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# **W50 Consultants Specification for a Wireless Addressable Fire Detection System up to 64 fire devices**

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This document is provided for fire system documentation where wireless systems/devices have been identified as the preferred solution. Any text and/or images can be freely used and lifted directly from any part of this document to produce a generic specification for tender purposes.

## Introduction

This document describes *wireless* fire detection and alarm devices / components and refers to various component and or system standards applicable when *wireless* components are utilised wholly or in part to configure fire detection and alarm system that will comply with EN standards.

This document is designed to focus on the *wireless* component of a fire detection and alarm system and references other subsets of EN54 for completeness and clarity only.

EN54 pt 25 - (*Fire detection and fire alarm systems - Components using wireless links and system requirements*) is therefore the main focus of this document.

This document also refers to *wireless communication* standards applicable to wireless communication equipment / components and therefore a prerequisite to all compliant wireless equipment / components independent of EN54.

This document also references national codes of practice and or standards in pertinent sections to illustrate and or highlight operational requirements and or performance requirements of fire alarm systems. i.e. BS5839 pt1

Any pertinent subset of requirements / standards of EN54 that are applicable / maybe required to create a compliant EN system that are generic within all types of fire detection and alarm systems be they, wired, conventional, or analogue addressable systems etc. i.e. Power Supplies (EN54-4) or EN54-5 smoke detectors etc. whilst referred to within this document may not be detailed within this document.

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Wire Free Radio Addressable Fire Detection & Alarm System  
**SPECIFICATION FOR SMARTCELLWIRE FREE**

**ADDRESSABLE RADIO FIRE DETECTION  
& ALARM SYSTEM**

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

**1.0 System Components**

- 1.1 The fire alarm system shall be addressable, and devices are to be installed throughout the areas nominated in conjunction with local installation practices.
- 1.2 The system shall consist of addressable wire free optical and heat detectors, call-points and electronic alarm indication units communicating back to a control panel
- 1.3 The system should have means via an option communications module to connect to cloud monitoring service allowing remote diagnostics as well as the ability to send system health notifications to pre-defined contacts.

**2.0 Wireless control panel**

- 2.1 The Fire Alarm shall be local powered. 230v and 24v variants of the control panel should be available.
- 2.2 The control panel shall have an LCD text display and LED status indicators.
- 2.3 The control panel shall be capable of self-testing and analysing its power sources on a daily basis, reporting any internal power fault within 100 seconds.
- 2.4 The control panel shall have the ability to use the 868MHz frequency band, The unit must be capable of handling a maximum of 64 wireless devices of which up to 32 devices can include smoke/heat detectors.
- 2.5 The control panel shall have as standard USB connectivity. It shall be capable of diagnostics and programming by the use of a laptop or portable computer.

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- 2.6 The control panel shall be capable of actioning information to the C.I.E. as appropriate:
- Fire Alarm
  - Information Alert
  - Fault conditions
- 2.8 The system shall be designed in accordance with the requirements of BS5839-1 (or local codes of practice if used outside UK) and all relevant parts of EN54.

### **3.0 Dual Detectors**

- 3.1 All detector assemblies used shall be of a two-part construction:
  1. Dual detector head & Radio address module and battery housing
  2. Ceiling mount
- 3.2 The detector shall be self-monitoring and be addressable.
- 3.3 The detector should have the ability to be programmed via the control panel to be either Dual, Optical only or Heat only.
- 3.4 The optical smoke detector should have the ability to have two sensitivity settings.
- 3.5 The Heat detector should have the ability to set the temperature to 58 or 72 degrees and set at either fixed temperature or rate of rise.
- 3.6 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 3.7 The device module shall contain a factory programmed unique ident code.
- 3.8 The unit shall be fitted with an integral tamper switch to indicate removal from its ceiling plate.
- 3.9 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 3.10 The unit will transmit its battery condition indicating when the batteries require replacement.
- 3.11 The device shall be capable of being logged on to the control panel and soft addressed.
- 3.12 The device shall be certified as tested to EN54 parts 5,7 & 25

## **4.0 Combined Dual Detector with Integral Sounder**

- 4.1 All detector assemblies used shall be of a two-part construction:
  1. Dual detector head, Sounder with Radio address module and battery housing
  2. Ceiling mount
- 4.2 The detector/sounder shall be self-monitoring and be addressable.
- 4.3 The detector should have the ability to be programmed via the control panel to be either Dual, Optical only or Heat only.
- 4.4 The optical smoke detector should have the ability to have two sensitivity settings.
- 4.5 The Heat detector should have the ability to set the temperature to 58 or 72 degrees and set at either fixed temperature or rate of rise.
- 4.6 The sounder shall be activated and silenced by the control panel.
- 4.7 The sounder shall be capable of generating sounder tones from a list of 32 different available tone set from the Control panel programming.
- 4.8 The device should have the ability to be configured for self-sound mode should communications be lost from its control panel.
- 4.9 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 4.10 The device module shall contain a factory programmed unique ident code.
- 4.11 The unit shall be fitted with an integral tamper switch to indicate removal from its ceiling plate.
- 4.12 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 4.13 The unit will transmit its battery condition indicating when the batteries require replacement.
- 4.14 The device shall be capable of being logged on to the control panel and soft addressed.
- 4.15 The device shall be certified as tested to EN54 parts 3,5,7 & 25

## **5.0 Combined Dual Detector with Integral Sounder and VAD**

- 5.1 All detector assemblies used shall be of a two-part construction:
  - 1. Dual detector head, Sounder, VAD, Radio address module and battery housing
  - 2. Ceiling mount
- 5.2 The detector/sounder shall be self-monitoring and be addressable.
- 5.3 The detector should have the ability to be programmed via the control panel to be either Dual, Optical only or Heat only.
- 5.4 The optical smoke detector should have the ability to have two sensitivity settings.
- 5.5 The Heat detector should have the ability to set the temperature to 58 or 72 degrees and set at either fixed temperature or rate of rise.
- 5.6 The sounder shall be activated and silenced by the control panel.
- 5.7 The sounder shall be capable of generating sounder tones from a list of 32 different available tone set from the Control panel programming.
- 5.8 The device should have the ability to be configured for self-sound mode should communications be lost from its control panel.
- 5.9 The device shall include and VAD (beacon) which will operate in a fire condition.
- 5.10 The device programming should allow for the option to be a sounder/Vad, sounder or VAD only.
- 5.9 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 5.10 The device module shall contain a factory programmed unique ident code.
- 5.11 The unit shall be fitted with an integral tamper switch to indicate removal from its ceiling plate.
- 5.12 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 5.13 The unit will transmit its battery condition indicating when the batteries require replacement.

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- 5.14 The device shall be capable of being logged on to the control panel and soft addressed.
  
- 5.15 The device shall be certified as tested to EN54 parts 3,5,7, 23 & 25



## **6.0 Call -Points**

- 6.1 Call-points or break glasses are to be of such manufacture as generally used within the fire industry.
- 6.2 The unit shall be fitted with an integral tamper switch to indicate removal from its ceiling plate.
- 6.3 The device shall house a battery compartment, which has 2 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 6.4 The call point will be fitted with a glass substitute card as standard that allows for the strict and controlled introduction of devices into the protected area.
- 6.5 The call point shall have its own unique ident code installed during manufacture.
- 6.6 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure.
- 6.7 The unit will transmit its battery pack condition indicating when a replacement is due.
- 6.8 The device shall be capable of being logged on to the control panel and soft addressed.
- 6.9 The device shall be certified as tested to EN54 parts 11 & 25.

## **7.0 Addressable Radio Input / Output Transmitter**

- 7.1 The unit shall be fitted with an integral tamper switch.
- 7.2 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 7.3 The unit shall provide the facility of transmitting alarm signals from third party equipment, such as beam detection, aspirating detection systems and other ancillary equipment or fire related systems that require monitoring by the fire control panel. The Input shall be fully monitored.
- 7.4 The unit shall provide the facility of receiving command signals from the control panel to devices that require remote activation, including magnetic door release units, staircase ventilation systems or other ancillary equipment.
- 7.5 The unit shall be capable of indicating low battery warning with a minimum of thirty days notice of impending failure.
- 7.6 The unit will transmit its battery pack condition indicating when the batteries require replacement.
- 7.7 The device will have two independent resistor monitored inputs.
- 7.8 The device will have two relay outputs configurable for Fire or Fault
- 7.8 The device shall be capable of being logged on to the control panel and soft addressed.
- 7.9 The device shall be certified as tested to EN54 parts 18 & 25.

## **8.0 Addressable Radio Remote Indicator**

- 8.1 The unit shall be fitted with an integral tamper switch.
- 8.2 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 8.3 The device will give a visual LED indication of Fire alarm activation.
- 8.4 The device shall be able to be programmed such that single and multiple device addresses or zones in fire can activate the remote indicator.
- 8.5 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 8.6 The unit will transmit its battery pack condition indicating when the batteries require replacement.
- 8.7 The device will have two independent resistor monitored inputs.
- 8.8 The device shall be capable of being logged on to the control panel and soft addressed.
- 8.9 The device shall be certified as tested to EN54 part 25.

## **9.0 Addressable Sounder**

- 9.1 All detector assemblies used shall be of a two-part construction:
  - 1. Sounder with Radio address module and battery housing
  - 2. Ceiling mount
- 9.2 Sounder shall be self-monitoring and be addressable.
- 9.3 The Sounder should be available with red or white case options.
- 9.4 The sounder shall be capable of generating sounder tones from a list of 32 different available tone set from the Control panel programming.
- 9.5 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 9.6 The sounder shall be activated and silenced by the control panel.
- 9.7 The device module shall contain a factory programmed unique ident code.
- 9.8 The unit shall be fitted with an integral tamper switch to indicate removal from its ceiling plate.
- 9.9 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 9.10 The unit will transmit its battery condition indicating when the batteries require replacement.
- 9.11 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 9.12 The device shall be capable of being logged on to the control panel and soft addressed.
- 9.13 The Sounder will have adjustable volume set from the control panel.
- 9.14 The device shall be certified as tested to EN54 parts 3 & 25

## **10.0 Addressable Sounder and VAD**

- 10.1 All assemblies used shall be of a two-part construction:
  1. Dual Sounder, VAD with Radio address module and battery housing
  2. Ceiling mount
- 10.2 The sounder/VAD shall be self-monitoring and be addressable.
- 10.3 The device should have the ability to be programmed via the control panel to be either Dual, Sounder only or VAD only.
- 10.4 The device should be available in both ceiling and wall mounted variants.
- 10.5 Whit flash and red flash variants of the VAD should be available.
- 10.6 The sounder shall be activated and silenced by the control panel.
- 10.7 The sounder shall be capable of generating sounder tones from a list of 32 different available tone set from the Control panel programming.
- 10.8 The device should be available with red or white case options.
- 10.9 The device shall include and VAD (beacon) which will operate in a fire condition.
- 10.10 The device shall house a battery compartment, which has 3 'Er1450M' 3.6v Lithium batteries providing primary and secondary supply support and a microprocessor control unit. The battery pack should be capable of powering the device for up to three years.
- 10.9 The device module shall contain a factory programmed unique ident code.
- 10.10 The unit shall be fitted with an integral tamper switch to indicate removal from its ceiling plate.
- 10.11 The unit shall be capable of indicating low battery warning with a minimum of thirty days' notice of impending failure.
- 10.12 The unit will transmit its battery condition indicating when the batteries require replacement.
- 10.13 The device shall be capable of being logged on to the control panel and soft addressed.
- 10.14 The device shall be certified as tested to EN54 parts 3, 23 & 25

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## **11.0 Addressable Wireless Door Controller (WDC)**

- 11.1 The Device shall be completely self-contained with Radio address module, battery housing and floor plunger
- 11.2 The WDC should be available with black or white case options.
- 11.3 The device shall house a battery compartment, which has 2x C Alkaline (Panasonic LR14AD Powerline / Varta 4014 Industrial) The battery pack should be capable of powering the device for up to three years.
- 11.4 The device module shall contain a factory programmed unique ident code.
- 11.5 The WDC shall be self-monitoring and be addressable and be capable of automatically releasing upon detection of an internal fault.
- 11.6 The unit shall be fitted with an integral tamper switch to indicate removal from the door.
- 11.7 Upon activation from the control panel the WDC will give an audible alert for approximately 8 seconds prior to releasing the door.
- 11.8 The device shall be certified as tested to EN54 25 & Comply BS EN1155 and BS 7273-4 (category B)

## **12.0 Radio Fire Alarm System Design**

- 12.1 All companies tendering shall submit with the tender, all relevant information and detail as required for the appropriate 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 BS5839-1 (or local codes of practice if used outside UK) and all relevant parts of EN54 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 suitably trained to survey, install, and commission and maintain the system during its lifetime.
- 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 ISO9001 Quality System.