



INSTALLATION and MAINTENANCE of FIRE ALARM SYSTEMS

COURSE 470: 2 DAYS: Max 8 Candidates

Modern fire alarm systems require careful, validated installation and maintenance to ensure that false alarms are infrequent and that a real fire would be detected quickly without damage to property or loss of life. This course provides delegates with the knowledge and skills necessary to work on these systems competently. Candidates who attend this course may also like to attend course 460: Design of Fire Alarms. Candidates who attend both of the fire alarm courses would be able to commission a fire alarm system.

PARTICIPANTS

The course is designed for those who have an electrical background (for example maintenance electricians) or for those who have successfully completed course 110: Electrical Maintenance Skills.

COURSE PRESENTATION

The course is presented using 4 wire, 2 wire and analogue addressable fire alarm panels and associated components so that candidates learn how the devices fit into the system, how they function and the way in which they should be configured, connected and tested. On-going assessments are used to ensure that the candidates are able to meet the objectives of the course. Comprehensive course notes are provided.

COURSE OBJECTIVES

On completion of the course, participants will be able to:

- Understand the way in which a large fire alarm system would be connected and zoned
- Specify the import of the British Standards and Regulations relating to fire alarm systems
- Identify the main connections, component parts and indications on typical fire panels
- Identify the required end of line (EOL) terminations and the cabling requirements for mains supplies and detectors etc
- Recognise the various types of detectors used in fire alarm systems
- Read and understand a typical schedule for a large fire alarm system
- Identify the dangers involved in incorrectly connecting detectors and Manual Call Points (MCPs)
- Connect a fire alarm panel (using EOLs) to a variety of detectors, sounders, MCPs etc
- Find faulty detectors, cabling, configuration errors, etc on a simulated system
- Test and inspect a fire alarm system using walk tests, making measurements, testing for functionality of detectors etc
- Complete the relevant certificates to validate a functional commercial system.

Successful completion of the course leads to the award of the Technical Training Solutions Certificate of Competence 470: Fire Alarm System Installation.

What do candidates on the Fire Alarm System Installation and Maintenance Course actually do?

The Installation and Maintenance of fire alarm systems course begins by looking at the Legislation, British Standards and Codes of Practice applicable to Fire Alarm Systems. The various requirements are explained, in particular the requirements of BS 5839-1 and BS5839-6. Candidates then learn about the component parts of fire alarm systems, starting with the detectors used. (We employ a range of manufacturers' components on the course, so that the candidates can carefully consolidate their knowledge and experience of the range of devices that they might encounter when looking at real systems subsequent to the training. We source a lot of the equipment we use on the course from Discount Fire Supplies.) For example, the following are some of the many and various fire detectors that we use as demo pieces on the course:



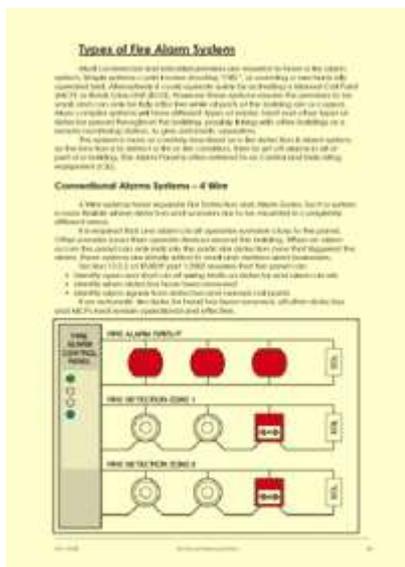
Some of the detectors used as demonstration pieces for the candidates to look at on the fire alarm system installation training course

We then disassemble the commonly used component parts of fire alarm systems, looking carefully at the terminal identifications etc. We provide the candidates with a wide range of Manual Call Points, Detectors and Sounders as demonstration pieces.

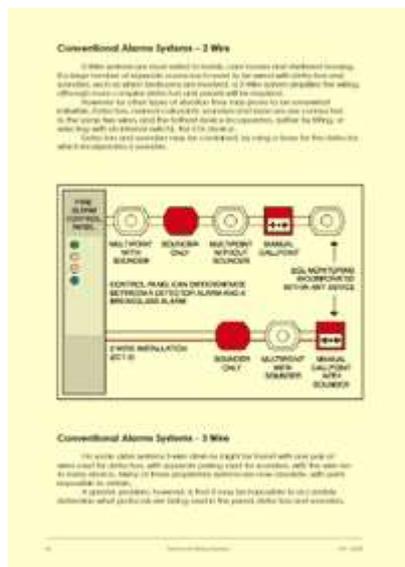


Some of the detector bases, Manual Call Points (MCPs) and sounders used as demonstration pieces for the candidates to look at on the fire alarm system training course

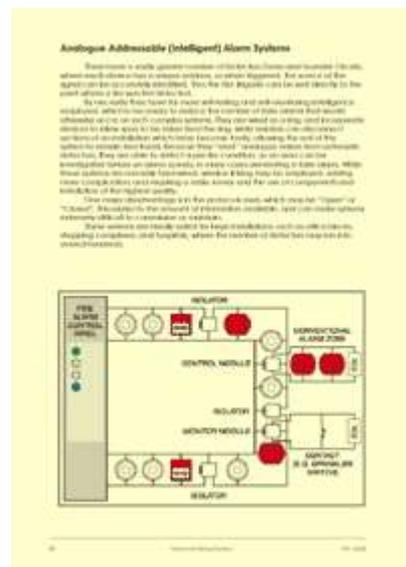
We then analyse the various types of fire alarm panels in common use, differentiating between conventional and addressable, 2-Wire and 4-Wire types. The following are pages taken from the course notes in this section of the course, dealing with 4-Wire Panels, 2-wire Panels and analogue addressable panels:



Page 35 of the course notes for the fire alarm system installation training course, describing the 4-Wire types of fire alarm panel

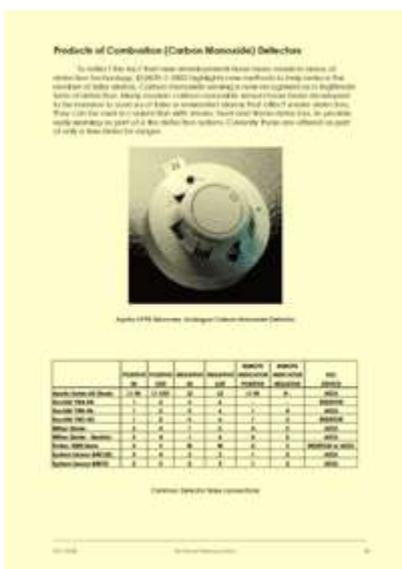


Page 36 of the course notes for the fire alarm system installation training course, describing the 2-Wire types of fire alarm panel

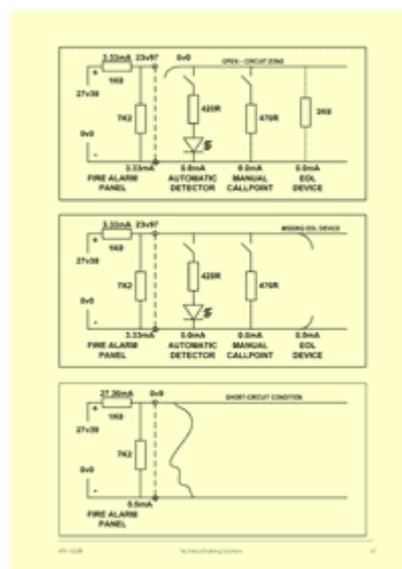


Page 38 of the course notes for the fire alarm system installation training course, describing the analogue addressable types of fire alarm panel

We then look at how the various components used in fire alarm systems achieve automatic detection, how to connect them to the panel and the typical arrangements of the electronic components used in the sensing wires. The following are pages taken from the course notes in this section of the course, dealing with CO detectors and the electronics found on the signal wiring:



Page 45 of the course, describing the various components used in fire alarm systems



Page 61 of the course notes, describing the typical arrangements of the electronic components used in the sensing wires

Whilst the course needs to cover the important requirements of the Standards and ensure that the candidates acquire the necessary knowledge on the subject, it is very important that the candidates are taught in an interesting and engaging way and for this reason we employ lots of practical exercises throughout the course.

The main focus of the course is on the following set of practical exercises, which requires them to apply the knowledge gained in the earlier part of the course to a series of proper skills-based practical exercises, allowing them to demonstrate that they have achieved the required understanding of fire alarm systems.

Candidates on the fire alarm system installation training course then work through a series of practical exercises on our custom built boards.

These exercises provide valuable experience and our instructors help the candidates where necessary.

In each of the practical exercises that follow, the candidates:

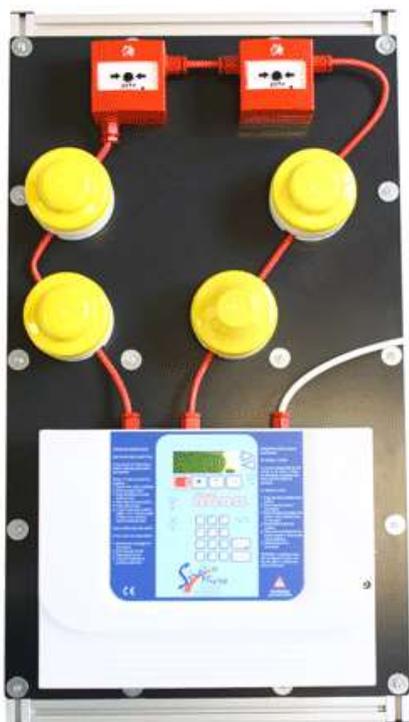
- reset the systems from the alarm state
- disable a zone
- add or remove a detector
- perform a walk test
- check fault indications
- complete the relevant certificates as recommended by BS5839.

In addition to the above the candidates also connect the conventional 4-Wire Systems to act as master and slave panels.

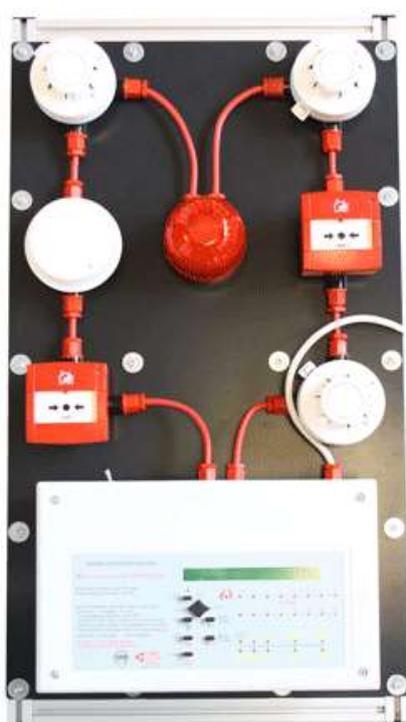
Candidates are given access to a range of spare parts while working through the practical exercises:



The practical exercises include installation, inspection, measurement, fault-finding, maintenance and certification exercises. The candidates work with a maximum of 2 people per board, so that everyone gains sufficient exposure to the exercises.



Analogue addressable System 1 used on the fire alarm system installation training course



Analogue addressable System 2 used on the fire alarm system installation training course



Conventional 4-Wire System 1 used on the fire alarm system installation training course



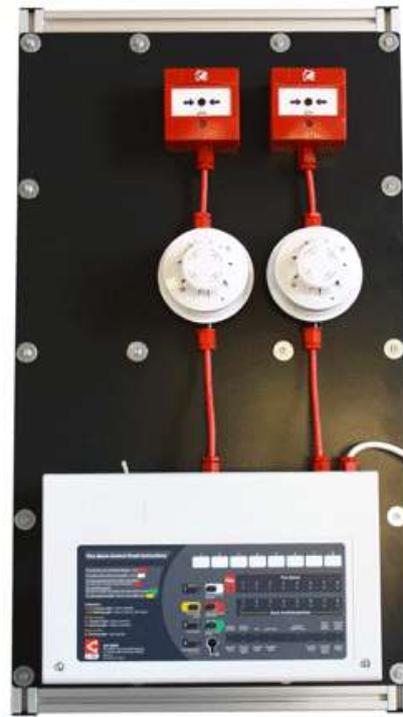
Conventional 4-Wire System 2 used on the fire alarm system installation training course



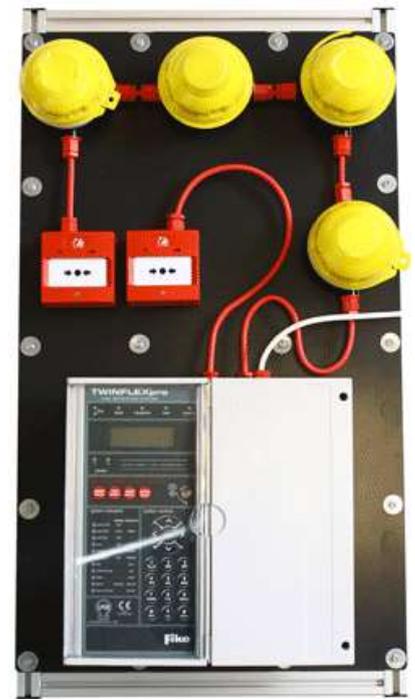
Conventional 4-Wire System 3 used on the fire alarm system installation training course



Conventional 4-Wire System 4 used on the fire alarm system installation training course



2-Wire System 1 used on the fire alarm system installation training course



2-Wire Fike System 2 used on the fire alarm system installation training course

We measure the sound intensity from a real sounder, looking at the ways in which this should be done (adjusting when necessary) and ensuring that the levels meet the requirements of the British Standard.



We also identify the maintenance requirements of fire alarm systems, as well as the use of modern multi-technology detectors. We then look at the certification requirements and practice completing the required paperwork, taken from appropriate parts of BS5839. In the practical exercises shown above the candidates complete the relevant certificates as they go along.

