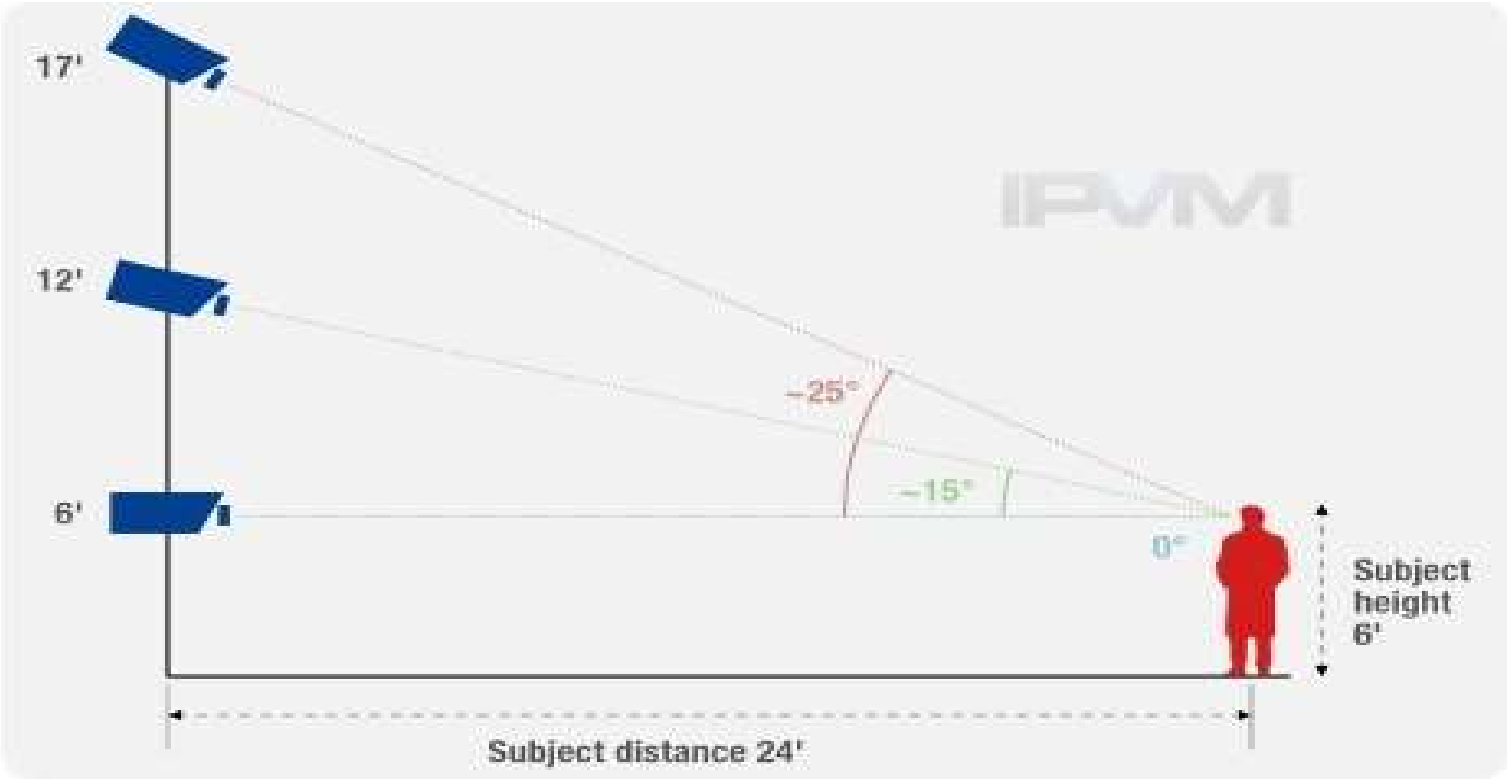


CAMERA VIEWING ANGLE (HEIGHT)

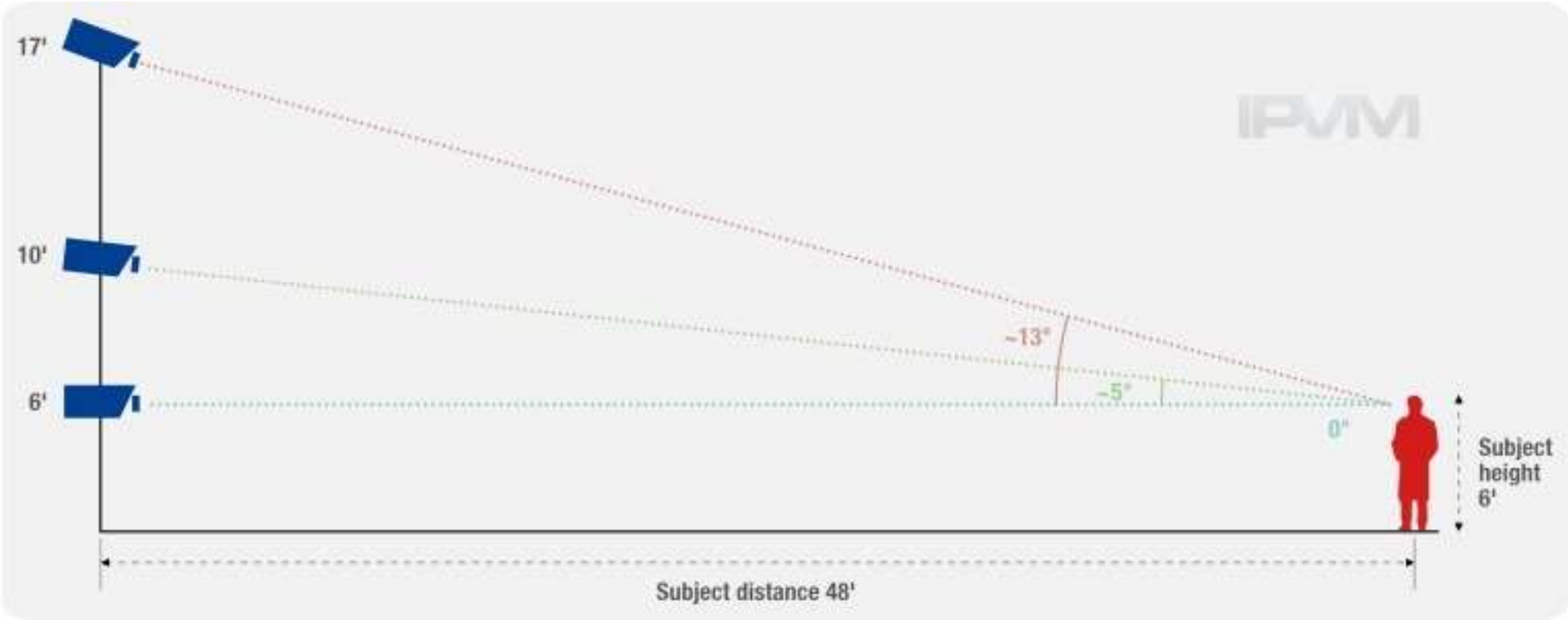
CAMERA VIEWING ANGLE (HEIGHT)

SUBJECT DISTANCE (FOOT)	MAX. CAMERA HEIGHT (FOOT) SUBJECT FACING STRAIGHT
1	6
3	7
6	7.5
10	8.5
15	10
20	11
30	13.5
50	18.5

CAMERA VIEWING ANGLE (HEIGHT)



CAMERA VIEWING ANGLE (HEIGHT)



VSS COMPONENTS

2. Monitoring Station

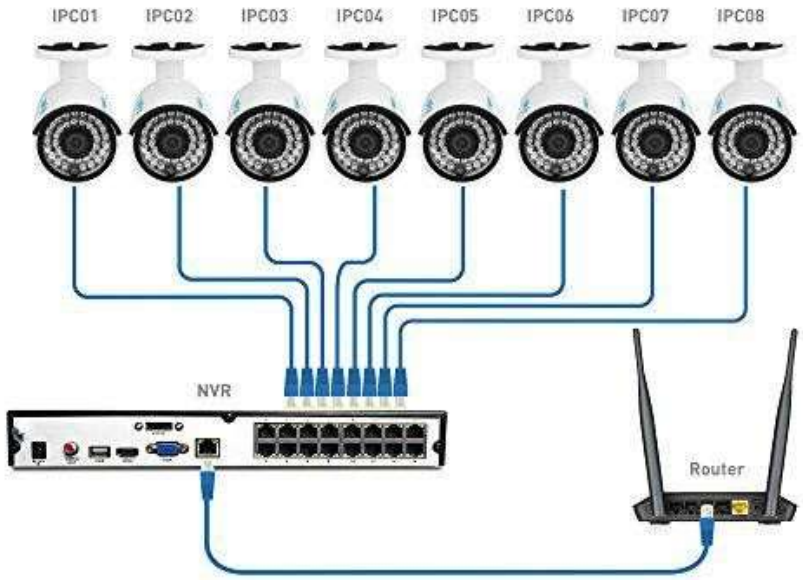
- A monitor arguably facilitates the most important function of a security camera: viewing recorded images and footage. Deciding how many monitors you'll need is dependent upon what, and which area you are monitoring. You wouldn't need more than three to five screens if you aren't operating in a large-scale facility. Although if your requirements change, you can easily add or remove monitors anytime to match the compatibility of your camera..

VSS COMPONENTS

3. Cables & Routers

- Depending on the type of surveillance system, and cameras you choose, you will need supporting technologies like cables, and routers to be integrated into your system for a seamless connection. For example, wireless systems require a router, while wired versions do not.

- Therefore, choose the cables, and wires after selecting your cameras, and monitors according to your unique needs.



VSS COMPONENTS

4. Video Recorders

The video recorder is the device where video recorded on the camera gets processed for storage & viewing. There are two types of video recorders: DVR (Digital Video Recorders) and NVR (Network Video Recorders).

VSS COMPONENTS

5. Data Storage

Your CCTV security system is only as good as the hard disk backing it. The storage device for a security camera system should be able to record, store and re-play videos non-stop from multiple feeds. Regular hard drives that are used in PCs and Laptops are ill equipped to handle CCTV storage needs. Hence, it is critical to choose a robust storage system for safe data storage.

VSS COMPONENTS

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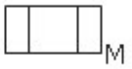
VSS SYMBOL

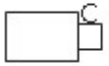
Motion detector
Mount type and technology type can be specified.

Glass break sensor
Mount type and technology type can be specified.

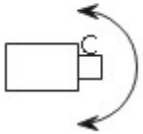


Screening device
Technology type can be specified.

Monitor
Mount type and technology type can be specified.



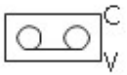
Camera
Mount type can be specified.



Camera P/T/Z
Camera with pan/tilt/zoom. Mount type can be specified.

Video multiplexer

Push button
Type of push button and mount type can be specified.



Recorder
Mount type and technology type can be specified.

Switch - manual
Manually operated switch. Mount type and technology type can be specified.

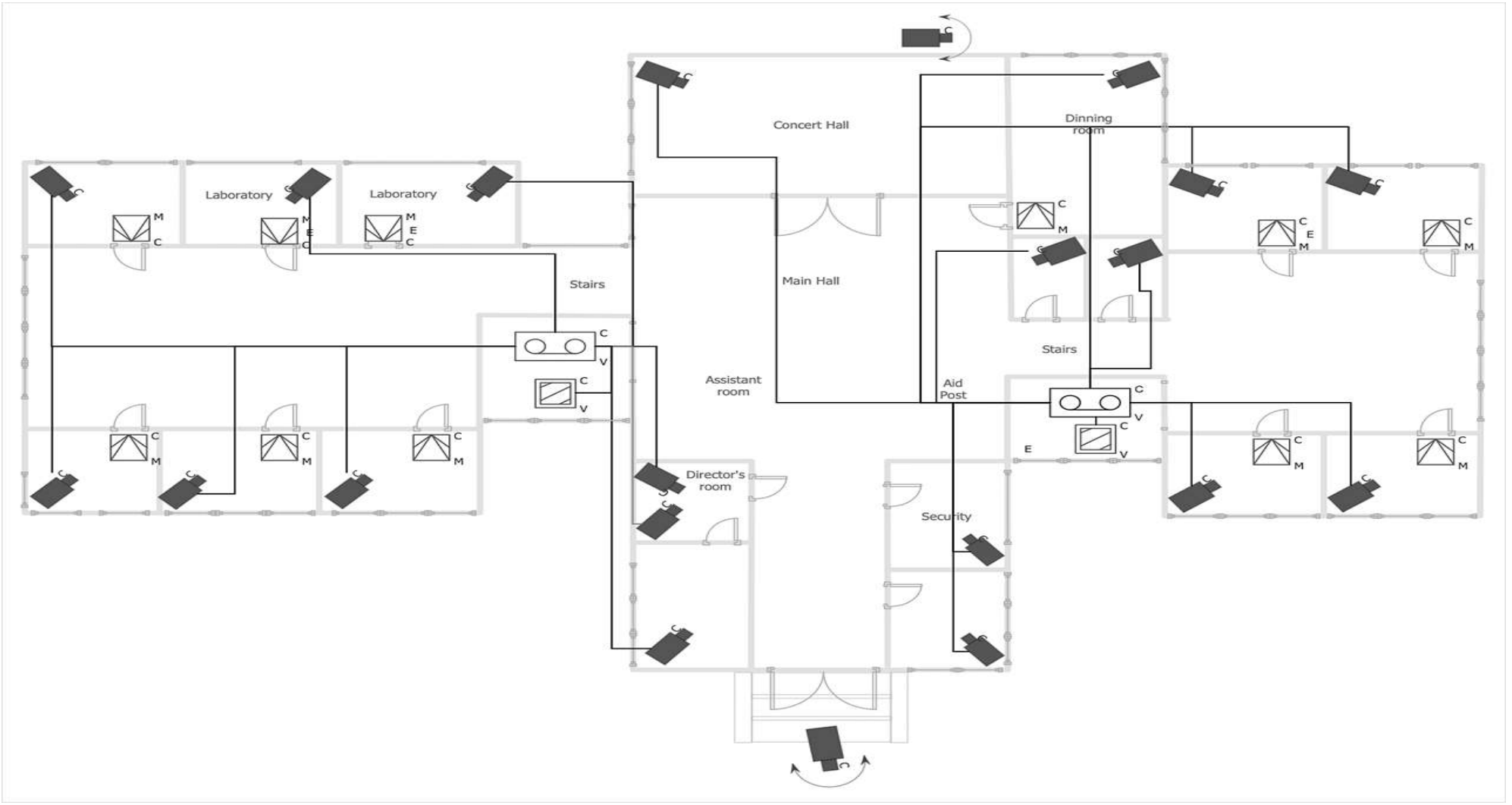
Switch - automatic
Automatic monitoring switch. Mount type and technology type can be specified.

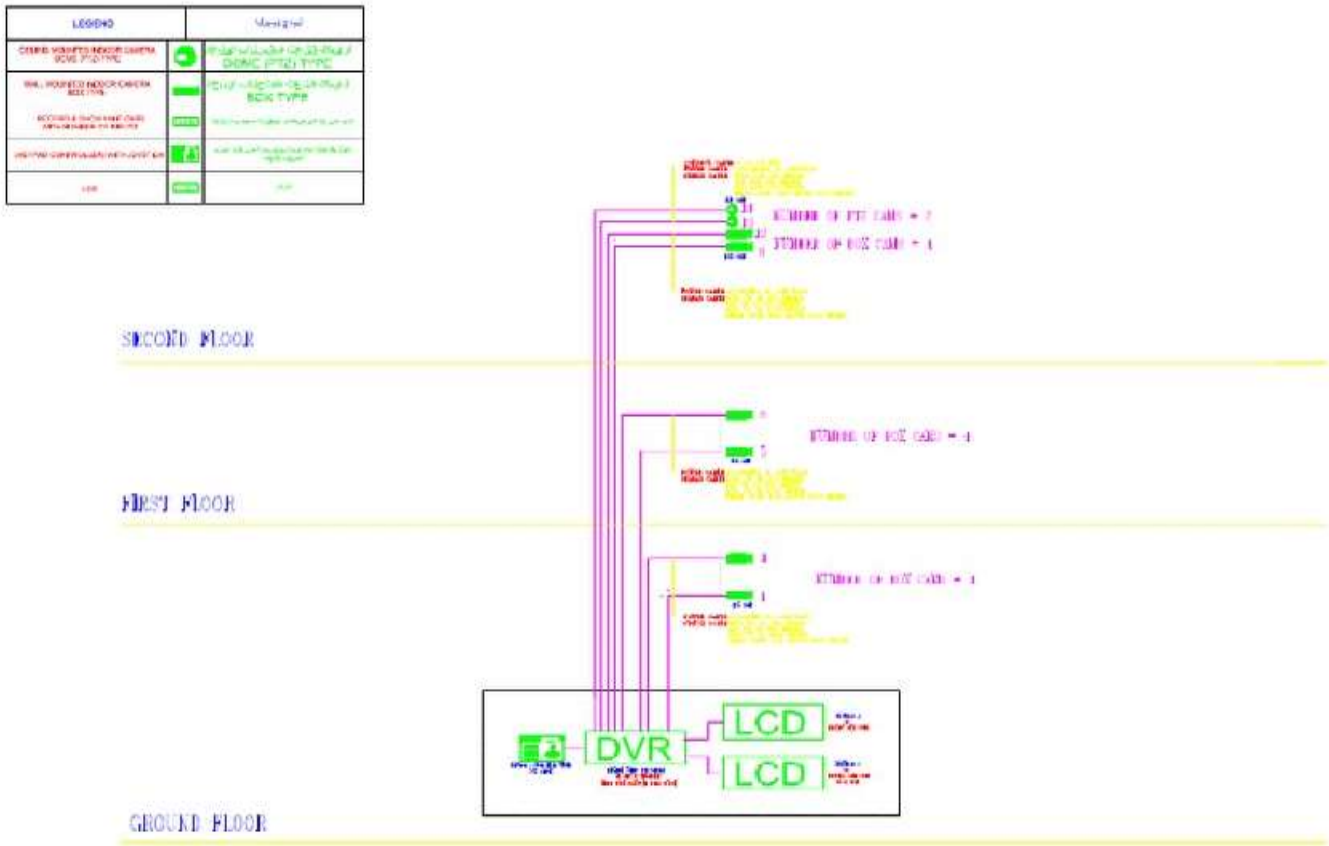
Video keyboard
Video control keyboard

Bi-static beam sensor
Mount type, technology type, and function of sensor can be specified.

Security window screen with alarm
Type of window screen can be specified.

Video motion detector


Laboratory
Laboratory
Concert Hall
Dinning room
Main Hall
Stairs
Assistant room
Director's room
Aid Post
Stairs
Security



CCTV SYSTEM RISER DIAGRAM
HOTEL, HOSPITAL, RESIDENTIAL BUILDINGS etc..