

Answer on Question #43317 – Engineering - Other | for completion

Explain the following terms with the reference to definitions in BS 5839-1

1. addressable fire alarm system
2. conventional fire alarm system
3. two state detector
4. analogue detector
5. pre-alarm warning
6. staff alarm

Solution:

1. addressable fire alarm system

An **addressable system** is one using addressable detectors and/or call points, signals from which are individually identified at the control panel.

In an addressable system, the fire controller can provide a number of two wire circuits onto which addressable detectors and call points may be connected. The two-wire circuit should be connected to form a loop in order to provide circuit integrity. In addition to this, zone/line isolators should be used at zonal boundaries to ensure compliance with the code.

Essentially addressable detectors operate as conventional detectors as they only have two active states (normal and fire alarm) and the zoning requirements of the addressable system are the same as for a conventional system. The main departure from the conventional system is that the detector base is now addressable. As such, each base has several DIL switches or rotary switches or pre-programmed chips that allow the unique address of the base to be set. It is quite common for addressable fire controllers to accommodate up to 1,000 detectors and call points on a number of detection loops.

2. conventional fire alarm system

Conventional fire alarm system provide a number of two wire circuits onto which conventional detectors and call points are connected. Similarly, separate two wire circuits are also provided for the purpose of connecting sounders (or alarm bells) to the system.

The primary function of the fire controller unit is to indicate the location of a fire as precisely as possible. To achieve this objective, detectors are grouped into zones with each zone being connected to the fire controller by a separate circuit that also has a separate indicator on the control panel.

Each detector includes an integral LED (light emitting diode) indicator that illuminates when the device is in the fire alarm condition. If an indicator on the control panel indicates a fire in a zone, the zone must be physically searched until the detector with the illuminated LED is found.

3. two state detector

A conventional or **two-state detector** is a detector that gives one of two states relating to either normal or fire alarm conditions.

4. analogue detector

Analogue detectors are individually identified with an address (number) on a loop of wiring. The control panel communicates with each device in turn and each device reports back an analogue value based upon how much smoke or heat is present. The control panel, not the detectors, then makes all the decisions with regard to sounding the alarms.

With an intelligent system, if a fire is detected, its position can be pin-pointed because each device has its own unique address which means its location can be found precisely.

5. pre-alarm warning

Such systems are often used to provide signals intended to be managed as a “pre-alarm warning” (to indicate that an alarm condition is approaching) or as a very early warning (to alert staff of abnormal conditions that are worthy of investigation). Such signals might not be suitable (or intended) to be managed as an alarm signal that triggers alarm devices and evacuation of the building.

In fact, such pre-alarm warnings or very early warning signals can be used to avoid false alarms and unnecessary evacuations. In some applications in which Class A and/or Class B aspirating smoke detection systems are used, a Class C (normal sensitivity) signal is provided which is managed as an alarm condition.

6. staff alarm

Staff alarm - restricted alarm, following the operation of a manual call point or automatic fire detector, given to certain staff in the premises to permit investigation prior to evacuation and/or summoning of the fire and rescue service