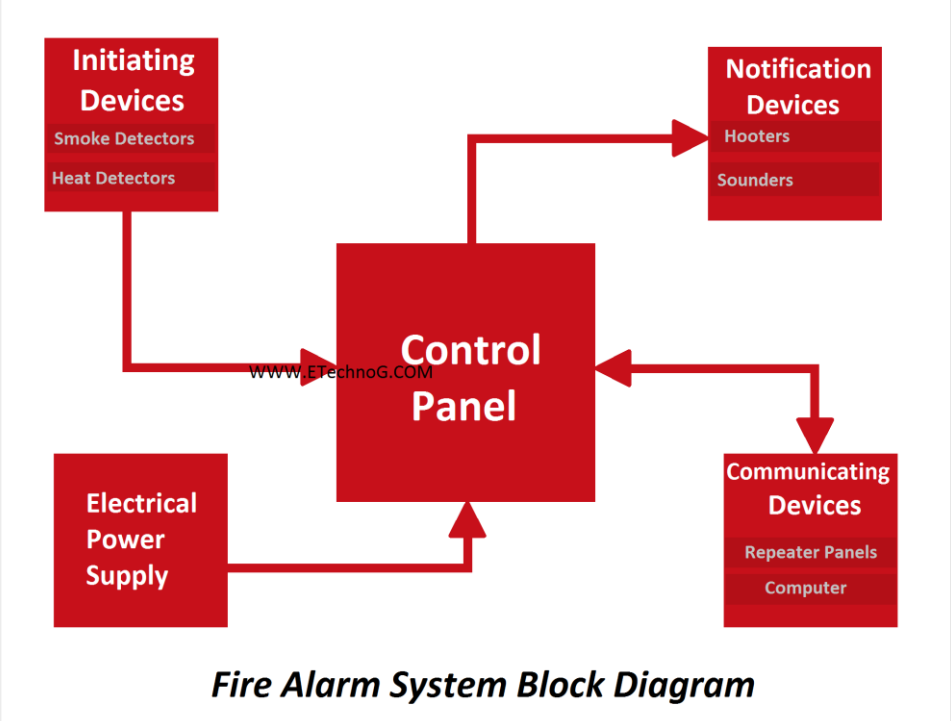
FIRE ALARM SYSTEM

INTRODUCTION :

The **fire alarm system** is an electrical or electronic system that alert or notifies peoples when an emergency accident such as a fire happens. Generally, the fire alarm system is installed in a building to detect the fire anywhere in that building. The fire alarm system has two main parts - a detection system and a notification or alarm system. Using the detection system, it senses the fire or fire-related incidents, and using the alarm system it notifies the people. The fire alarm can be enabled automatically or manually. The heat detectors, smoke detectors, or other detection sensors (generally called initiating devices) enable the fire alarm system automatically. On the other hand, Manual Call Point (MCP), pulling systems are used to enable the fire alarm system manually. The alarm system uses different types of speakers, hooters, sounders to alert people using voice. The modern fire alarm system also uses lighting, displays to alert people through visuals.

BLOCK DAIGRAM :



Fire Alarm System Block Diagram

CONTROL PANEL

The Control panel in the fire alarm system (known as FACP or FACU) is the main hub or brain of the whole system. All the initiating devices, notification devices, and other components are connected to this control panel. It receives signals from the initiating devices and sends signals to the notification devices. In this control panel, we can see all the information and also can control all the devices connected to it. The control panel takes the main electrical power supply (120V for some countries, 240V for other countries) and provides it to other devices. The control panel of the fire alarm system is also connected to a secondary backup power supply to utilize it when the main power supply is not available. Generally, a battery, inverter, and rectifier circuits are used for the backup power source.

COMMUNICATING DEVICES

Communicating devices are those through which we can communicate with the control panel of the fire alarm system or take information or data from it. Repeater panel is an example of a communicating device through which we can observe or control the fire alarm system. A modern fire alarm system allows connecting with computers and networks also.

INITIATING DEVICES

Initiating devices are those that detect the fire or any environmental changes during fire-related accidents and sends signals to the main control panel. The common examples of initiating devices are Heat Detectors, Smoke Detectors, Dust detectors, carbon monoxide detectors, etc.

NOTIFICATION DEVICES

Notification devices are those through which the fire alarm system alert peoples. Generally, the notification devices required an additional power supply from the control panel. During any accident or emergency cases, when the control panel receives signals from the initiating devices, it starts to send signals to the notification devices.

WORKING PRINCIPLE :

The basic working principle of a fire alarm system is that when any fire-related accident happens the initiating devices sense the environmental changes and send signals to the control panel with the location of the accidental place. After receiving the signal, the control panel activates the notification devices to alert people to go far away from that place. Safety officers, supervisors can see the location in the control panel and go to the accidental place and take further actions.

PURPOSES :

A fire alarm system warns people when smoke, fire, carbon monoxide or other fire-related emergencies are detected. 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.

ADVANTAGES :

As far as fire alarm installers go, a wireless system is ideal because they are much easier to install. A wireless system essentially involves mounting the devices to the appropriate locations around a building or room, setting up the actual system and syncing it to Wi Fi. Compare this to a wired system, which requires fire alarm installers to connect the system to power supplies and ensure cables are connected properly. Another great advantage of a wireless fire alarm system is it operates off of a battery. This frees up a wall outlet and you can feel safe knowing the system will still work in the event of a power outage. And adding a second or subsequent wireless device is easy if you add on to your home or office.

DISADVANTAGES:

The one thing most fire alarm system inspectors caution against with wireless systems is having to replace the battery. The system is essentially useless if the batteries aren't charged, since it won't work properly. There is a bit of a burden to homeowners or business owners to always remember to keep the batteries fresh so the system operates properly when you need it most. A couple other disadvantages fire alarm system inspectors point out is wireless systems have limited range and don't have centralized monitoring.

Range can be a problem for large offices or homes, since a weak wireless connection may cause the system to not operate reliably. Wireless fire alarm systems also don't connect directly to the telephone lines, which are linked to the fire departments, so the response to an emergency could be slower as a result.