

ID3000 Addressable Fire Detection and Alarm System Specification

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Scope of Work

To design, supply and install a Digital Addressable Fire Alarm Detection and Alarm System in accordance with the details specified herein and in accordance with supplied drawings.

The EN54 Part 2 & 4 Fire System

The system shall include all materials, equipment and wiring required to install the complete Fire Detection and Alarm System. The system shall include but not be limited to one or more control panels, repeater panels, and detectors, call points, audible and visual alarm indicating devices and relays.

The installation shall include the laying of all cables required for connection of the detection, alarm indicating and other devices along with connections to the power supply as appropriate to the design. All cabling shall conform to the requirements and recommendations of the Fire Alarm Control Panel manufacturer. Any openings /chasing in walls, ceilings or floors shall be fire-stopped as appropriate and made good.

The system shall be designed such that no more than 80% of the available signalling / detection loop capacity is employed to allow for future requirements.

Standards

The fire detection system shall be designed, installed and commissioned in accordance with, and all elements shall meet the requirements of:

- BS5839-1: 2013 Code of Practice for automatic fire detection and alarm systems
- EN54-Part 2: Control and indicating equipment
- EN54-Part 3: Audible fire alarm devices
- EN54-Part 4: Power supply equipment
- EN54-Part 5: Heat Detectors – point type
- EN54-Part 7: Smoke Detectors – point type using scattered light
- EN54-Part 8: High temperature heat detectors
- EN54-Part 10: Flame detection
- EN54-Part 11: Manual call points
- EN54-Part 12: Beam smoke detectors
- EN54-Part 15: Multi-detector fire detectors
- EN54-Part 17: Isolators
- EN54-Part 18: Input / Output modules
- EN54-Part 20: Aspirating smoke detection
- EN54-Part 23: Visual alarm devices
- EN54-Part 25: Radio linked devices
- EN54-Part 26: Point detectors using CO elements
- EN54-Part 27: Duct smoke detectors
- BS7671 - IEE Wiring Regulations
- BS7273 Code of practice for the operation of fire protection measures Part 4: Actuation of release mechanisms for doors

The responsible company should be able to demonstrate their competence to design, install and commission the system, e.g. by certification to BAFE SP203, LPS1014 or other relevant standard.

The equipment manufacturer shall operate a quality management system in accordance with ISO 9001:2000. In addition, the equipment shall be manufactured and Third Party Certificated under a recognised factory control procedure.

All detection devices shall be independently certified as complying with the relevant EN54 standard.

The Fire Alarm Control Panel shall be independently certified as complying with requirements of EN54 Part 2 and EN54 Part 4.

The Fire Alarm Control Panel shall be independently certified as complying with requirements of EN54 Part 2 and EN54 Part 4.

The Control and Indicating Equipment (C.I.E) shall be independently certified as complying with requirements of EN54 Part 2 and EN54 Part 4, including any Network devices to connect multiple C.I.E together.

In addition to the basic requirements of EN54, the C.I.E shall offer the following EN54 optional features with requirements:

Optional Functions:		EN54-2 Clause
Indication	Fault signals from fire protection equipment	7.10.4
	Alarm counter	7.13
	Fault Signals from points	8.3
Outputs	Fire alarm devices	7.8
	Fire alarm routing equipment	7.9.1
	Fire alarm routing equipment with confirmation	7.9.2
	Fault warning routing equipment	8.9
Controls	Investigation delays to outputs	7.11.1
	Manual or automatic switching of delays to outputs	7.11.2
	Dependency on more than one alarm signal. Type B	7.12.2
	Dependency on more than one alarm signal. Type C	7.12.3
	Disablement of points	9.5
	Test condition	10
Power Supply Equipment Functions:		EN54-4 Clause
	Operation from a main power supply	5.1
	Operation from a standby battery	5.2
	Monitor and charge the standby battery	5.3
	Recognise and notify supply faults	5.4

The Fire Alarm Control Panel shall also support a number of additional functions that are not covered by EN54. These additional functions shall include:

- Programmable Cause / Effect on Outputs (E.g. Phased Evacuation)
- Auxiliary Power Supply Output
- Auxiliary Relay Outputs

Control and Indicating Equipment (C.I.E)

Functional Description

The main C.I.E (Control and Indicating Equipment) shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent sensors, addressable modules, printers, repeaters, and other system controlled devices. It shall be possible to change between the following languages: English (default) – Spanish – Icelandic – Portuguese.

Function

The main C.I.E shall perform the following functions:

Supervise and monitor all intelligent/addressable sensors and modules connected to the system for normal, fault and alarm conditions.

Supervise all initiating signalling and indicating circuits throughout the facility by way of connection to monitor and control modules, or direct connection to the C.I.E.

Detect the activation of any initiating device and the location of the alarm condition. Operate all indicating appliances and auxiliary devices as programmed.

Visually and audibly, annunciate any fault or alarm condition on the panel display, and repeaters.

System Capacity and General Operation

The C.I.E. shall provide, or be capable of expansion to a maximum of eight addressable loops.

The C.I.E shall provide, or be capable of expansion to 198 intelligent/addressable devices per loop plus 31 repeaters or mimics per C.I.E.

The C.I.E. shall include a fully featured operator interface control and annunciation panel that shall include a backlit 240 x 64 pixel Graphics Liquid Crystal Display, individual, colour coded system status LED's, and a keypad for field programming and control of the Fire Alarm System.

The C.I.E. shall meet the requirements of EN54 Pt. 2 and 4 without the need for separate indication LED's for each zone of fire. Mandatory annunciation shall be carried out with the use of system status LED's and the LCD alone.

All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the C.I.E.

The C.I.E. shall be able to provide the following features:

- Control-By-Event-By-Time.
- Day/Night Sensitivity settings.
- Device Blink Control.
- Log/Display Reports.
- Alarm Delays.
- Non-Alarm Module Reporting.
- Periodic Detector Test.
- Non-addressed device detection (address 0).
- Duplicate address detection.
- Walk Test.
- Upload/Download to PC Computer.
- "Autolearn" facility
- Class change
- Real Time Display of Analogue Data.
- Degraded mode of operation
- "Virtual Keyboard"

Central Processing Unit

The Central Processing Unit shall communicate with, monitor, and control all other modules within the control panel. Removal, disconnection or failure of any control panel module shall be detected and reported to the System Display by the Central Processing Unit.

The Central Processing Unit system shall contain and execute all Control-By-Event programs for specific action to be taken if an alarm condition is detected by the system. Such Control-By-Event programs shall be held in non-volatile programmable memory, and shall not be lost even if system primary and secondary power failure occurs.

The Central Processing Unit shall contain up to 32 characters of custom alphanumeric location text labels for each Intelligent Sensor and Addressable Module.

The Central Processing Unit system shall contain up to 32 characters of custom alphanumeric location text labels for each Zone of Fire.

The Central Processing Unit shall be capable of being programmed with device and input/output mapping information on site without requiring the use of any external programming equipment. Systems that require the use of external programmers or change of EPROM's are not acceptable.

The manufacturer's representative shall also be able to program the C.I.E. information, in full, on a P.C. based support tool, which shall make full use of standard Windows™ features. This support tool shall be able to read the data from the panel and store it on a portable memory.

C.I.E.'s sharing the Central Processing Unit between network processing and fire detection processing are not acceptable.

Display

The System Display shall provide all the controls and indicators required by the system operator and may also be used to program all system operational parameters.

The System Display shall provide a 240 x 64-pixel graphics backlit Liquid Crystal Display (LCD).

The "contrast" or "viewing angle" shall be adjustable via the software for optimal viewing in ambient site conditions.

The System Display shall provide 15 Light-Emitting-Diodes (LED's) that will indicate the status of the following system parameters. FIRE (2 LED's), FAULT (2 LED's), PRE-ALARM, SYSTEM FAULT, SOUNDER FAULT / DISABLED, FIRE O/P FAULT / DISABLED, FIRE O/P ACTIVE, DISABLEMENT, TEST, POWER, DAY MODE, DELAYS ACTIVE, and TECHNICAL ALARM.

The System Display shall provide for the addition of 64, 128 or 256 sets of supplementary red Light-Emitting-Diodes (LED's), that will provide warning of fire by zone, and amber Light-Emitting-Diodes (LED's) that will provide warning of fault, disablement and test, by zone.

The System Display shall provide a 17-button keypad for entry of any alphanumeric information, and field programming. Two configurable pass codes will give access to system levels, accessible through the Display Interface. An optional Lexan door assembly shall be provided to prevent unauthorised access to the system display.

The System Display shall include the following operator control switches: MUTE BUZZER, EXTEND DELAY, END DELAYS/EVACUATE, SILENCE/RESOUND, RESET, DAY MODE, FIRE O/P DISABLE, CHANGE TABS, and ZONES IN ALARM.

Loop Interface Boards

The C.I.E. shall be supplied as standard equipped with interfaces for two Signalling Line Circuits (SLC)

Optional additional Loop Interface Boards (LIB's) shall be provided to monitor and control two Signalling Line Circuits (SLC Loops) each in the system. The Loop Interface Board shall contain its own micro-controller.

For fire systems where the total number of fire input devices exceeds 512, optional Enhanced Loop Interface Boards (E-LIB's) shall be provided to monitor and control two Signalling Line Circuits (SLC Loops) each in the system. The E-LIB shall contain its own micro-processor, which shall be capable of continuous monitoring of the SLC in the event of the main C.I.E. micro-processor failure, and raising an alarm condition when a loop device is in a fire state.

E-LIB's may be freely intermixed with standard LIB's within a single C.I.E.

The Loop Interface Board shall not require any jumpers, cuts or address switch settings to initialise SLC Loop operations.

The Loop Interface Board shall provide power to, and communicate with, all of the Intelligent/Addressable sensors and Addressable Modules connected to its SLC Loop over a single pair of wires.

The Loop Interface Board shall receive analogue information from all Intelligent Sensors and shall pass this information for processing to determine whether normal, alarm, or fault conditions exist for that particular sensor. The analogue information may also be used for automatic sensor testing and for the automatic determination of sensor maintenance requirements.

The Loop Interface Board shall communicate with up to 198 Intelligent/Addressable sensors and Addressable Modules on each SLC loop and verify proper device function and status.

The communications between the Loop Interface Board and the addressable devices will be single fault tolerant in that a single open circuit-cabling fault will not restrict the operation of the system at all. Limitations due to a short circuit cable fault will be dependent on positioning of short circuit isolator modules.

A manufacturer's software tool shall be available to ascertain the loop loading is within functional limitations, based on cable length and type, loop powered devices themselves, and the distribution of the loop load, accounting for any required spare capacity. Results from this tool shall be used as guarantee that the system shall operate correctly under the specified conditions, including a loop open circuit fault whilst operating on low standby batteries.

Enclosures

The control panels shall be housed in a cabinet suitable for surface or semi-flush mounting. Cabinet and front cover shall be corrosion protected and in manufacturer's standard finish.

The back box shall be constructed of sheet zintec with provisions for electrical conduit connections into the top and bottom.

The front cover shall be of a painted Glass Filled Polyester Thermoset Plastic moulding (DMC) with the option of a clear Lexan window to protect the display and controls.

The C.I.E. shall be modular in structure for ease of installation and maintenance.

It shall be possible to extend the system capacity up to the maximum without the need to replace the original back box, nor unduly affecting the aesthetics, by the addition of suitable expansion cabinets.

Peripheral

Each peripheral device connected to the CPU shall be continuously scanned for proper operation. Data transmissions between the CPU and peripheral devices shall be reliable with high error rejection. The transmission scheme used should employ dual transmission or other equivalent error checking techniques.

Power Supply

The Main Power Supply shall operate on 230 VAC, 50 Hz, and shall provide all necessary power for the C.I.E.

It shall provide 3 amps of user indicating appliance power, using a switching 24 VDC regulator.

It shall provide a charger for batteries capable of a minimum of 24 hours of standby.

There will be additional power supply units available, of 4.5 and 7.0 amp capacity for larger systems.

The 3A or 4.5A supplies shall be capable of being mounted in the same cabinet as the C.I.E, which shall also provide space to house batteries of up to 38 Ah capacity.

The 4.5A and 7.0A power supply units shall be capable of being housed in a separate custom enclosure, capable of additionally housing batteries of up to 78AH capacity. A further cabinet to house batteries up to 130 AH shall be available.

A manufacturer's software tool shall be available to calculate the required battery capacity for the system, based on the total loading of the system and the standby time required.

System Circuit Supervision

The C.I.E shall supervise all circuits to intelligent devices, annunciators and conventional peripherals and annunciate loss of communications with these devices. The CPU shall continuously scan devices for proper system operation and upon loss of response from a device shall sound an audible fault, indicate that device or devices are not responding and print the information on the printer if fitted.

Sprinkler system valves and flow switches shall be supervised for "off normal" state.

Printer

The printers shall be of the automatic thermal type, printing the event date and time, device location, event category, and condition.

The printer shall be capable of printing a minimum of 80 characters per second.

It shall be possible to suspend or disable the printer via action at the primary controls.

It shall be possible to "forward" the printer paper by a manual action at the primary controls.

The printer shall provide hard-copy printout of all changes in status of the system and shall time-stamp such printouts with the current time-of-day and date.

Field Programming

The system shall be programmable, configurable and expandable in the field without the need for special tools or electronic equipment and shall not require field replacement of electronic integrated circuits.

All programming shall be accomplished through the standard C.I.E. keyboard or via the off-line P.C. based configuration package.

All field-defined programs shall be stored in non-volatile memory.

The programming function shall be enabled with a password that may be defined specifically for the system when it is installed. Two levels of user configurable password protection shall be provided.

Specific System Operations

Smoke sensor Sensitivity Adjust: Means shall be provided for adjusting the alarm and pre-alarm sensitivity of any or all analogue intelligent smoke sensors in the system from the System keypad. Sensitivity range shall be within the allowed EN54 limits and requirements.

Alarm Delays: Each of the intelligent/addressable smoke sensors in the system may be independently selected and enabled to be an alarm delayed sensor. The Alarm delay function shall be programmable for each sensor and shall be selected during the field programming of the system. The Alarm delay shall not require any additional hardware in the C.I.E. Configured delay times shall be within the allowed EN54 limits and requirements.

Disabling: Any device or zone of devices in the system may be enabled or disabled through the system keypad. When a device is disabled the C.I.E shall continue to monitor the device and shall log fire and fault events, but will not annunciate or act on those events. Such events shall be distinguishable from those of enabled devices.

It shall be possible to disable individual devices or their respective zones when they are in Fire or Pre-Alarm with a short cut method such that the user need only select from the list of zones or devices in that state at that time.

It shall be possible to enable individual devices or zones with a short cut method such that the user need only select from the list of disabled devices at that time.

Test: It shall be possible to perform a one person test by zone. Individual output devices shall be capable of being activated and de-activated from the control panel for test purposes.

A real time tally of the number of devices within the zone, which have been tested, and those remaining untested, shall be displayed on the LCD.

It shall be possible to end a zone test with a short cut method.

Log/Display Reports: Upon command from an operator, a display of any device shall be provided showing the real time analogue value.

System History Recording and Reporting: The C.I.E shall contain a History Buffer that will be capable of storing up to 600 system input/control events. Each of these events will be stored with a time and date stamp for the actual event. The contents of the History Buffer may be manually reviewed on the LCD or sent to the printer.

The History Buffer shall use non-volatile memory. Systems that use volatile memory or battery backed memory for history storage are not acceptable.

Serially Connected Repeater / Mimic Requirements

The repeaters and mimic controllers shall communicate with the fire alarm control panel via an RS485 (multi-drop) communications link. Up to 31 Repeaters / Mimic Controllers may be connected to the RS485 communications cabling.

The repeaters / mimics shall require only four wires to provide power and data.

Each repeater shall provide full text location detail as indicated at the main C.I.E.

The repeater shall provide switches to control MUTE BUZZER, END DELAY/EVACUATE, SILENCE/RESOUND, CHANGE TABS, ZONES IN ALARM, and RESET functions.

Batteries

Shall be 2x12 volt, Sealed Lead Acid type.

Batteries shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 30 minutes of alarm upon a normal AC power failure.

A manufacturer's supplied Windows™ software tool shall be used to provide the calculations required to determine the minimum battery capacity required for the associated system loading over the expected standby time.

Networking

The network system shall be third party approved to EN54 part 2 as a distributed C.I.E.

The manufacturer shall demonstrate by means of third party documentation that the system meets the requirement that multiple C.I.E's are approved as a distributed system and not that individual C.I.E's are approved containing a communication interface.

Functionality

The network shall use a multi token-passing, non-collision-based protocol.

A single token shall be used between two stations only and be un reliant on any other token in the system.

Two communication links shall be provided on each network node capable of communicating independently of each other. Each communication links shall be electrically isolated.

When the network node receives a message, the message shall be regenerated and error checked before it is re-transmitted to the next network node.

A priority message system must be provided so that fire response is prioritised above other network messages.

Each network node shall have an independent microprocessor dedicated to control of the network. The use of the C.I.E microprocessor for network control is not acceptable.

Network distance boosters shall be available if required.

Network Capacity and General Operation

It shall be possible to connect up to 125 nodes on the entire network.

The network shall be capable of accepting up to 63 C.I.E's.

The propagation delay though any network node shall not exceed 55mS for any message not including low priority messages at the time when they may be overtaken at the node by a higher priority message.

A single network fault, either open or short circuit between nodes, shall have no effect on the transmission within the network.

The network shall be true peer-to-peer performance and not be reliant on any single node in the system to control the network information.

The control of the entire network is possible from any C.I.E. in terms of system control functions, Disablesments, testing or the display of device statuses including analogue real time value.

Supervision of open & short circuit shall be provided between all nodes.

Optional earth fault monitoring shall be provided.

The network shall be connected in a closed ring. Networks using sub network / stubs or Master/slave architecture are not acceptable.

The network system shall provide the capability to synchronise addressable loop sounders across the network.

Network Cabling

The network cable shall be two core copper cable suitable for the purpose. Fibre optic cable shall be used if specified. Fibre optic cable shall be 50/125 or 62.5/125 mm duplex fibre only.

One fibre optic card shall be provided per C.I.E as required. The fibre optic card shall be a dual port converter.

Use of fibre shall not impose any delay on message.

It shall be possible to mix fibre optic and copper cables in each C.I.E. or booster such that any node may convert from one media to another.

Serially Connected Voice Alarm/Public Address Systems

The fire detection control panel shall support a programmable serial interface a to a voice alarm system such that additional cause and effect can be implemented without the addition of further interface hardware during the life of the system.

Addressable Photoelectric Smoke Detector Specification

Compliance with standards

The Addressable Photoelectric Smoke Detector shall be third party approved to EN54 part 7.

Functionality

The Detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the C.I.E, send data to the panel digitally representing the analogue level of smoke density.

Photoelectric Smoke Detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

The detectors shall be fitted with a loop isolation device in-built into the device.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

Group Polling

The detector shall be capable of group polling with improved performance a result.

There shall be no limit to the number of devices that can be grouped together on the same loop.

Implementation of group polling feature shall decrease response time for an alarm to be detected to less than 2.5 seconds, the use of complex cause and effect programming shall not increase the operation of all output devices to more than 10 seconds.

Test functions

The Detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

Address setting

The Detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Detectors shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Detector.

Visual indication

The Detectors shall provide dual bi-colour LED's. Both LED's enable red, amber and green local status indication also indicating that the Detector is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Detector Dirty
- Test Mode
- Chamber Fault

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program. An output connection shall also be provided in the base to connect an external remote alarm LED.

Sensitivity settings

The Detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

These sensitivity levels shall not contravene EN54 part 7 unless placed in to thermal (heat) only mode in which case the unit shall comply with EN54 part 5.

Drift compensation

The Detector shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance.

The use of this function shall not contravene EN54 part 7.

Additional requirements

Optional relay base and isolator base variants shall be available.

Up to 99, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The sensitivity of each detector shall be set in the C.I.E.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable Thermal Heat Detector Specification

Compliance with standards

The Heat Detector shall be third party approved to EN54 part 5. Types A1R, A1, and BS shall be available.

Functionality

The Detectors shall use an electronic detector to measure thermal conditions caused by a fire and shall, on command from the C.I.E, send data to the panel representing the analogue or digital level (the temperature) at the detector.

Heat Detectors shall be intelligent and addressable devices, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

The detectors shall be fitted with a loop isolation device in-built into the device.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

Group Polling

The detector shall be capable of group polling with improved performance a result.

There shall be no limit to the number of devices that can be grouped together on the same loop.

Implementation of group polling feature shall decrease response time for an alarm to be detected to less than 2.5 seconds, the use of complex cause and effect programming shall not increase the operation of all output devices to more than 10 seconds.

Test functions

The Detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E. Such a test may be initiated at the Detectors itself (by activating a magnetic switch) or initiated remotely on command from the C.I.E.

Address setting

The Detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Detectors shall store an internal identifying code that the control panel shall use to identify the type of Detector.

Visual indication

The Detectors shall provide dual bi-colour LED's. Both LED's enable red, amber and green local status indication also indicating that the Detector is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Detector Dirty
- Test Mode
- Chamber Fault

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program. An output connection shall also be provided in the base to connect an external remote alarm LED.

Sensitivity settings

The Detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted to the panel on a time-of-day basis.

These sensitivity levels shall not contravene EN54 part 5.

Additional requirements

Optional relay base and isolator base variants shall be available.

Up to 99, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The sensitivity of each detector shall be set in the C.I.E.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable Multi-Criteria SMART2 Detector Specification

Compliance with standards

The Multi-Criteria Detector shall be third party approved to EN54 part 7 & 5, CEA 4021 Type C multi detector.

Functionality

The Detector shall use the photoelectric (light-scattering) principal to measure smoke density in conjunction with dual thermistors to measure heat and shall, on command from the C.I.E, send data to the panel representing the fire risk.

The Detector shall incorporate a micro processor that combines the signals from the photoelectric smoke chamber, and the thermistor heat detector elements using algorithms that include a time element to provide an increased immunity to false alarm whilst maintaining the earliest warning of real fire condition.

Multi-Criteria Detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

The detectors shall be fitted with a loop isolation device in-built into the device.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

Group Polling

The detector shall be capable of group polling with improved performance a result.

There shall be no limit to the number of devices that can be grouped together on the same loop.

Implementation of group polling feature shall decrease response time for an alarm to be detected to less than 2.5 seconds, the use of complex cause and effect programming shall not increase the operation of all output devices to more than 10 seconds.

Test functions

The Detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

Address settings

The Detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Detectors shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Detector.

Visual indication

The Detectors shall provide dual bi-colour LED's. Both LED's enable red, amber and green local status indication also indicating that the Detector is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy

- Fire
- Fault – Isolation in use
- Detector Dirty
- Test Mode
- Chamber Fault

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program.

An output connection shall also be provided in the base to connect an external remote alarm LED.

Sensitivity settings

The Detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

The detector shall be capable of 6 sensitivity settings.

Alarm Level 1 - 1%/ft Smoke
Alarm Level 2 - 2%/ft Smoke
Alarm Level 3 - 3%/ft Smoke
Alarm Level 4 - 3%/ft Smoke
Alarm Level 5 - 3%/ft Smoke
Alarm Level 6 - Class A1R. Heat only alarm.

These sensitivity levels shall not contravene EN54 part 7 unless placed in to thermal (heat) only mode in which case the unit shall comply with EN54 part 5.

The Detector shall be able to be placed in to a thermal (heat) only mode of operation from command from the C.I.E. This shall be automatic on a time-of-day basis or by means of a manual operation at the C.I.E. The Detector shall include two self optimising sensitivity levels that will adjust to the optimum sensitivity based on the long term environmental conditions of the unit's surroundings.

Drift compensation

The Detector shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The use of this function shall not contravene EN54 part 7.

Additional requirements

Optional relay base and isolator base variants shall be available.
Up to 99, intelligent Detectors may connect to one SLC loop.
The C.I.E software, not the detector, shall make the alarm decision.
The sensitivity of each detector shall be set in the C.I.E.
The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable Multi-Criteria SMART3 Detector Specification

Compliance with standards

The Multi-Criteria Detector shall be third party approved to EN54 part 7 & 5, CEA 4021, LPS1279.

Functionality

The Detector shall use the photoelectric (light-scattering) principal to measure smoke density in conjunction with dual thermistors to measure heat and Infra Red detector to detect flame and shall, on command from the C.I.E, send data to the panel representing the fire risk.

The Detector shall incorporate a micro processor that combines the signals from the photoelectric smoke chamber, the thermistor heat detector and Infra Red elements using algorithms that include a time element to provide an increased immunity to false alarm whilst maintaining the earliest warning of real fire condition.

The Infra Red detector shall be capable of measuring Irradiance on the IR detector of between 0 – 450 $\mu\text{W}/\text{cm}^2$.

Multi-Criteria Detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

The detectors shall be fitted with a loop isolation device in-built into the device.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

Test functions

The Detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

Address setting

The Detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Detectors shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Detector.

Visual indication

The Detectors shall provide dual bi-colour LED's. Both LED's enable red, amber and green local status indication also indicating that the Detector is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Detector Dirty
- Test Mode
- Chamber Fault

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program.

An output connection shall also be provided in the base to connect an external remote alarm LED.

Sensitivity settings

The Detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

The detector shall be capable of 6 sensitivity settings.

Alarm Level 1 - Low false alarm resistance, high photoelectric only sensitivity

Alarm Level 2 - Medium false alarm resistance, medium photoelectric only sensitivity

Alarm Level 3 - Standard false alarm resistance, low photoelectric only sensitivity

Alarm Level 4 - High false alarm resistance, low photoelectric only sensitivity

Alarm Level 5 - Very high false alarm resistance, low photoelectric only sensitivity

Alarm Level 6 - Class A1R. Heat only alarm.

These sensitivity levels shall not contravene EN54 part 7 unless placed in to thermal (heat) only mode in which case the unit shall comply with EN54 part 5.

The panel threshold should be chosen according to the specific environment:

- “ULTRA-CLEAN” environments can use Level 1 ALERT
- “CLEAN” environments can use Levels 2-3 ALARM
- “MODERATE” environments can use Level 4 ALARM
- “HARSH” environments can use Level 5-6 ALARM

The Detector shall be able to be placed in to a thermal (heat) only mode of operation from command from the C.I.E. This shall be automatic on a time-of-day basis or by means of a manual operation at the C.I.E.

Drift compensation

The Detector shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The use of this function shall not contravene EN54 part 7.

Additional requirements

Optional relay base and isolator base variants shall be available.

Up to 99, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The sensitivity of each detector shall be set in the C.I.E.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable Multi-Criteria SMART4 Detector Specification

Compliance with standards

The Multi-Criteria Detector shall be third party approved to EN54 part 7 & 5 CEA 4021, LPS1279.

Functionality

The Detector shall use the photoelectric (light-scattering) principal to measure smoke density in conjunction with dual thermistors to measure heat, Carbon Monoxide detector, and Infra Red detector to detect flame and shall, on command from the C.I.E, send data to the panel representing the fire risk.

The Infra Red detector shall be capable of measuring Irradiance on the IR detector of between 0 – 450 $\mu\text{W}/\text{cm}^2$.

The Carbon Monoxide detector shall be capable of measuring CO levels of between 0 – 500 ppm.

The Detector shall incorporate a micro processor that combines the signals from the photoelectric smoke chamber, the thermistor heat detector, Carbon Monoxide detector and Infra Red elements using algorithms that include a time element to provide an increased immunity to false alarm whilst maintaining the earliest warning of real fire condition.

Multi-Criteria Detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

Group Polling

The detector shall be capable of group polling with improved performance a result.

There shall be no limit to the number of devices that can be grouped together on the same loop.

Implementation of group polling feature shall decrease response time for an alarm to be detected to less than 2.5 seconds, the use of complex cause and effect programming shall not increase the operation of all output devices to more than 10 seconds.

Test functions

The Detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

Address setting

The Detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Detectors shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Detector.

Visual indication

The Detectors shall provide dual LED's. Both LED's shall flash red under normal conditions, indicating that the Detector is operational and in regular communication with the C.I.E. Both LED's may be placed into steady red illumination by the C.I.E, indicating that an alarm condition has been detected.

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program.

An output connection shall also be provided in the base to connect an external remote alarm LED.

Sensitivity settings

The Detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

The detector will be capable of 6 sensitivity settings

Level 1 – 1%/ft of smoke or greater than 45 ppm of CO. No delays from processed photo output.

Level 2 – 2%/ft of smoke. No delays from processed photo output.

Level 3 – 3%/ft of smoke. No delays from processed photo output.

Level 4 – 3%/ft of smoke. Maximum of 10 minutes delay from processed photo output.

Level 5 – 4%/ft of smoke. Maximum of 10 minutes delay from processed photo output.

Level 6 – Heat only alarm. If the heat level on either thermistor exceeds 60°C or rate of rise limits.

These sensitivity levels shall not contravene EN54 part 7 unless placed in to thermal (heat) only mode in which case the unit shall comply with EN54 part 5.

The detector shall be capable of being configured from the control panel to accept various application dependant alarm threshold levels to reduce nuisance alarms

The panel threshold should be chosen according to the specific environment:

- “ULTRA-CLEAN” environments can use Level 1 ALERT
- “CLEAN” environments can use Levels 2-3 ALARM
- “MODERATE” environments can use Level 4 ALARM
- “HARSH” environments can use Level 5-6 ALARM

The Detector shall be able to be placed in to a thermal (heat) only mode of operation from command from the C.I.E. This shall be automatic on a time-of-day basis or by means of a manual operation at the C.I.E.

Drift compensation

The Detector shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The use of this function shall not contravene EN54 part 7.

Additional requirements

Optional relay base and isolator base variants shall be available.

Up to 99, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The sensitivity of each detector shall be set in the C.I.E.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable View Laser High Sensitivity Smoke Detector Specification

Compliance with standards

The View Laser detector shall be third party approved to EN54 part 7, ANSI/UL 268, CAN/ULC –S529, FM3230-3250

Functionality

The View Laser detector shall use the Laser Diode and patented smoke sensing chamber, designed to amplify signals from smoke and shall, on command from the C.I.E, send data to the panel representing the analogue or digital level of smoke density.

The View Laser detector shall incorporate a micro processor that analyses the signals from the Laser smoke chamber and using algorithms that include a time element to provide an increased immunity to false alarm whilst maintaining the earliest warning of real fire condition.

View Laser smoke detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

Co-operative Multi-Sensing

The View Laser detector shall be capable of co-operative multi-sensing using AWACS[™] (Advanced Warning Addressable Combustion Sensing) software with improved performance a result.

There shall be no limit to the number of devices that can be grouped together on the same loop.

Implementation of co-operative multi-sensing feature shall decrease response time for an alarm to be detected by combining signals from adjacent detectors then statistically combining to reach a common signal.

The use of co-operation multi-sensing shall allow an alarm condition to be indicated before the signal from any one detector is itself is above the alarm threshold.

The View Laser detector shall use co-operative multi-sensing to reject certain false alarm phenomena, this function shall work on the basis that if a detector sees a relatively sudden and large change in scattered light, it raises the suspicion of a false signal. Such a large 'step' function is not normally given by true smoke, and could be caused by a lint or hair particle, or even by an insect.

The View Laser detector must be capable of rather than immediately accepting this signal as a fire, the Laser detector first checks a physically adjacent Laser detector, and observe this second Laser detector for several seconds (if a third Laser detector is also adjacent, AWACS[™] will observe the third detector). If no significant analogue signal, even a very low signal, is received from the adjacent Laser detector, AWACS[™] will report a fault condition for the first detector.

The View Laser detector shall be capable of, if the situation changes, because of any oscillation in the first Laser detector, or any small reading in the second or third Laser detector, AWACS[™] will still report an alarm.

Test functions

The View Laser detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Laser detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

Address setting

The View Laser detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The View Laser detectors shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Detector.

Visual indication

The View Laser detectors shall provide dual LED's. Both LED's shall flash red under normal conditions, indicating that the Detector is operational and in regular communication with the C.I.E. Both LED's may be placed into steady red illumination by the C.I.E, indicating that an alarm condition has been detected.

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program.

An output connection shall also be provided in the base to connect an external remote alarm LED.

Sensitivity settings

The View Laser detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted by the panel on a time-of-day basis; this will force the detector to a minimum sensitivity setting for the time period, then return to normal sensitivity operation.

The View Laser detector will be capable of 9 sensitivity settings for both Pre-alarm and Alarm, sensitivity settings from 0.02 %/ft upto 2 %/ft obscuration shall be achievable. These sensitivity levels shall not contravene EN54 part 7.

Drift compensation

The View Laser detector shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The use of this function shall not contravene EN54 part 7.

Additional requirements

Optional relay base and isolator base variants shall be available.

Up to 99, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The sensitivity of each detector shall be set in the C.I.E.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable Loop Powered Beam Detector Specification

Compliance with standards

The Beam Smoke Detector shall be third party approved to EN54 part 12.

Functionality

The Beam Smoke Detector shall consist of a transmitter and receiver unit in the same housing which projects an IR signal, which is reflected by use of a suitable reflector.

The Beam Smoke Detector shall be intelligent and addressable, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits. Additional connections for power are not acceptable.

Mounting brackets capable of ceiling or wall mounting shall be available.

The unit shall have automatic drift compensation to adjust for signal deterioration from dust and dirt.

Test functions

A servo test function shall be available whereby activation of a low level test switch shall operate a servo motor that moves a calibrated test filter in to the path of the beam. A temporary 24 Vdc source is acceptable for this purpose.

The Beam Smoke Detector shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Detector itself (by activating a low level test switch) or may be activated remotely on command from the C.I.E.

Address setting

The Beam Smoke Detector shall provide address setting on the Detector head using decimal switches.

Addressable Beam Smoke Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Beam Smoke Detectors shall also feature an internal identifying code that the control panel shall use to identify the type of Detector.

Visual indication

The Detector shall provide fire, fault and normal LED's.

The normal LED shall flash green under normal conditions, indicating that the Detector is operational and in regular communication with the C.I.E.

The flashing mode operation of the Detector LED shall be controlled through the system field program

The fire LED may be placed into steady illumination by the C.I.E, indicating that an alarm condition has been detected.

An output connection shall also be provided to connect an external remote alarm LED.

The fault LED shall be used to indicate all fault conditions detected by the unit including alignment or drift compensation faults.

Sensitivity settings

The Detector sensitivity shall be adjustable in the field with four fixed settings of 25%, 30%, 40% and 50% obscuration.

In addition the detector shall also be capable of being set to one of two self-optimising sensitivity settings being 30-50% or 40-50% obscuration.

Drift compensation

The Detector may automatically compensate for dust accumulation and other slow environmental changes that may affect their performance.

The use of this function shall not contravene EN54 part 12.

Additional requirements

In order to aid alignment, a side 'gun sight' shall be provided allowing direct visibility of the reflector from the transmitter / receiver unit.

Optional in built loop isolation shall be included in each unit.

Up to 99, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.

Addressable In-Duct Smoke Detector Housing Specification

Compliance with standards

The smoke detector used in the In-Duct housing shall be third party approved to EN54 part 7.

Functionality

The In-Duct Housing shall use the Duct-tube principle, whereby air is drawn in through a sampling tube and released back to the ducting by an exhaust tube.

Sample filters shall be provided to minimise the accumulating of dust and dirt.

The air velocity shall have a rating from 2.5m/s to 20 m/s.

A clear Polycarbonate cover shall be used on the In-Duct housing, to provide easy visual inspection of sampling tube filters.

When sufficient smoke is sensed, an alarm signal is initiated at the C.I.E, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system.

Test functions

The unit shall have the facility to initiate a remote test from a conveniently located key switch such that the detector housed within the unit shall operate it's test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Smoke detectors

In-Duct Smoke Detector Housing shall accommodate an intelligent Photoelectric Detector, to provide continuous analogue or digital monitoring and alarm verification from the panel.

Visual indication

The In-Duct Smoke Detector Housing shall provide remote LED output suitable for connection to a conveniently located LED position.

The LED output shall pulse under normal conditions, indicating that the detector is operational and in regular communication with the C.I.E.

The LED output may be placed into steady condition by the C.I.E, indicating that an alarm condition has been detected.

If required, the flashing mode operation of the LED output shall be controlled through the system field program.

Additional requirements

The In-Duct Housing shall when required provide 1 relay output and 24Vdc input.

Addressable Manual Call Point Specification

Compliance with standards

The Manual Call Points shall be third party approved to EN54 part 11.

Only Manual Call Points of Type A shall be used.

The uses of Type B Manual Call Points are not acceptable.

Functionality

Manual Call Points shall be addressable, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

The Manual Call Points shall, on command from the Control Panel, send data to the panel representing the state of the manual switch.

All operated Manual Call Points shall have a positive, visual indication of operation by means of an LED indicator.

The Manual Call Points shall operate on a digital protocol to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

The Manual Call Points shall be fitted with a loop isolation device in-built into the device.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

Manual Call Points shall be suitable for surface mounting, or semi-flush mounting as shown on the plans.

Manual Call Points shall be constructed of flame retardant plastic with clearly visible operating instructions provided on the glass. The 'house burning' symbol shall appear on the front of the Call Points.

Test functions

Manual Call Points shall use a key operated test without the need to break the glass, and shall be designed so that after Emergency operation, they cannot be restored to normal use except by the replacement of the glass element.

Address setting

The Manual Call Points shall provide address-setting means using decimal switches.

Addressable Manual Call Points that use binary address setting methods, such as a dip switch code cards or soft addressing are not acceptable.

Visual indication

The Manual Call Points shall provide bi-colour LED's. The LED's enable red, amber and green local status indication also indicating that the Manual Call Point is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Test Mode

If required, the flashing mode operation of the Call Point LED shall be controlled through the system field program.

Additional requirements

Optional waterproof (IP76) Manual Call Points shall be available.

Up to 99, addressable Manual Call Points may connect to one SLC loop.

Addressable Control Module Specification

Compliance with standards

The Control Modules shall be third party certified to CEA GEI 1-082 and CEA GEI 1-084.

General

Addressable Control Modules shall be provided to supervise and control the operation of one conventional indicating circuit of compatible, 24 Vdc powered, polarised audio/visual indicating appliances.

For fan shutdown and other auxiliary control functions, the control module may be set to operate as a Volt Free relay contact and shall connect to one of the C.I.E. Signalling Line Circuit Loops.

Addressable Control Modules shall operate on a digital protocol to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Control Modules shall mount in a purpose made surface mount box, panel mount clip for mounting in to other equipment housings or on a DIN rail mounting clip.

The Control Modules shall include loop isolation in each unit, which shall be installer selectable as required.

Functionality

The indicating circuit shall be capable of powering a maximum of 1.5 Amps of Resistive audio visual signalling equipment, or as a Volt Free Contact (Form C) Relay shall be capable of switching 2 Amps @ 30Vdc.

The relay coil shall be magnetically latched to reduce wiring connection requirements, and to ensure that 100% of all auxiliary relay or indicating circuits may be energised at the same time on the same Signalling Line Circuit Loop.

Audio visual power shall be provided by a separate supervised power connection from the main C.I.E. or from a supervised remote power supply approved to EN54 Pt2.

Control Modules shall be loop powered and addressable devices, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

Address setting

The Control Modules shall provide address setting on the module using decimal switches.

Addressable Modules that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The modules shall also feature an internal identifying code that the C.I.E. shall use to identify the type of module.

Address switches shall be viewed in two plains such that the address is visible when mounted in a surface mount box or DIN / panel mounted.

Visual indication

The Control Module shall provide bi-colour LED's. The LED's enable red, amber and green local status indication also indicating that the module is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Test Mode

If required, the flashing mode operation of the Control Module LED shall be controlled through the system field program.

Additional requirements

Up to 99, addressable Control Modules may connect to one Signalling Line Circuit Loop.

Addressable Radio Interface Translator Module Specification

Compliance with standards

Radio Interface Modules shall be designed to meet the requirements of EN54 Part 25 & BS5839 Part 1.

General

Radio Interface Modules shall be provided to connect one zone of radio detectors to one of the C.I.E. Signalling Line Circuit (SLC) Loops.

The Radio Interface Modules shall mount in a purpose made surface mount box with antenna positions in two planes.

Functionality

The Radio Interface Modules shall use 868MHz to communicate with up to 32 radio devices.

The Radio Interface Modules shall be loop powered and addressable devices, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

The radio devices shall pass all analogue or digital device data via the Radio Interface Modules to the C.I.E.

Address setting

The Radio Interface Modules shall provide address setting on the Module using the on board LCD.

Addressable Modules that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The modules shall also feature an internal identifying code that the control panel shall use to identify the type of Module.

Visual indication

The Radio Interface Modules shall provide 3 visible LED indicators.

The LED's shall give visual indication of:

- Device Healthy
- Module Fault
- Low Power Source

The Radio Interface Modules shall provide an LCD for programming and additional information for the connected radio devices.

Test functions

The Radio Interface Modules shall pass test requests invisibly to the radio devices which, in turn, will respond in the same way as other loop powered devices.

Additional requirements

Up to 6, addressable Radio Interface Modules may connect to one SLC loop.

The C.I.E software, not the Radio Interface Modules, shall make the alarm/normal decision, thereby allowing the system operator to view the status of each radio device.

Addressable Monitor Module Specification

Compliance with standards

The Monitor modules shall be third party certified to CEA GEI 1-082 and CEA GEI 1-084.

General

Addressable Monitor Modules shall be provided to connect one supervised area of conventional Alarm Initiating Devices (any N.O. volt free contact device) to one of the C.I.E. Signalling Line Circuit Loops.

Addressable Monitor Modules shall operate on a digital protocol to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Monitor Modules shall mount in a purpose made surface mount box, panel mount clip for mounting in to other equipment housings or on a DIN rail mounting clip.

The Control Modules shall include loop isolation in each unit, which shall be installer selectable as required.

Functionality

The Monitor Module shall use an electronic supervised input to monitor the conditions of flow switches, sprinkler valves, fire dampers etc.

Monitor Modules shall be loop powered and addressable devices, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

Address setting

The Monitor Modules shall provide address setting on the Module using decimal switches.

Addressable Modules that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The modules shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Module.

Address switches shall be viewed in two plains such that the address is visible when mounted in a surface mount box or DIN / panel mounted.

Visual indication

The Monitor Module shall provide bi-colour LED's. The LED's enable red, amber and green local status indication also indicating that the module is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Test Mode

If required, the flashing mode operation of the Monitor Module LED shall be controlled through the system field program.

Additional requirements

Up to 99, addressable Monitor Modules may connect to one Signalling Line Circuit Loop.

The C.I.E software, not the Monitor Module, shall make the alarm/normal decision, thereby allowing the system operator to view the status of each Monitor Module.

Addressable Dual Monitor Module Specification

Compliance with standards

The Dual Monitor Modules shall be third party certified to CEA GEI 1-082 and CEA GEI 1-084.

General

Addressable Dual Monitor Modules shall be provided to connect two supervised areas of conventional Alarm Initiating Devices (any N.O. volt free contact device) to one of the C.I.E. Signalling Line Circuit Loops.

Addressable Monitor Modules shall operate on a digital protocol to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Dual Monitor Module shall mount in a purpose made surface mount box, panel mount clip for mounting in to other equipment housings or on a DIN rail mounting clip.

The Dual Monitor Module shall include loop isolation in each unit, which shall be installer selectable

Functionality

The Dual Monitor Module shall use two electronic supervised inputs to monitor the conditions of flow switches, sprinkler valves, fire dampers etc.

Dual Monitor Modules shall be loop powered and addressable devices, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

Address setting

The Dual Monitor Modules shall utilise two module addresses with the start address being set as above and the second address being automatically assigned at the start address plus one.

Addressable Modules that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The modules shall feature an internal identifying code that the C.I.E. shall use to identify the type of Module.

Address switches shall be viewed in two plains such that the address is visible when mounted in a surface mount box or DIN / panel mounted.

Visual indication

The Dual Monitor Module shall provide two bi-colour LED's to show the status of each module address. The LED's enable red, amber and green local status indication also indicating that the module is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Test Mode

If required, the flashing mode operation of the Dual Monitor Module LED shall be controlled through the system field program.

Additional requirements

Up to 99, addressable Modules may connect to one Signalling Line Circuit Loop.

The C.I.E software, not the Monitor Module, shall make the alarm/normal decision, thereby allowing the system operator to view the status of each Monitor Module.

Addressable Dual Monitor and Single Relay Output Module Specification

Compliance with standards

The Dual Monitor and Single Relay Output Modules shall be third party certified to CEA GEI 1-082 and CEA GEI 1-084.

General

Addressable Dual Monitor and Single Relay Output Modules shall be provided to connect two supervised areas of conventional Alarm Initiating Devices (any N.O. volt free contact device).

In addition the Dual Monitor and Single Relay Output Modules shall provide a single change over contact output and shall connect to one of the C.I.E. Signalling Line Circuit Loops.

Addressable Monitor Modules shall operate on a digital protocol to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Dual Monitor and Single Relay Output Modules shall mount in a purpose made surface mount box, panel mount clip for mounting in to other equipment housings or on a DIN rail mounting clip.

The Dual Monitor and Single Relay Output Modules shall include loop isolation in each unit, which shall be installer selectable as required.

Functionality

The Dual Monitor and Single Relay Output Modules shall use two electronic supervised inputs to monitor the conditions of flow switches, sprinkler valves, fire dampers etc.

The Dual Monitor and Single Relay Output Modules shall provide a single addressable change over relay rated at 2A @ 30Vdc.

Dual Monitor and Single Relay Output Modules shall be loop powered and addressable devices, and shall connect with two wires to one of the C.I.E. Signalling Line Circuits.

Address setting

The Dual Monitor and Single Relay Output Modules shall utilise three module addresses with the start address being set as above and the second and third addresses being automatically assigned at the start address plus one and two respectively.

Addressable Modules that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The modules shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Module.

Address switches shall be viewed in two plains such that the address is visible when mounted in a surface mount box or DIN / panel mounted.

Visual indication

The Dual Monitor Module shall provide three bi-colour LED's to show the status of each module address. The LED's enable red, amber and green local status indication also indicating that the module is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Test Mode

If required, the flashing mode operation of the Dual Monitor Module LED shall be controlled through the system field program.

Additional requirements

Up to 99, addressable Modules may connect to one Signalling Line Circuit Loop.

The C.I.E software, not the Monitor Module, shall make the alarm/normal decision, thereby allowing the system operator to view the status of each Monitor Module.

BS7273-4 Door Release System Specification

Compliance with standards

The BS7273 part 4 2007 is the code of practice governing door holders and door release mechanisms. The door release system shall offer a compliant solution to meet the requirements of section 5 of BS7273-4 Category A installations by ensuring the fail safe operation of actuation of release mechanisms in conjunction with the existing output module and wider fire system.

General

The system shall comprise loop addressable output module, failsafe measure and enclosure.

The door release system shall be compatible with 12-24VDC door hold systems and include a volt free contact.

The system shall be capable of driving a third party relay to switch mains giving the added benefit of separating the fire system from direct mains connection.

The system shall provide a reduced activation time test mode.

The system shall provide visual indication of loop power status, loop communication and activation status via a bi-colour LED.

The system shall mount in a purpose made surface mount box, panel mount clip for mounting in to other equipment housings or on a DIN rail mounting clip.

Loop communication failure and/or power failure shall be able to be simulated to demonstrate the functionality of the module via the removal of an integral jumper.

Functionality

The door release system shall offer a compliant solution to meet the requirements of section 5 of BS7273-4 Category A installations by ensuring the fail safe operation of actuation of release mechanisms in conjunction with the existing output module and wider fire system.

Address setting

The system shall utilise one module address.

Addressable Modules that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

Address switches shall be viewed in two plains such that the address is visible when mounted in a surface mount box or DIN / panel mounted.

Visual indication

The system shall provide three bi-colour LED's to show the status of each module address. The LED's enable red, amber and green local status indication also indicating that the module is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Test Mode

Additional requirements

Up to 99, addressable Modules may connect to one Signalling Line Circuit Loop.

Addressable Loop Powered Audible/Visual Devices Specification

Compliance with standards

Intelligent Addressable Sounders shall be third party approved to EN54 part 3 and shall be the primary means of evacuation.

Visual Alarm Devices (VADs) complying to EN54-23 are only required if they are considered to be the primary source of evacuation to building occupants as defined within the building's fire risk assessment.

Visual Indicating Devices (VIDs) can provide useful supplementary indication that may increase the awareness of people to an event.

Functionality

Six basic product groups shall be available consisting of:

- Wall mounting sounders;
- Wall mounting sounders & combined Visual Alarm Device;
- Wall or ceiling mounting Visual Alarm Devices;
- Base sounders for use beneath detectors;
- Base sounders & combined supplementary indicator for use beneath detectors;

Intelligent Addressable Audible Visual Devices shall operate on a digital protocol to give reduced power consumption, upto 99 detectors and 99 modules may be connected to a single loop.

Intelligent Addressable Audible Visual Devices shall be fitted with a loop isolation device in-built into the device.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The warning devices shall fit to a common mounting plate incorporating a twist-lock bayonet fitting.

Warning devices shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops and derive the control and power from this single connection.

Address setting

The warning devices shall provide address setting on the device using decimal switches.

Addressable warning devices that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The warning device shall also feature an internal identifying code that the C.I.E. shall use to identify the type of device.

Tone and volume settings

The audible warning devices shall have 32 different tone settings, which shall be site configurable.

The audible warning device shall have up to 8 distinguishable tone settings, which can be operated via C.I.E programming or remote input i.e. Class Change, Bomb Alert.

The audible warning devices shall have three volume settings, which shall be site configurable, from the C.I.E. or at the device.

Additional requirements

Up to 99, warning devices may connect to one SLC loop.

The wall-mounting units shall have a waterproof mounting option for external fitting.

Base sounder and combined base sounder / supplementary indicators shall not require an additional detector base.