Specification for EDA Wire Free Radio Fire Alarm Systems

Electro-Detectors Millennium wire free fire alarm systems have been developed to provide a powerful and intelligent fire system that gives the designer and the user a flexible wire free solution for the protection of people and property. They are available in addressable or analogue addressable formats and, with the development of remote diagnostics via a telephone line, both the installation and the ongoing maintenance of these systems continue to make wire free a sensible and cost-effective choice.

Application

It is now possible to install a fire alarm where all components are wireless, manual call points, smoke and heat detectors, sounders and radio linked repeater or booster panels all communicate without the use of interlinking cables.

The function of the wire free alarm system will be as follows.

1. To detect a fire in the protected area.
2. Alarms of fire or fault conditions will be displayed on the control panels and indicating equipment.
3. Where required, the system can be programmed to automatically initiate a general alarm, staff alarm, phased or staged evacuation using tone or speech sounders in both wire free and wired formats.
4. The system may be used to initiate the operation of fixed fire extinguishing systems via the use of an approved extinguishing control panel.
5. Where required, fault and fire signals from the panel can be relayed to remote locations or the fire brigade via a digital autodialer, digital communicator or Redcare.

System Specification

1. The system has been designed to comply with the requirements of BS 5839 Part 1 1988 and EN 54 Parts 1 and 4. Although the design and planning phases of a wire free radio fire alarm system are generally identical to that of a wired system it is essential to include a detailed radio survey to ensure reliable transmissions between devices and panels.
2. The radio signalling equipment has been approved and is manufactured to the requirements and specifications of the DTI under their licence No. MPT 1344.

At the present moment there is no third party approval procedure for radio based wire free fire alarm systems. Electro-Detectors is working closely with the BFPSA (British Fire Protection Systems Association) and the LPC (The Loss Prevention Council) so that a suitable standard can be developed to provide this approval. However, Electro-Detectors has commissioned the LPC to technically evaluate the Millennium smoke detector to En 54. These tests were successfully completed in November 1988.

Control Panel and Repeater/Booster Equipment

1. The MI00 control panel is capable of accommodating up to 999 zones with 3,000 individually addressed devices.

2. A maximum of 50 control panels or radio repeater/booster panels can be installed on single system.

3. The system uses an advanced dual frequency protocol operating on 173.225 and 173.325 MHz and by utilising the 16-bit, 16 MHz processor, sophisticated user-friendly programmes and complex cause and effect mapping are all performed with speed and reliability. The panel communications exist on their own separate frequency and incorporate a handshake to eliminate panel communications clashing by means of a time division multiplexed transmission protocol.

4. A highly visible 8 line backlit liquid crystal display [LCD] is used to highlight fire, faults and general information from each device and to provide easy viewing to the onboard 1000 event battery backed non-volatile storage memory. A permanent record of the panels' memory may be obtained by specifying the Millennium M150 that is fitted with an onboard printer. Alternatively, via the use of the RS 232 communications port, this information can be downloaded onto your own printer or computer.

5. Panels are programmed via the onboard keypad or by the use of the RS232 port and a laptop computer. The main control panel operates as either a stand-alone system or, for larger installations, through a network of repeater/booster panels. Electro-Detectors has designed a repeater/booster panel specifically for the purpose, using all the common features of the main panel. The repeater panel is even smaller than the main panel and is intended to be sited in an inconspicuous position, requiring only a mains supply. All communications and data retrieval is accomplished by radio via the main control panel.

6. Each panel has 2 hardwired sounder interfaces, each rated at 0.5A. In addition to this, each panel has a hardwired call point interface and 2 volt free auxiliary relays, each rated at lA.

7. Access to the system controls is provided by a lockable front door. Security for unauthorised system operation is further protected by 3 levels of access code.

8. Both the main control panel and the repeater/booster panels have a 72-hour standby power backup provided from a 7.2A 12V rechargeable sealed lead acid battery.

9. Where required, a UHF frequency pager interface can be included allowing text messages to be transmitted to a handheld pager mimicking the text information from the main control panel.

10. When the control panel is configured to operate in its analogue mode, the sensitivity of the devices is adjusted from the control panel. At day/night mode can be selected which automatically adjusts the sensitivity of the detector to pre programmed levels to suit varying environmental conditions.

General Radio Devices

1. All radio devices are self-contained and powered by two individual lithium battery sources.

2. Alarm signals will override fault signals.

3. Each device transmits, at a regular interval, a verification or handshake signal confirming that the device is still operating, its batteries are within specification and, for analogue devices, its threshold value will be transmitted at the same time.

4. All devices transmit a tamper fault or unit removal fault when removed from their base.

5. All devices transmit at 173.225 MHz or 173.325 MHz with an output power of 1 Mw ERP. Modulation is narrow band FM with a deviation of from +/- 1.5 kHz.

Radio Smoke and Heat Detectors

1. All detectors comply with the relevant parts of the British Standard BS 5445, BS 5839 and EN 54 as appropriate.

2. Smoke detectors are available in ionisation or optical configurations and as addressable or analogue types.

3. Addressable smoke detectors are programmed by the use of a handheld programmer or laptop computer. Analogue sensors sensitivity is set at the main control panel.

4. Heat detectors are available as fixed temperature units at 65 and 75°C or rate of rise at 0.5°C per second, with a 58°C alarm threshold.

5. Each unit is fitted with a pair of lithium batteries with an expected operational life of ten years. Once the batteries are approaching the end of their useful life, a fault transmission will be made to the control panel indicating a low battery condition, the units will then continue to operate for a minimum of 60 days.

6. All detectors can be programmed with an alarm verification/transient rejection feature, this facility

allows the detector to use its intelligence whilst processing the alarm signal and then to make a decision whether there is sufficient smoke still present in the atmosphere to justify raising a full alarm condition.

Radio Manual Call Point/Break Glass/Transmitter Units

1. To raise a manual alarm, the system can be provided with call points complying with BS 5839 part 2. The call points are battery powered by 2 independent lithium AA sized cells and have an expected life of ten years, and a low battery is indicated at the main control panel, the unit will then continue to operate for a minimum of 60 days.

Radio Sounder/Sounder Detector and Activating Devices

1. Radio sounders are available as wall-mounted stand-alone units or as sounder detectors, each programmable with 14 different tones from the control panel.

2. Sounder levels for the wall mounted sounders are adjustable between 85 and 105dBA. Sounder detectors are adjustable between 65 and 90 dBA.

3. Each sounder or group of sounders is capable of being individually activated.

4. Each wall-mounted sounder has the facility to operate or isolate third party equipment in the event of a fire alarm. This facility is programmable on either silence or the reset command of the main fire alarm control panel.

5. Wall-mounted sounders have a life expectancy of up to four years. A secondary battery is fitted to provide backup in the event of main battery failure, which will provide the capacity to operate the sounder for a further 60 days while still having the capacity to operate the sounder in an alarm state for a further 30 minutes. The expected life of the sounder/detector batteries is 6 to 7 years, with the unit remaining operational for a further 60 days after a low battery signal has first been received.

6. Each wall-mounted sounder has the capability of having a wired call point connected to it. The call point, even though powered by the sounder, will have its own unique device number and location text.

7. Each wall-mounted sounder has the option of a further extension sounder to be connected to it. The slave sounder is then powered and controlled by the main sounder. This provides a low-cost solution where a large number of sounders are required to protect premises where sounders can be fitted back to back.

8. When planning to utilise existing hardwired sounder circuits in conjunction with radio sounders, a hardwired 24V version of the wall-mounted radio sounder is available to provide an aesthetic match with identical tones.

9. A radio strobe and a radio actuator, typically used for closing fire doors, is also available with the same

options as the wall mounted radio sounder.

For more detailed information concerning the specification of any of the above Electro-Detectors equipment please refer to specific product data sheets or contact TTS Fire & Security 01279 429029.