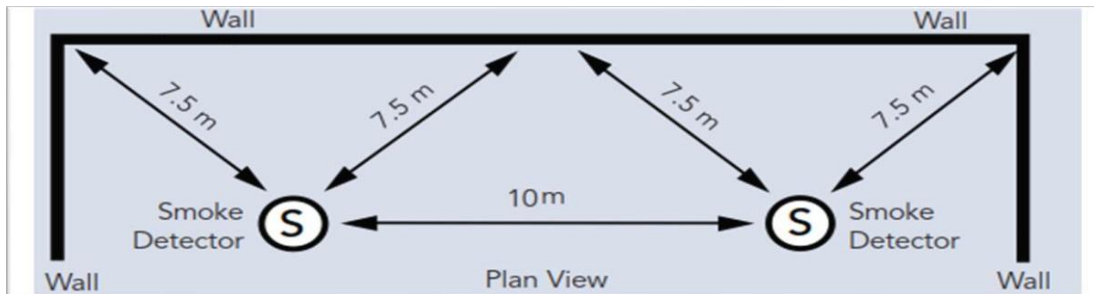
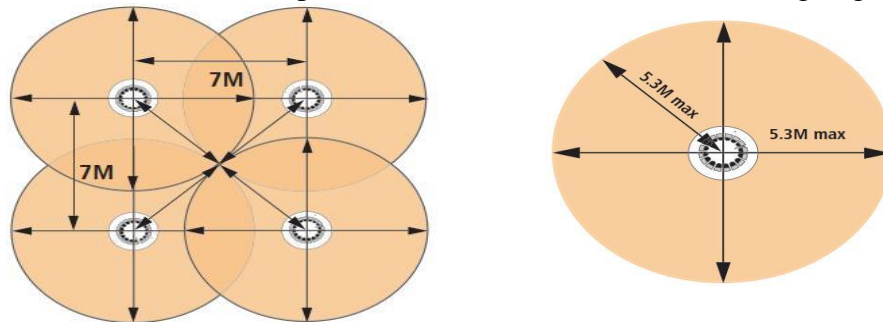


Fire Alarm Design Steps

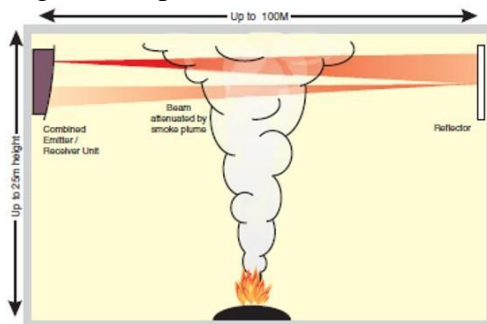
- 1- Fire Alarm System Components Divided into two types
 - Input devices (detectors – manual call point-monitor module)
 - Output devices (Bell-flasher -control module)
- 2- Detectors is the main component in the system because it sense the beginning of fire and send signal to the panel to start action like ringing bell and turn on flasher , open the exit doors, turn on ex-fans with control module connected to the control panel of the fans ... etc
- 3- Detectors types
 - **Smoke detector** used in most spaces that not had heat activities
When distributing smoke detectors the main way is the coverage area and the smoke detectors had the following coverage area



- **Heat detector** used in spaces had heat activities like kitchens- garages



- **Multi detector** used in electrical /tele rooms, switch gear rooms,,etc distribution like as per heat coverages
- **Beam detector** used in spaces with double high >6m up to 25m



Detectors spacing reduction based on ceiling height

From (m)	Up to (m)	% of listed spacing
0	3	100
3	3.66	91
3.66	4.27	84
4.27	4.88	77
4.88	5.49	71
5.49	6.1	64
6.1	6.7	58
6.7	7.3	52
7.3	7.9	46
7.9	8.5	40
8.5	9.14	34



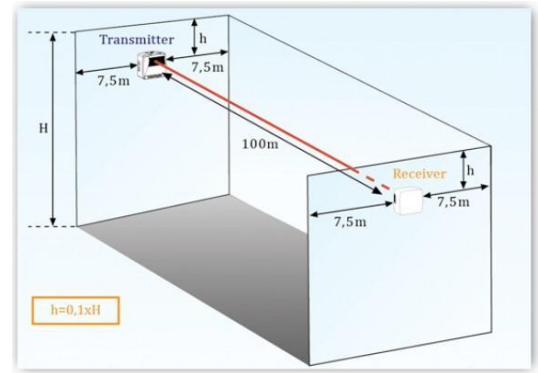
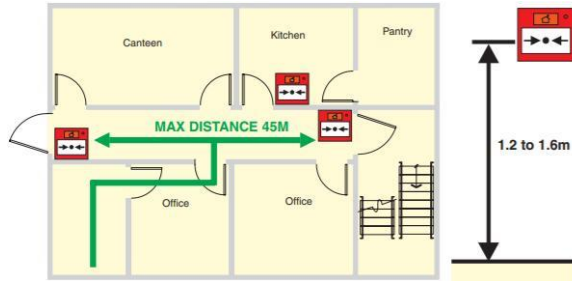
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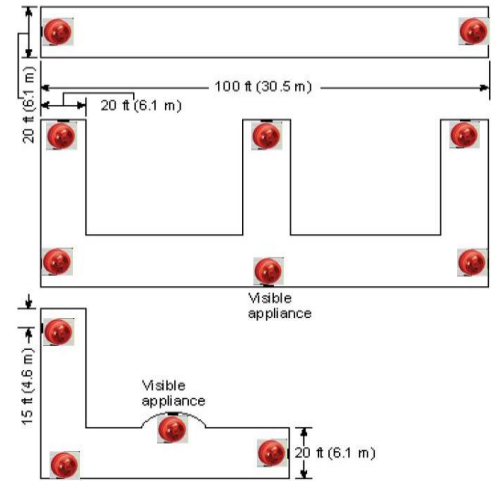
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Beam detector distribution as per the following graph

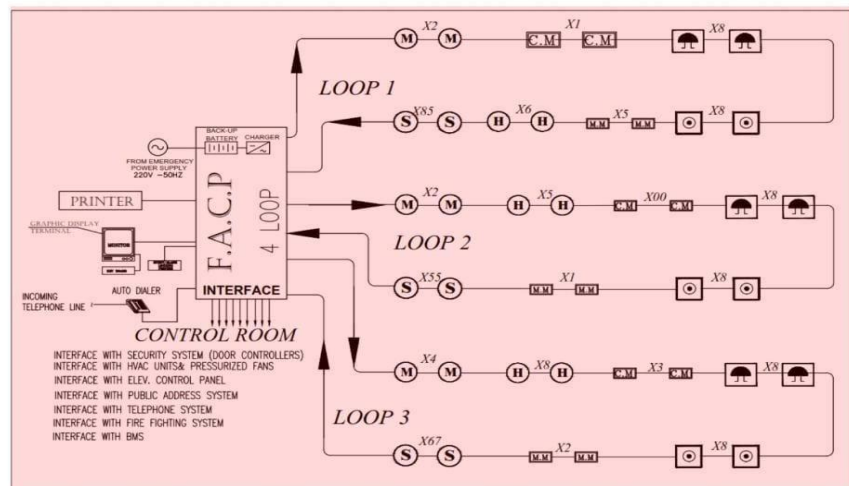
- Manual Call Point it's a device which can anybody use it to trigger alarm in case of existing fire and detectors didn't sense it manual call point distributing in the corridors at the entrance and exit doors at 1200:1600mm from the finished floor level



- Alarm Devices distributing at corridors and evacuation spaces at high >2.1 m from finished floor level
- The sensors are connected with fire alarm cables as a loop with cable $2 \times 1.5\text{mm}^2$ or $2 \times 2\text{mm}^2$ cu/pvc/pvc depend on the loop length to avoid 5% voltage drop and the alarm devices connected with dc cable as a separated loop
- There are two types of systems (conventional – addressable)
 - Conventional used in small building alarm will be in the all-loop cant identify which detectors sense fire
 - Addressable used in large building each detector had IP and can identify which detector sense alarm
 - It is preferable to connect each floor in single loop in the large building to avoid the long distance of cables



- Monitor module to monitoring status of firefighting devices (zone control valve) we connect the monitor module at the flow switch and tamper switch to know its status
- Control module connected for controlling on devices like ex-fan in case of fire ...etc
- All these components are connected at fire alarm control panel which reasonable for managing and control all devices



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