

CONVENTIONAL FIRE ALARM SYSTEM

The contractor shall supply, install, test and commission a modern Conventional Fire Detection and Alarm System of an approved manufacture and design, and in accordance with the civil defense requirements to protect the risk area set forth in the drawings.

The equipment shall form an integrated system of actuating devices laid in different areas and connected to a central control panel located at the main entrance of the building.

The contractor shall submit a complete proposal with schematic drawings, list of materials and original detailed catalogues of the equipment for consultant/client approval before starting the work.

The supplier and installer of the system shall be approved by the local civil defense authority.

Installation shall be to the British Standard BS5839 Part 1: 1988 Fire Detection and Alarm systems for buildings.

1. Control panel:

The control panel shall comply with the requirements of BS 5839 part 4 and EN 54-2 & 4, and with quality assurance requirements of ISO 9001-1994. The panel shall be LPCB approved.

The system equipment shall be **CE tested and certified** and the **CE** marking shall appear on the packaging and/or included in the operating instructions.

The control panel shall be housed in a steel enclosure with partially glazed door. All electronics within the panel shall be microprocessor controlled. The motherboard and the display electronics inside the control panel shall be fixed on to a detachable chassis. The panel shall include an integral power supply unit and sealed lead acid batteries. A fire relay with two changeover contacts and a fault relay with changeover contact shall be supplied in the control panel. Facilities for remote evacuation, silence and reset of system shall be provided.

Twin LED's shall be provided for zone identification. They will flash intermittently when an alarm is received and change to steady when the alarm is acknowledged. A flashing amber fault led shall indicate the fault status of each zone. A separate zone isolation switch shall be provided for each zone. Upon operating the zone isolation switch, amber led shall flash steadily to indicate the fault.

All zones shall be monitored for both open and short circuit faults.

The control panel shall be provided with two 24 Volt DC alarm circuits, monitored for both open and short circuit faults. Flashing amber led shall operate with internal buzzer on fault conditions. Alarm circuits shall have the following minimum power rating:

2 at 500 mA each	for panels with 2-4 Zones
2 at 750 mA each	for panels with 8-12 Zones
2 at 1 Amp each	for panels with 16 Zones
4 at 1 Amp each	for panels with 32 Zones

When calculating the back-up battery requirement notice shall be taken of the quiescent load and time the system must be maintained operational in the event of mains failure.

The control panel shall have "Single Man" commissioning/test facility.

The following user controls shall be provided:

- Silence alarm switch.
- System reset switch.
- Test alarms/evacuation switch.
- Test display switch.
- Silence fault buzzer switch/ Watchdog reset.
- Zone isolate switch per zone.
- Relay isolate switch.

The following primary visual indicators shall be visible at access levels 1&2:

- Mains on - green
- Fire (twin LED's) - red
- Zone fault/isolated - amber
- System disabled - amber
- Processor fault - amber
- General fault - amber

The following engineer's function shall be available at access level 3 on the panel:

1. DIL switch 1
 - off, causes continuous alarms.
 - on, causes pulsed (intermittent) alarms.
2. DIL switch 2
 - on, causes zone 1 only to become non-latching inhibits zone operation of fire relays.
3. DIL switch 3
 - on, selects one-man test mode.
4. DIL switch 4
 - inhibits the operation of fire relay on evacuate in panels with 2-4 zones.

- 5. Indication at access level -3
 - enables processor fault counter in panels with 8/6/32 zones.
 - power supply fault.
 - alarm circuit fault.
 - display board removed.

2. Optical smoke detectors:

The optical smoke detectors are designed to detect bigger particles of smoke such as that from burning PVC. They shall be self-monitoring with led indication, interchangeable plug-in base and two-wire operation. The operating voltage shall be 17 to 28V DC. Wiring shall be polarity insensitive. Detector shall be rated to IP 43.

The detector shall comply with EN 54 (BS 5445) as well as UL standards.

The detector shall be manufactured to comply with the quality assurance standards of BS EN ISO 9002 1994. It shall also be approved by the LPCB.

3. Heat detectors:

The heat detectors shall be rate of rise type with a fixed upper temperature limit. They shall be solid state construction with a monitoring led and interchangeable plug in bases. The supply voltage shall be between 17-28 V DC and nominal operating temperature - 20^o C to +90^o C. The wiring shall be polarity insensitive. The detector shall be rated to IP 54.

The detector shall comply with EN 54 (BS 5445) as well as UL standards.

The detector shall be manufactured to comply with the quality assurance standards of BS EN ISO 9002 1994. It shall also be approved by the LPCB.

4. Alarm bell:

Alarm bells shall be a 6" diameter gong type and be suitable for mounting either directly on to a wall or to a conduit box. The bell gong shall be constructed of steel with molded glass filled polypropylene bases housing the motor/solenoid and terminal blocks. The bell shall be polarized.

5. Combined Sounder Strobes:

The design of sounder/strobe shall be an efficient combination of audible and visual warning, in a package taking up no more surface area than a standard sounder. The unit

shall have 103 dB (A) sound output at 1m at 800 Hz, 24V. The lens area shall be large enough to allow maximum visibility.

6. Break glass unit:

Break glass units shall be standard model that fit on switch/socket box for flush installation. Testing shall be carried out by inserting a test key to move the glass, and operate the switch.

7. Remote indicator:

The remote indicator shall have a led fixed on a square/circular self-extinguishing white plastic box for remote indication of the detectors. Remote indicator lamps shall be provided for closed rooms etc. where in normal operation physical viewing of the fire sensor is not possible due to closed doors.

Bill of materials:

No.	Description	Unit	Qty	Rate	Total
	<u>Fire Alarm System :</u>				
	Supply, installation, test and commissioning of a complete Fire-Alarm System as shown on the drawings & described in the specifications to the approval of the civil defense authority :				
1.	Multi-zone fire-alarm control panel with the required sealed lead acid batteries.	No.	1		
2.	Ionization smoke detector complete with base.	Nos.			
3.	Optical smoke detector complete with base.	Nos.			
4.	Heat detector complete with base.	Nos.			
5.	Manual call point.	Nos.			
6.	6" fire alarm bell.	Nos.			
7.	Combined Sounder Strobes	Nos.			
8.	Remote indicator lamp.	Nos.			
9.	Repeater panel in the guard/watchman room.	Nos.			
10.	Fireproof cable as approved by the civil defense authority.	Lot	LS		
11.	Supply installation, test and commissioning of the above system with all necessary accessories as specified.	Lot	LS		