

**ARCHITECTS &
CONSULTANTS
SPECIFICATION**

**ANALOGUE ADDRESSABLE
RADIO FIRE ALARM SYSTEM**

SPECIFICATION FOR WIRE FREE

ANALOGUE ADDRESSABLE RADIO FIRE ALARM SYSTEM

The area(s) shall be protected using wire free detectors, callpoints and sounders capable of transmitting their status back to a central control unit for interpretation of the data and action as appropriate. The wire free radio fire alarm system shall be selected and installed in accordance with the following:

1.0 System Component

- 1.1 The fire alarm system shall be analogue addressable and devices are to be installed throughout the zones nominated on the drawings.
- 1.2 The system shall consist of an analogue addressable fire alarm control panel, radio wire free optical and heat detectors, callpoints and electronic sounders.

2.0 Control Panel

- 2.1 The Radio Fire Alarm System Control Panel shall be analogue addressable. It shall have a minimum of 12 zones, a vacuum fluorescent display for clarity of displayed information, a numeric keypad to allow access and operation of a menu function to facilitate on site amendments to text and programming information, two hardwired sounder circuits, a hardwired interface for the provision of callpoints etc and must be able to accept either hardwired or radio operated bomb alert and class change facilities.
- 2.2 The control panel shall have individual zonal LED display.
- 2.3 The control panel shall be capable of self-testing and analysing its batteries on a daily basis and reporting any internal battery fault immediately.
- 2.4 The control panel shall have a VHF (173.245 MHz) receiver and UHF (458.50 MHz) transmitter/receiver. The unit must be capable of handling a maximum of 252 devices selectable from detectors, callpoints, sounders and interface accessories.
- 2.5 The control panel shall have as standard an in-built pager facility which can be used as either an engineer or customer pager. It shall be capable of transmitting coded commands to a 92 character pager which will have tone and vibration options.
- 2.6 The control panel shall have a standard RS232 and RS485 input/output facility. It shall be capable of being programmed by the use of a laptop or portable computer for detailed device description and configuration, it shall also be capable of supporting a panel mount printer.

- 2.7 The control panel shall be capable of displaying and actioning as appropriate, pre-alarm, alarm and fault conditions along with service and near service conditions and providing remote outputs for fire and fault signalling to external sounders and auxiliary equipment.
- 2.8 The control panel shall be designed in accordance with the requirements of BS5839 part 4 and EN54 part 2.
- 2.9 The 240 volt supply to the panel shall be taken from the essential supply circuitry.

3.0 VHF Transponder

- 3.1 A transponder signal processor which receives VHF (173.245 MHz) signals from local devices and transmits those signals on UHF (458.5 MHz) at 500mw via a remote receiver may be installed as required.
- 3.2 The transponder will have a 240 volt supply and be complete with an integral power supply unit.
- 3.3 The transponder will be fitted with VHF and UHF helical aerials as standard with the provision for VHF half wave dipole remote aerials to be fitted if required.
- 3.4 There should be a maximum of four transponders reporting to each control panel.

4.0 UHF Transponder

- 4.1 A UHF transponder to extend the range of radio sounders and pagers may be incorporated in the System if determined by the radio survey.
- 4.2 A UHF transponder will receive UHF (458.5 MHz) signals from the control panel and will relay these to sounders, input/output units and pagers.
- 4.3 The UHF transponder will require 240 volt supply and be complete with integral power supply unit.
- 4.4 The remote transponder will be fitted with an integral UHF aerial but be capable of being fitted with a UHF remote dipole aerial.

5.0 VHF Remote Receiver

- 5.1 A VHF remote receiver which receives VHF (173.245 MHz) signals from local VHF transmitters may be installed as required.

- 5.2 The VHF remote receiver may be located as determined by the radio survey and transmit signals by Beldon cable link directly to the main control panel. The connecting Beldon cable shall be in fire protected casing.
- 5.3 No more than ten remote receivers may be used for direct connection to the main control panel.
- 5.4 The remote receiver requires 240 volt supply and shall be complete with an integral power supply unit.
- 5.5 Signals from the remote receiver to the main control panel shall be fully monitored.

6.0 Optical Analogue Addressable Smoke Detectors

- 6.1 All detector assemblies used shall be of a three part construction:
1. Smoke detector head
 2. Radio address module and battery board
 3. Ceiling mount
- 6.2 The detector shall be self-testing and be analogue addressable.
- 6.3 The radio address module shall have 1mw ERP power output.
- 6.4 The radio address module shall house a separate battery board which has four 3.7 volt primary lithium batteries and a micro processor control unit.
- 6.5 The detector head shall operate at 3.2 volts.
- 6.6 The radio address module shall contain a factory programmed unique ident code.
- 6.7 The unit shall be fitted with an integral tamper switch which shall make contact with the surface to which the device is fitted.
- 6.8 The detector shall have the option of four selectable sensitivity levels switchable within the detector head - high, medium, low and normal plus 16 additional verification checks. The sensitivity setting shall be communicated to the panel data bank.
- 6.9 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure and provision to energise the sounder at its full operating level for a further thirty minute period.

- 6.10 The unit will transmit its battery pack condition indicating when a replacement is due.
- 6.11 The device shall have non-volatile memory.
- 6.12 The device shall be capable of being logged on to the appropriate control panel and addressed using either the panel keypad or a lap-top computer program.

7.0 Analogue Addressable Heat Detector

- 7.1 All detector assemblies used shall be of a three part construction:
 - 1. Detector head
 - 2. Radio address module
 - 3. Ceiling mount
- 7.2 The detector shall be analogue addressable.
- 7.3 The radio address module shall have 1mw ERP power output.
- 7.4 The radio address module shall house a separate battery pack which has four 3.7 volt primary lithium batteries and a micro processor control unit.
- 7.5 The detector head should operate at 3.2 volts.
- 7.6 The radio address module shall contain a factory programmed unique ident code.
- 7.7 The unit shall be fitted with an integral tamper switch which shall make contact with the surface to which the device is fitted.
- 7.8 The detector head shall have selectable heat ranges switchable within the detector head, giving 3 x fixed temperature and 1 x rate of rise and the selected setting shall be communicated to the panel data bank.
- 7.9 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure and provision to energise the sounder at its full operating level for a further thirty minute period.
- 7.10 The unit will transmit its battery pack condition indicating when a replacement is due.
- 7.11 The device shall have non-volatile memory.
- 7.12 The device shall be capable of being logged on to the appropriate control panel and addressed using either the panel keypad or a lap-top computer program.

8.0 Callpoints

- 8.1 Callpoints are to be of such manufacture as currently used within the fire industry.
- 8.2 The unit shall be fitted with an integral tamper switch which shall make contact with the surface to which the device is fitted.
- 8.3 The callpoint shall have four 3.7 volt primary lithium batteries and a micro processor control unit.
- 8.4 The callpoint will be fitted with a frangible glass substitute card as standard which allows for the strict and controlled introduction of devices into the protected area.
- 8.5 The callpoint shall have its own unique ident code installed during manufacture.
- 8.6 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure and provision to energise the sounder at its full operating level for a further thirty minute period.
- 8.7 The unit will transmit its battery pack condition indicating when a replacement is due.
- 8.8 A weatherproof unit manufactured and tested to achieve IP65 Standard shall be available for appropriate areas.
- 8.9 The device shall have non-volatile memory.
- 8.10 The device shall be capable of being logged on to the appropriate control panel and addressed using either the panel keypad or a lap-top computer program.

9.0 Addressable Radio Input Transmitter

- 9.1 Addressable Radio Input Transmitters are to be of such manufacture as currently used within the fire industry.
- 9.2 The unit shall be fitted with an integral tamper switch which shall make contact with the surface to which the device is fitted.
- 9.3 The unit shall have four 3.7 volt primary lithium batteries and a micro processor control unit.
- 9.4 The unit shall provide the facility of transmitting alarm signals from beam detection, aspirating detection systems and other ancillary equipment or fire related systems which require monitoring by the fire control panel. The Radio Input Transmitter shall be fully monitored.

- 9.5 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure.
- 9.6 The unit will transmit its battery pack condition indicating when a replacement is due.
- 9.7 The device shall have non-volatile memory.
- 9.8 The device shall be capable of being logged on to the appropriate control panel and addressed using either the panel keypad or a lap-top computer program.

10.0 Addressable Radio Input / Output Transmitter

- 10.1 Addressable Radio Input / Output Transmitters are to be of such manufacture as currently used within the fire industry.
- 10.2 The unit shall be fitted with an integral tamper switch.
- 10.3 The unit shall have five 3.7 volt primary lithium batteries and a micro processor control unit.
- 10.4 The unit shall provide the facility of transmitting alarm signals from beam detection, aspirating detection systems and other ancillary equipment or fire related systems which require monitoring by the fire control panel. The Radio Input Transmitter shall be fully monitored.
- 10.5 The unit shall provide the facility of receiving command signals from the control panel to devices, which require remote activation, including magnetic door release units, staircase ventilation systems or other ancillary equipment.
- 10.6 The unit shall house both a radio transmitter and a receiver on VHF (173.245 MHz) and UHF (458.5 MHz) frequencies.
- 10.7 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure.
- 10.8 The unit will transmit its battery pack condition indicating when a replacement is due.
- 10.9 The device shall have non-volatile memory.
- 10.10 The device shall be capable of being logged on to the appropriate control panel and addressed using either the panel keypad or a lap-top computer program.

11.0 Wire Free Electronic Sounder

- 11.1 Sounders are to be of such manufacture as currently used within the fire industry.
- 11.2 The unit shall house both a radio transmitter and a receiver on VHF (173.245 MHz) and UHF (458.5 MHz) frequencies.
- 11.3 The unit shall be capable of generating four different sounds:
 1. Fire
 2. Alert
 3. Bomb Alert
 4. Class Change
- 11.4 The unit shall have an in-built microphone allowing for a rapid and unobstructed test of every sounder, generated and reporting to the control panel.
- 11.5 The unit shall house five AA size 3.7 volt primary lithium batteries mounted on a battery board with micro processor control.
- 11.6 The unit shall have an interface for a hardwired callpoint.
- 11.7 The unit shall have an interface for an auxiliary contact board for the operation of auxiliary equipment.
- 11.8 The unit shall have 1mw ERP power output.
- 11.9 The unit shall be fitted with an integral tamper switch which shall make contact with the surface to which the device is fitted.
- 11.10 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure and provision to energise the sounder at its full operating level for a further thirty minute period.
- 11.11 The unit will transmit its battery pack condition indicating when a replacement is due.
- 11.12 The device shall have non-volatile memory.
- 11.13 The device shall be capable of being logged on to the appropriate control panel and addressed using either the panel keypad or a lap-top computer program.

12.0 Radio Fire Alarm System Design

- 12.1 The tenderer shall submit with the tender, all drawings and detail required for the design of the fire protection system as governed by the requirements below.
- 12.2 The detection system shall be arranged to comply with the requirements of BS5839 part 1 1988 and ensure optimum efficiency of smoke detection coverage commensurate with aesthetics and practical constraints.
- 12.3 Prior to installation the dealer shall submit working drawings with engineering design details endorsed by the manufacturer.
- 12.4 The system shall be commissioned by the manufacturers approved dealer who is trained to survey, install, commission and maintain the system.
- 12.5 The system and all of its sensors/devices shall be manufactured by a company working and accredited to the disciplined requirements of the IS9000 Quality System.

13.0 Technical Assistant Programme Using Remote Access Facility

- 13.1 The remote access facility used with the Technical Assistant Programme (TSA) allows the operator to manage the system successfully from a distance, therefore allowing engineering facilities from any BT or cellular line. ie: devices/zones can be isolated if work is to be carried out on site, device text information can be changed if required. It is also possible to talk end users through the menus, as the front screen can be viewed remotely. Each of these functions obviously cut down on the need to attend site for minor amendments.

13.2 Upload Setup

This feature allows newly created or edited fire panel database information to be sent directly to the panel via the modem. This feature does not require on site attendance as all editing can be carried out using the TSA either on a laptop or standard PC.

13.3 Download Setup

This feature allows the complete fire panels setup to be copied remotely via the modem. The database can then be viewed or edited if applicable and then uploaded back to the panel using the upload setup feature previously described. This feature does not require on site attendance.

13.4 Engineers Comms

The engineers comms feature allows remote diagnostics to be performed on the system. This shows all the radio information presently being received by the fire panel including individual idents and signal strength readings for the devices. This information can be filtered for particular devices and saved as a file for later use if required.

13.5 Download Log

The fire panel's 1,000 event log can be remotely downloaded to the TSA and saved as a file. Therefore allowing further diagnostics to be carried out, along with the ability to print the information if required.

13.6 Remote Panel

This feature allows the System 5000 front screen display to be viewed and menu access as if you were standing in front of the panel. All engineering features are available, so again site attendance is not required.