



Course FP101 – Fire Alarm Basics – Part 1

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Course Description & Outline

The purpose of this course is to provide a general overview of fire alarm components/devices with focus on initiating and notification devices along with emergency elevator recall and shunt functions. A holistic view of these devices will be provided beginning with defining the basics terms, purpose of the devices, code regulations and the applicable standards and spacing requirements. Emergency operation of elevators will also be covered during fire emergency situation including the difference between designated and alternative level, shunt trip, type of detectors used for elevators and testing requirements. It is important to have a good understanding of these devices so that good design practices, plan review and testing methods can be implemented.

This course will focus on ICC codes and NFPA standards.

A multiple-choice quiz must be completed at the end of this course to achieve a certificate. The quiz is provided to make sure the attendee understands the materials and to enhance the understanding of the course materials.

Learning Objective

At the conclusion of this course, the attendee will understand:

- Codes and Standards pertaining to initiating devices
- Purpose of fire alarm initiating devices and notification appliances
- Different types of devices
- Circuits for initiating devices
- Spacing requirements
- Fire safety functions
- Understand sound level for fire alarm
- Speaker and emergency voice requirements
- What is elevator recall
- What is elevator shunt
- When is elevator recall required and shunt trip necessary and when is it not
- Associated codes and reference standards
- Components of each system
- How does the system function
- Elevator testing requirements

Fire alarm wiring and circuitry will be covered in a different Module Part 2.

Intended Audience

This course will provide a basic overview in fire alarm system for Authority Having Jurisdictions (AHJ), architects, engineers and contractors.

Course Length

2 hours

Benefit for Attendee

Attendee of this course will be able to become familiar with the function of fire alarm, types of devices, systems utilizing fire alarm devices, code regulations, spacing requirements,

Course Introduction

Fire alarm systems are critical for fire and life safety emergency situations. They are our first defense against preventing loss of life and property. They allow for early detection of fire, notification for occupant to evacuate the building and also alert the first responders of a fire situation. The fire alarm system is made up of several components which can be broken down to initiating devices, notification appliances, panels and wiring. When either designing, reviewing or testing a fire alarm system, it is important to know the functionality of the devices, proper placements, what codes and standards govern them and their interconnection. This course is a general overview to get the attendee familiar with the most basic requirements.

Course Content

Link to content [file](#)

Course Summary

Fire alarm is an active system that alerts occupants and first responders against fires. Hundreds and thousands of lives have been saved and property damage averted due to the properly designed, inspected and tested fire alarm systems.

Devices such as smoke and heat detectors, pull stations, flow and pressure switch; these are used to detect fire, smoke, heat, water flow, changes in water pressure are known as initiating devices. Via the Fire Alarm Panel (FACP), the brain of the system, signals are received from these devices (alarm, supervisory, or trouble) to

trigger actions such as energize the building wide notification appliances. Notification appliances are those that provide alert, awareness, whether it is through flashes of light (strobes), bells and horns, or messages communicated through voice using the voice evacuation system to provide detail information to the occupants about safe existing.

Lastly, elevator recall and shunt trip function follow a series of steps:

With Recall: Smoke detectors sense smoke from a fire and send signal to elevator control panel. The elevator control panel send the elevator to designated (or alternative) floor, nonstop. Upon arriving at the level the doors open and remain open unless overridden by fireman key. Alarm signal is sent to panel and entire building goes to alarm if there is a full fire alarm system (otherwise a local alarm operates).

With Shunt: Heat buildup causes heat detector to de-energize power to elevator controls. Power can only be resorted manually. Further heat buildup opens sprinkler head located either at the top of shaft (including machine room less elevators) or in elevator machine room. Shunt trip only occurs when the elevator or elevator control panel is protected by a fire suppression sprinkler system.

Related Links/References

Society of Fire Protection Engineering Handbook (SFPE) Handbook

NFPA Handbook

NFPA 70: National Electric Code

NFPA 72: National Fire Alarm and Signaling Code

NFPA 72 Handbook (excellent commentary and explanation)

ICC - IBC and IFC commentary