Wireless Fire Detection Consultant Specification

Table Of Contents

1   Scope of Work

To design, supply and install a Wireless Fire Alarm Detection and Alarm System as per the details specified below and in accordance with the provided drawings and design documentation.

2   Standards & Specifications

2.1   Manufacturer Requirements

The manufacturer of the system equipment will undergo regular monitoring as part of a quality assurance program that adheres to the latest ISO 9001 standards.

2.2   Fire Alarm Contractor Requirements

The fire alarm contractor shall assume responsibility for the design, installation, commissioning and maintenance of the wireless fire detection and alarm system. If subcontractors are to be engaged for any of these tasks, their involvement must be agreed upon at the time of proposal submission.

The fire alarm contractor should hold BAFE certification (or an equivalent qualification). Alternatively, a minimum of five years' experience in designing, installing, commissioning and maintaining wireless fire detection and alarm systems will be deemed acceptable.

The fire alarm contractor must possess a comprehensive set of technical manuals for all installed equipment. These manuals should encompass the technical specifications, system design recommendations and guidelines for installation, commissioning, operation and maintenance of the wireless equipment.

2.3   Product Requirements

The proposed equipment for the wireless fire detection and alarm system should be approved by an accredited organisation in accordance with the following standards:
BS EN 54-2:1997+Al:2006 - Control And Indicating Equipment
BS EN 54-3:2001 - Fire Alarm Devices: Sounders
BS EN 54-4:1998 - Power Supply Equipment
BS EN 54-5:2001 - Heat Detectors: Point Detectors
BS EN 54- 7:2001 - Smoke Detectors: Point Detectors Using Scattered Light, Transmitted Light, Or Ionisation
BS EN 54-11:2001 - Manual Call Points
BS EN 54-17:2005 - Short-Circuit Isolators
BS EN 54- 18:2005 - Input/Output Devices
BS EN 54-23:2010 - Fire Alarm Devices. Visual Alarm Devices
BS EN 54-25:2008 - Components Using Radio Links

2.4   System Requirements

The fire detection and alarm system must be designed, installed and maintained in compliance with the applicable British and European standards, typically BS 5839-1, or the relevant code of practice.

3   Specification for Wireless Fire Alarm Systems

3.1   General

The system should possess the ability to function as either a standalone wireless solution or accommodate wired field devices on the same loop wiring as the wireless translator modules, forming a seamless hybrid system. An analogue addressable fire alarm control panel will be responsible for controlling this functionality.

The wireless fire alarm system will be based on analogue addressable technology, with devices to be installed in the designated areas as specified in the system design. The system will comprise analogue addressable fire detection units, wireless smoke and heat detectors, manual call points, sounders, and visual alarm devices. These devices will utilise an 868MHz frequency for communication with the wireless infrastructure components, ultimately connecting to the fire alarm control panel.

The wireless translator will be installed into the loop and establish direct communication with the wireless devices. It can also utilise expanders connected to the translator to enhance the signal strength or increase the system capacity. The fire alarm control panel will interpret the communications and send relevant information back to the devices.

A comprehensive radio survey will be conducted on-site to ensure that the necessary signal headroom, as specified in EN54-25, is maintained.

The radio survey will generate a comprehensive report of the conducted survey, which can be downloaded for reference and review.

The fire alarm panel must meet the requirements outlined in the relevant EN and British standards, including EN54-2 and EN54-4.

Each loop of the fire alarm control panel should have the capacity to accommodate the installation of up to 240 devices.

The wireless components of the system should have the capability to be programmed and commissioned either on-site or pre-programmed off-site based on drawings and/or survey results.

All wireless and wired analogue addressable devices must have a consistent visual appearance.

Detectors should be visually distinguishable based on their sensing criteria to facilitate easy testing.

3.2   Wireless System Configuration

The translator module will be loop-powered by the fire alarm control panel.

The fire alarm control panel should have the capability to support multiple translators per loop, with a maximum limit of six.

The translator must have the ability to communicate with a total of 128 devices. Each translator should have the capacity to support up to fifteen expanders.

Each translator or expander should have the capability to accommodate a maximum of 32 devices in total.

Additional expanders, which are necessary to boost wireless signals and extend the coverage of the translator modules, must be equipped with a power supply that complies with the requirements specified in EN54 part 4.

The system will incorporate a total of sixty communication channels across the infrastructure and field devices.

To ensure maximum channel separation and performance throughout the system's lifespan, the infrastructure and field devices will operate on separate channels. The infrastructure devices will operate across eight pairs of channels, while the field devices will operate across 22 pairs of channels.

The system will use the licence-free 868MHz range.

QR codes will be included on the devices, providing a unique identification method and facilitating programming and connection to the infrastructure devices.

The system will incorporate redundant channel technology between all field devices, translators and expanders.

The system will include fully synchronised outputs.

The system should incorporate a discovery mode that will wake up pre-installed devices.

Each translator will have a unique site code to prevent any interference with other systems on the site or nearby.

All wireless field devices will be powered by internal power sources, utilising easily replaceable CR123 lithium batteries of standard manufacture. Each power source will be monitored and capable of reporting its condition to the fire alarm control panel. When the battery capacity becomes low, a low-battery condition will be indicated at the control and indicating equipment (CIE), allowing a minimum of 30 days of normal use for the batteries to be replaced.

4   System Infrastructure Devices

4.1   Wireless Translator Module Specification

General

The system will employ translator modules to integrate the wired and wireless elements of the fire alarm system. The translator module will translate all analogue and digital messages from radio devices into protocol messages that can be managed via the fire alarm control panel. The translator module will be powered by the loop and will include loop isolation within each unit. In the event of a loop failure or to reduce the panel's current loop requirement, an EN54-4 PSU may be used in parallel to support the translator radio functions.

The translator module shall exclusively be used with the manufacturer's recommended fire alarm control panel, and the control panel will comprehensively monitor the status of the translator module and the associated wireless devices.

The translator module will be mounted on the wall and will be equipped with an anti-tamper switch, which will be monitored by the fire alarm control panel.

The translator module will offer both wired and wireless options for connecting to a PC-based configuration tool. Additionally, a Bluetooth dongle will be provided to facilitate maintenance and diagnostic tasks.

Functionality

Each translator will have the capacity to communicate with up to 128 field devices. Additionally, it will be possible to connect a maximum of fifteen expander modules to the translator.

Each translator module will possess the capability to switch to a secondary redundant channel as a backup measure.

The communication channels on which the translator module operates will be independent of those used by the field devices. This separation ensures improved wireless signal separation and performance.

The onboard screen of the translator module will enable viewing of the background noise. The translator modules will be fully monitored by the fire alarm control equipment.

Translators will be programmed without the need for any special tools or software. They will be accompanied by licence-free PC-based software to support programming requirements.

The translator modules will have a minimum rating of IP65, ensuring their protection against dust and water ingress.

The translator module will indicate power, fault and alarm events through three separate LEDs located on the front of the module.

The system configuration will allow for the addition, removal and replacement of devices using a unique ID in the form of a QR code. This can be accomplished through the dedicated PC-based software tool.

Compliance

The translator modules will be approved by an independent accredited approval body in accordance with EN54-17, EN54-18 and EN54-25, and the Radio Equipment Directive (RED).

A comprehensive report of the complete system, built on each translator, will be downloadable. This report will include details such as network topology, link quality status, occupied wireless channels, device descriptions, radio addresses, loop addresses, analogue values, configured options, wireless packet test results, and event logs.

4.2 Expander Module Specification

General

The system will employ expander modules to enhance signal strength and increase the capacity for additional devices connected to the translator module.

The expander module will be powered by a dedicated power supply unit that is approved according to EN54-4 standards. This power supply unit will also include a backup battery to comply with BS5839-1 requirements.

The expander module will be wall-mounted and equipped with an anti-tamper switch. This switch will be monitored by the fire alarm control panel to ensure the integrity and security of the system.

The expander module will offer a means of connection to a PC-based configuration tool.

Functionality

Each expander will have the capability to communicate with up to 32 field devices.

During the commissioning phase, it will be possible to create a pre-configured robust mesh communication network using multiple expander modules. This network will establish redundant paths back to the translator, ensuring reliable communication.

Each expander module will also have the capability to switch to a secondary redundant channel for added resilience.

The communication channels in which the expander operates will be independent of those used by the field devices, enhancing wireless signal separation and performance.

The fire alarm control equipment will fully monitor the expander modules.

Additionally, the expander modules will have a minimum rating of IP65, ensuring their protection against dust and water ingress.

The expander module will provide indications for power, fault and alarm events through three independent LEDs located on the front of the module.

It will be possible to add, remove, or replace devices in the system configuration using a unique ID in the form of a QR code. This can be accomplished through the dedicated PC-based software tool.

Compliance

The expander modules will be approved by an independent accredited approval body in accordance with EN54-18 and EN54-25, and the Radio Equipment Directive (RED).

5 System Field Devices

5.1 Wireless Optical Smoke Detector Specification

General

The low-profile wireless dual optical smoke detector, designed in accordance with British Standards, will employ the light scattering principle to measure smoke density. It will transmit digital communication through the system to the fire alarm control panel.

The wireless dual optical smoke detector will be powered by two commercially available CR123A 3V lithium batteries, which will be located within the detector head.

The wireless dual optical smoke detector will be mounted on the ceiling and will feature an anti-tamper switch. This switch will be monitored by the fire alarm control panel to ensure the integrity and security of the detector.

Functionality

Wireless dual optical smoke detectors will offer the following features: dual channel optics for enhanced smoke detection accuracy; automatic drift compensation to maintain reliable performance over time; and adjustable sensitivity settings to fine-tune the detector's response to varying smoke levels.

The PC-based configuration software will allow for the activation of remote detector functions.

The device will have a built-in magnetic reed switch, allowing for easy testing of the detector.

Each wireless dual optical smoke detector will have the capability to switch to a secondary redundant channel as a backup communication pathway.

The communication channels used by the wireless dual optical smoke detector will be independent of those used by the infrastructure devices.

This separation ensures enhanced wireless signal separation and performance.

The wireless dual optical smoke detectors can operate across a total of 22 pairs of field channels.

The fire alarm control equipment will provide full monitoring of the wireless dual optical smoke detectors.

The wireless dual optical smoke detector will be equipped with bi-coloured LEDs, allowing for clear visual status indication of its operational state. The wireless dual optical smoke detectors will have a manufacturer's recommended battery life of up to ten years.

The wireless dual optical smoke detectors will include a facility to lock the detector to the base using a grub screw, ensuring secure and tamper-resistant installation.

The wireless dual optical smoke detectors will have a minimum rating of IP40, indicating their resistance to dust ingress and providing reliable performance in indoor environments.

The system will allow for the visual representation of the device locations on a map or drawing. This visual map will provide information such as the address on the loop and the links between devices. Additionally, all device information can be generated and printed for use in an Operations and Maintenance (O&M) Manual.

The base of the wireless dual optical detector will feature a device identification tab.

It will be possible to add, remove, or replace the device in the system configuration using a unique ID in the form of a QR code. This can be accomplished through the dedicated PC-based software tool.

Compliance

The wireless dual optical smoke detectors will be approved by an independent accredited approval body in accordance with EN54-7 and EN54-25, and the Radio Equipment Directive (RED).

The detector shall operate on the 868MHz frequency band.

5.2 Wireless Multi-Sensor Detector Specification

General

The wireless multi-sensor detector will have a low-profile design and utilise the light scattering principle to measure smoke density. Additionally, it will incorporate a thermistor to measure the thermal conditions caused by fire. The detector will transmit digital communication through the system to the fire alarm control panel, ensuring efficient and reliable communication.

The wireless multi-sensor detector will be powered by two commercially available CR123A 3V lithium batteries located within the detector head. The wireless multi-sensor detector will be mounted on the ceiling and will feature an anti-tamper switch. This switch will be monitored by the fire alarm control panel, ensuring the integrity and security of the detector.

Functionality

Wireless multi-sensor detectors will integrate both dual optical smoke and heat detection technologies in compliance with EN54-7 and EN54-5 Class A1R standards, respectively.

PC-based configuration software will provide the capability to activate remote detector functions, allowing for convenient control and management of the device from a remote location. Additionally, the device will be equipped with a magnetic reed switch that can be used to test its functionality.

Each wireless multi-sensor detector will have the capability to switch to a secondary redundant channel.

The communication channels used by the wireless multi-sensor detector will be independent of those used by the infrastructure devices. This separation ensures enhanced wireless signal separation and performance, reducing the likelihood of interference or signal degradation.

The wireless multi-sensor detectors have the capability to operate across a total of 22 pairs of field channels.

The fire alarm control equipment will provide comprehensive monitoring of the wireless multi-sensor detectors. This ensures that the detectors are continuously supervised and any alarms or faults are promptly detected.

The wireless multi-sensor detector will incorporate bi-coloured LEDs, enabling clear visual indication of its status.

The wireless multi-sensor detectors will have a manufacturer's recommended battery life of up to ten years. This ensures long-lasting and reliable operation without the need for frequent battery replacements, contributing to the overall maintenance efficiency of the system.

The wireless multi-sensor detectors will be equipped with a facility to securely lock the detector to the base using a grub screw.

The wireless multi-sensor detectors will have a minimum rating of IP40, indicating their protection against solid objects larger than 1mm and providing reliable performance in indoor environments.

It will be possible to view the location of the wireless multi-sensor detectors on a visual map or drawing. This visual representation will include information such as the address on the loop, links between devices, and all relevant device information. It will also be possible to generate and print this information for use in an Operations and Maintenance (O&M) Manual.

The base of the wireless multi-sensor detector will feature a device identification tab, providing a convenient method to identify the detector. Adding, removing, or replacing the wireless multi-sensor detector within the system configuration can be accomplished by utilising a unique ID in the form of a QR code. This process is facilitated through the dedicated PC-based software tool, enabling convenient device management and configuration.

Compliance

Wireless multi-sensor detectors will be approved by an independent accredited approval body in accordance with EN54-5, EN54-7 and EN54-25, and the Radio Equipment Directive (RED). This ensures compliance with relevant standards and regulations, confirming the reliability and performance of the detectors.

The detector will operate on the 868MHz frequency band.

5.3   Wireless Heat Detector Specification

General

The wireless heat detector will have a low-profile design and utilise a thermistor to measure the thermal conditions resulting from fire. It will transmit digital communication through the system to the fire alarm control panel.

The heat detector will be powered by two commercially available CR123A 3V lithium batteries located within the detector head.

It will be mounted on the ceiling and include an anti-tamper switch, which will be monitored by the fire alarm control panel to ensure the detector's integrity and security.

Functionality

Wireless heat detectors will offer two modes of operation: Class BS high temperature (78°C) static profile and Class A1R (58°C maximum) profile. These modes can be programmed during the commissioning phase to meet the specific requirements of the installation.

Remote detector functions can be activated using the PC-based configuration software, enabling convenient control and management of the device from a remote location. Additionally, the heat detector will feature a magnetic reed switch that can be used to test its functionality. Each wireless heat detector will have the capability to switch to a secondary redundant channel, providing an alternate communication pathway for enhanced reliability and fault tolerance.

The communication channels used by the wireless heat detector will be independent of those used by the infrastructure devices, ensuring enhanced wireless signal separation and performance.

The wireless heat detectors can operate across a total of 22 pairs of field channels. They will be fully monitored by the fire alarm control equipment, ensuring comprehensive supervision and detection capabilities.

The wireless heat detector will include bi-coloured LEDs for clear visual status indication, allowing for quick and easy identification of its operational state.

The wireless heat detectors will have a manufacturer's recommended battery lifespan of up to ten years.

To ensure secure installation, the wireless heat detectors will feature a facility to lock the detector to the base using a grub screw.

The detectors will have a minimum rating of IP40, indicating protection against solid objects and providing reliable performance in various indoor environments.

It will be possible to view the location of the wireless heat detector on a visual map or drawing, as well as access information such as its address on the loop, links to other devices, and other relevant device details. This information can be generated and printed for use in an Operations and Maintenance (O&M) Manual.

The wireless heat detector will feature a device identification tab within its base.

Adding, removing, or replacing the device within the system configuration can be done using a unique ID in the form of a QR code. This can be accomplished through the dedicated PC-based software tool, facilitating efficient device management and configuration.

Compliance

Wireless heat detectors will be approved by an independent accredited approval body in compliance with EN54-5 and EN54-25, and the Radio Equipment Directive (RED). This ensures that the detectors meet the required standards for safety and performance.

The detectors will operate on the 868MHz frequency band.

5.4   Wireless Sounder Base Specification

General

The wireless base sounder can be used in conjunction with a wireless detector or independently with a cap. It will provide audible warning of fire events, ensuring that occupants are alerted to potential dangers.

The wireless base sounder will be powered by two commercially available CR123A 3V lithium batteries.

The wireless base sounder will include an anti-tamper switch, which will be monitored by the fire alarm control panel.

Adding, removing, or replacing the wireless base sounder within the system configuration can be accomplished using a unique ID in the form of a QR code. This can be done through the dedicated PC-based software tool, providing a convenient and efficient method for device management and configuration.

Functionality

The wireless base sounder will offer a selection of 32 pairs of tones within the device. This allows for customisation of the audible warning sound to suit the specific requirements of the installation.

The wireless base sounder will have both a primary and secondary accessible tone option. These tones can be controlled and activated through the fire alarm system, depending on the specific evacuation or alert message that needs to be communicated.

Wireless base sounders will have a typical sound output ranging from 88 to 91dB(A), depending on the selected tone and volume settings. The wireless base sounders will come with four volume levels as standard.

Each wireless base sounder will have the capability to switch to a secondary redundant channel, offering an alternative communication pathway for enhanced reliability and fault tolerance.

The communication channels used by the wireless base sounder will be independent of those used by the infrastructure devices. This separation ensures enhanced wireless signal separation and performance, reducing the likelihood of interference or signal degradation.

The wireless base sounder is capable of operating across a total of 22 pairs of field channels. Additionally, the wireless base sounders will be fully monitored by the fire alarm control equipment, ensuring comprehensive supervision and detection capabilities.

The manufacturer's recommended battery life for the wireless base sounder will be up to five years.

The wireless base sounders will have a minimum rating of IP21C, indicating their protection against solid objects larger than 12.5mm and resistance to condensation.

The wireless base sounder will be synchronised with all other output devices on the wireless system.

The system will provide the option to view the location of the wireless base sounder on a visual map or drawing. It will also display the address on the loop, links between devices, and all relevant device information. This information can be generated and printed for use in an Operations and Maintenance (O&M) Manual.

Adding, removing, or replacing the wireless base sounder within the system configuration can be easily accomplished using a unique ID in the

form of a QR code. This can be done through the dedicated PC-based software tool.

Compliance

Wireless base sounders will undergo approval by an independent accredited approval body in compliance with EN54-3 and EN54-25, and the Radio Equipment Directive (RED). This ensures that the base sounders meet the required standards for safety, performance and regulatory compliance.

The base sounders will operate on the 868MHz frequency band.

5.5 Wireless Sounder VAD Base Specification

General

The wireless base sounder VAD can be used in conjunction with a wireless detector or independently with a cap. It will provide both visual and audible warning of fire events, ensuring occupants are alerted to potential dangers effectively.

The wireless base sounder VAD will be powered by two commercially available CR123A 3V lithium batteries.

It will also include an anti-tamper switch, which will be monitored by the fire alarm control panel.

Functionality

The wireless base sounder VAD will offer a selection of 32 pairs of tones within the device.

The wireless base sounder VAD will have both a primary and secondary accessible tone option. These tones can be controlled and activated through the fire alarm system, depending on the specific evacuation or alert message that needs to be communicated.

Wireless base sounder VADs will have a typical sound output ranging from 88 to 91dB(A), depending on the selected tone and volume settings and will come with four volume levels as standard.

The wireless base sounder VAD will have the capability to produce either a red or white flash, depending on the specific variant of the product. The wireless base sounder VAD will offer two visual alarm settings: high and low.

The wireless base sounder VAD will have a C-3-15 setting in high power mode (white flash variant).

The wireless base sounder VAD will have a C-3-10 setting in low power mode (white flash variant).

The wireless base sounder VAD will have a C-3-10 setting in high power mode (red flash variant).

The wireless base sounder VAD will have a 0-1.7-6 setting in low power mode (red flash variant).

Each wireless base sounder VAD will have the capability to switch to a secondary redundant channel.

The wireless base sounder VAD will operate on communication channels that are independent of those used by the infrastructure devices. This separation ensures enhanced wireless signal separation and performance, reducing the risk of interference or signal degradation.

The wireless base sounder VAD is capable of operating across a total of 22 pairs of field channels.

The fire alarm control equipment will fully monitor the wireless base sounder VADs.

The wireless base sounder VAD is designed to have a manufacturer's recommended battery life of up to five years.

Wireless base sounder VADs will be rated to at least IP21C, providing sufficient protection against dust and moisture ingress.

The wireless base sounder VADs will be synchronised with all other devices in the wireless system.

The system will allow users to view the location of each wireless base sounder VAD on a visual map or drawing. Additionally, the system will display the address on the loop, the links between devices, and provide access to all relevant device information. This information can be generated and printed for use in an Operations and Maintenance (O&M) Manual, ensuring comprehensive documentation and facilitating efficient management and maintenance of the system.

Users will have the capability to add, remove, or replace the wireless base sounder VADs in the system configuration using a unique ID in the form of a QR code. This can be done conveniently through the dedicated PC-based software tool.

Compliance

Wireless base sounder VADs will be subject to approval by an independent accredited body in accordance with the EN54-3, EN54-23 and EN54-25 standards, as well as the Radio Equipment Directive (RED). This certification ensures that the wireless base sounder VADs comply with the required safety, performance and regulatory standards.

The base will operate on the 868MHz frequency band.

5.6   Wireless Manual Call Point Specification

General

The wireless manual call point will be a resettable type featuring a pushbutton, and it will have the option of a transparent hinged cover for added protection against accidental activation.

The device will be powered by two commercially available CR123A 3V lithium batteries.

The wireless manual call point will be designed for wall mounting and will include an anti-tamper switch that is monitored by the fire alarm control panel.

Functionality

Wireless manual call points will provide a clear visual indication when they have been activated. Resetting the call points will require the use of a special tool designed for that purpose.

Remote functions of the wireless manual call points can be activated through the PC-based configuration software.

Each wireless manual call point can switch to a secondary redundant channel when needed. This feature ensures reliable communication between the call point and the fire alarm system, even in the event of channel interference or disruption.

The communication channels used by the wireless manual call point will be separate and independent from those used by the infrastructure devices. This separation ensures enhanced wireless signal separation and minimises interference, allowing for reliable and efficient communication between the manual call point and the fire alarm system.

The wireless manual call point can operate across 22 pairs of field channels. It will be fully monitored by the fire alarm control equipment and will include bi-coloured LEDs for visual status indication.

The wireless manual call point will have a manufacturer's recommended battery life of up to ten years.

The wireless manual call points will be securely attached to their mounting box, with the front cover requiring a special tool for removal.

Wireless manual call points will have a minimum IP42 rating, ensuring a level of protection against solid objects and water ingress.

The system will provide the capability to view the location of the wireless manual call points on a visual map or drawing. This feature allows for easy identification and tracking of the call points' positions within the premises. Additionally, the system will display the address on the loop, allowing for precise identification and linkage to the fire alarm control panel. All relevant device information, including links between devices, can be generated and printed for inclusion in an Operation and Maintenance (O&M) Manual.

The system supports the use of a unique ID in the form of a QR code to add, remove, or replace wireless manual call points. This enables quick and efficient configuration through the dedicated PC-based software tool, ensuring smooth integration into the system.

Compliance

Wireless manual call points undergo thorough evaluation and are approved by an independent accredited approval body according to EN54-11 and EN54-25, and the Radio Equipment Directive (RED).

The call point will operate on the 868MHz frequency band.

5.7   Wireless Wall Sounder Specification

General

The wireless wall sounder provides audible warning signals during fire events.

The wireless wall sounder is powered by two commercially available CR123A 3V lithium batteries.

The wireless wall sounder will feature an anti-tamper switch that is monitored by the fire alarm control panel.

Functionality

The wireless wall sounder offers a selection of 32 pairs of tones for sound output.

The wireless wall sounders allow for primary and secondary tone options that can be controlled by the fire alarm system, depending on the specific evacuation or alert message that needs to be communicated.

Wireless wall sounders shall typically produce sound outputs ranging from 86 to 100dB(A), depending on the selected tone and volume settings. The standard configuration of wireless wall sounders includes three volume levels. Additionally, these sounders will be available in either red or white plastics.

Each wireless wall sounder can switch to a secondary redundant channel for enhanced reliability.

The wireless wall sounder operates on communication channels that are independent of those used by the infrastructure devices. This ensures enhanced wireless signal separation and reliability.

The wireless wall sounder is capable of operating across 22 pairs of field channels. It is fully monitored by the fire alarm control equipment to ensure its proper functioning and to provide reliable fire alarm notification.

The wireless wall sounder is designed to have a manufacturer's recommended battery life of up to five years.

Wireless wall sounders shall have an IP (Ingress Protection) rating of at least IPX5. This rating ensures that the sounders are protected against dust and water ingress to a sufficient degree, making them suitable for indoor installation and providing durability and reliability in various environments.

The wireless wall sounder shall be synchronised with all other devices within the wireless system, ensuring coordinated and simultaneous operation in the event of a fire event.

The wireless wall sounder shall support features that enable users to view its location on a visual map or drawing. This information includes the address on the loop, links between devices, and all relevant device information. These details can be accessed and documented for use in an Operation and Maintenance (O&M) Manual, providing comprehensive documentation of the system configuration and setup.
Users will have the capability to add, remove, or replace the wireless wall sounder in the system configuration. This can be done conveniently through the use of a unique identification (ID) in the form of a QR code. By utilising the dedicated PC-based software tool, the device can be easily recognised and managed within the system.

Compliance

Wireless wall sounders will undergo approval by an independent accredited body to meet the requirements of relevant standards such as EN54-3 and EN54-25, and the Radio Equipment Directive (RED).

The wireless wall sounder shall operate on the 868MHz frequency band.

5.8 Wireless Wall Sounder VAD Specification

General

The wireless wall sounder VADs provide both visual and audible fire event warnings.

The wireless wall sounder VAD shall be powered by readily available CR123A 3V lithium batteries.

The wireless wall sounder VAD shall be equipped with an anti-tamper switch that is monitored by the fire alarm control panel.

Functionality

The wireless wall sounder VAD shall offer a selection of 32 pairs of tones.

It shall provide primary and secondary accessible tone options that can be controlled by the fire alarm system based on the evacuation or alert message to be communicated.

The typical sound output of the wireless wall sounder VADs shall range from 86 to 100dB(A), depending on the tone and volume settings.
The wireless wall sounder VADs shall come with three standard volume levels. They shall be available in red or white body colours. The wireless wall sounder VAD shall have a W-2.5-7 rating.

Each wireless wall sounder VAD shall have the capability to switch to a secondary redundant channel.

The communication channels used by the wireless wall sounder VAD shall be separate from those used by the infrastructure devices to enhance wireless signal separation.

The wireless wall sounder VAD can operate across 22 pairs of field channels. It shall be fully monitored by the fire alarm control equipment.
The wireless wall sounder VAD shall have a manufacturer's recommended battery life of up to five years.

Wireless wall sounder VADs shall have an IP (Ingress Protection) rating of at least IPXS, indicating their level of protection against solid objects and water ingress.

The wireless wall sounder VAD shall be synchronised with all other output devices within the wireless system.

The wireless wall sounder VAD provides detailed location information, loop addressing, device interconnection, and device data that can be used to generate accurate visual maps, system diagrams and comprehensive Operation and Maintenance (O&M) manuals.

The wireless wall sounder VADs can be easily added, removed or replaced within the system configuration by utilising a unique ID in the form of a QR code. This process is facilitated through the dedicated PC-based software tool, allowing for efficient management and customisation of the system setup.

Compliance

Wireless wall sounder VADs undergo thorough testing and evaluation by an independent accredited approval body to ensure compliance with industry standards and regulations. They are approved to meet the requirements of EN54-3 and EN54-25, as well as the Radio Equipment Directive (RED).

The wireless wall sounder VAD operates on the 868MHz frequency band.

5.9 Wireless Input Module Specification

General

The wireless input module enables the monitoring and integration of third-party equipment by wirelessly connecting to the fire alarm control panel. This allows for seamless communication and integration with external devices.

The wireless input module is powered by two commercially available CR123A 3V lithium batteries.

The wireless input module is equipped with an anti-tamper switch, which is monitored by the fire alarm control panel.

Functionality

Wireless input modules provide a single monitored input for third-party equipment monitoring.

Cause and effect configurations for the activation of the input will be set up within the recommended fire alarm control panel provided by the wireless system manufacturer.

The wireless input module must also have the capability to provide a fault-monitored fire active input.

Each wireless input module shall have the capability to switch to a secondary redundant channel.

The communication channels used by the wireless input module shall be separate and independent from those used by the infrastructure devices in order to ensure enhanced wireless signal separation.

The wireless input module is capable of operating across 22 pairs of field channels. It is also fully monitored by the fire alarm control equipment. The wireless input module has a manufacturer's recommended battery life of up to ten years.

The wireless input module is designed to meet a minimum IP65 rating, ensuring its protection against dust and water ingress.

The wireless input module enables users to view its location on a visual map or drawing within the system. This feature allows for easy identification of the module's placement, along with its associated loop address and links to other devices. In addition, the module provides comprehensive device information that can be generated and printed for use in an Operation and Maintenance (O&M) Manual.

Compliance

Wireless input modules are approved to EN54-18 and EN54-25, and the Radio Equipment Directive (RED).

The module will operate on the 868MHz frequency band.

5.10 Wireless Output Module Specification

General

The wireless output module enables control of third-party equipment through wireless communication with the infrastructure devices and fire alarm control panel.

The wireless output module is powered by two commercially available CR123A 3V lithium batteries.

It includes an anti-tamper switch that is monitored by the fire alarm control panel.

It is possible to add, remove or replace the device to the system's configuration using a unique ID in the form of a QR code through the dedicated PC-based software tool.

Functionality

Wireless output modules provide a 24V DC switched output, and the 24V DC power is supplied by an external EN54-4 approved power supply unit (PSU).

The wireless output modules shall offer a switched output at 24V DC with a maximum current of 50mA.

The internal relay of the output module will have a rating of 30V DC with a maximum switch rating of 2 Amps.

The internal relay of the output module shall provide options for both normally open and normally closed contacts, which will switch when activated.

Cause and effect will be set up within the wireless system manufacturer's recommended fire alarm control panel.

The wireless output module must possess the capability of delivering a fault-monitored output. Additionally, it should allow for the activation of remote functions through the configuration software on the PC.

Every wireless output module should possess the capability to seamlessly switch to an alternative redundant channel.
To ensure improved wireless signal separation, the communication channels utilised by the wireless output module shall be independent from those employed by the infrastructure devices.

The wireless output module is designed to operate across a total of 22 pairs of field channels. The fire alarm control equipment will monitor the wireless output module to ensure proper functioning.

The wireless output module should have a recommended battery life of up to five years.

The wireless output module is required to have a rating of at least IP65, indicating its ability to withstand dust ingress and protect against water jets from any direction.

There should be a provision to view the location of the wireless output module on a visual map or drawing, along with its corresponding address on the loop. Additionally, the system should display the connections between devices and provide access to all relevant device information, which can be generated and printed for inclusion in an Operations and Maintenance (O&M) Manual.

The dedicated PC-based software tool should enable the addition, removal, or replacement of the wireless output module within the system's configuration. This process will be facilitated through the use of a unique ID in the form of a QR code.

Compliance

The wireless output modules must undergo approval by an independent accredited body in compliance with EN54-18 and EN54-25 standards.

Additionally, they should also adhere to the requirements of the Radio Equipment Directive (RED).

The module will operate on the 868MHz frequency band.

6   Software & Diagnostic Tools

6.1   Wireless Survey Kit Specification

General

The wireless survey kit should facilitate the assessment of signal strength between infrastructure devices and field devices. This assessment will enable the fire alarm contractor to generate a report on how the system should be configured for optimal performance.

Functionality

The wireless survey kit shall possess the capability to connect to a mobile or tablet device. This connection will enable the conduction of an enhanced survey report, providing a comprehensive analysis of the wireless system.

The wireless survey kit will furnish information regarding signal strength, background noise levels, optimal channel selection for installation, and the percentage of packet loss.

For each device, the wireless survey kit will provide a signal strength value indicating whether it is categorised as good, marginal, or bad.

The wireless survey kit app will include the functionality to add photos and location text to each surveyed point.

Upon completion of a survey, the wireless survey kit app will generate a PDF report.

6.2   Software Tools Specification

General

The wireless system will be equipped with PC-based software designed to assist with installation, commissioning and maintenance.

Functionality

The PC-based software shall offer a visual representation of the device's location on a map or drawing. This mapping functionality will be enabled by scanning the device into the software using a unique QR code.

In addition, the PC-based software will present crucial information such as the loop address, radio address and specific details pertaining to each individual device.

The PC-based software will provide real-time data visualisation, allowing users to monitor the signal strength between devices. This live data representation will utilise colours to indicate the strength levels, distinguishing between very good, good, marginal, and bad signal strength.

The PC-based software will include an event log feature that captures and presents a record of the translator connected to the PC.

The PC-based software will offer the capability to generate and print a PDF report for use in an Operations and Maintenance (O&M) Manual.

7   System Range

The wireless fire alarm system range includes the following devices:

Part No.	Description
Wi-Fyre Xenos Wireless Translator & Expander Modules	
10-200	Wi-Fyre Xenos Wireless Translator
10-201	Wi-Fyre Xenos Wireless Expander
10-202	Wi-Fyre Xenos Wireless Conventional Translator
Wi-Fyre Xenos Wireless Devices	
10-210	Wi-Fyre Xenos Wireless Optical Smoke Detector
10-211	Wi-Fyre Xenos Wireless Multi-Sensor Detector
10-212	Wi-Fyre Xenos Wireless Heat Detector
10-213	Wi-Fyre Xenos Wireless Sounder Base
10-214	Wi-Fyre Xenos Wireless Sounder VAD Base, White Flash
10-215	Wi-Fyre Xenos Wireless Sounder VAD Base, Red Flash
10-216	Wi-Fyre Xenos Wireless Manual Call Point
10-217	Wi-Fyre Xenos Wireless Remote Indicator
10-218	Wi-Fyre Xenos Wireless Input Module
10-219	Wi-Fyre Xenos Wireless Output Module
10-220	Wi-Fyre Xenos Conventional Wall Sounder, Red
10-222	Wi-Fyre Xenos Conventional Wall Sounder, White
10-224	Wi-Fyre Xenos Conventional Wall Sounder VAD, Red
10-225	Wi-Fyre Xenos Conventional Wall Sounder VAD, White
10-223	Wi-Fyre Xenos Wireless Wall Sounder Module
10-221	Wi-Fyre Xenos Wireless Survey Kit
10-257	Wi-Fyre Xenos Connect Dongle
Wi-Fyre Xenos Wireless Translator & Expander Modules, Black	
10-203	Wi-Fyre Xenos Wireless Translator, Black
10-204	Wi-Fyre Xenos Wireless Expander, Black
Wi-Fyre Xenos Wireless Devices, Black	
10-226	Wi-Fyre Xenos Wireless Optical Smoke Detector, Black
10-227	Wi-Fyre Xenos Wireless Multi-Sensor Detector, Black
10-228	Wi-Fyre Xenos Wireless Heat Detector, Black
10-229	Wi-Fyre Xenos Wireless Sounder Base, Black
10-230	Wi-Fyre Xenos Wireless Sounder VAD Base, Black, White Flash