



Specification Guide

INSPIRE™ Panel, Connected Life Safety Services (CLSS) and Addressable Self-Test Fire Detection and Alarm System Specification

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Control Panel

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, Manual 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 /chasings 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
- › BS 7671 - IEE Wiring Regulations
- › BS 7273 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 another 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 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 with Requirements EN54-2:

Controls

- › Delays to outputs
- › Outputs C, E and G
- › Provision to switch on and switch off the delayed operation of outputs dependencies on more than one alarm signal
- › Type A dependency
- › Type B dependency
- › Type C dependency
- › Disablement of addressable points
- › Test Condition

Inputs/Outputs

- › Output to Fire Alarm Devices
Control of Fire Alarm routing equipment
- › Output to Fire Alarm routing equipment
- › Alarm confirmation input from Fire Alarm routing equipment
Outputs to fire protection equipment
- › Output type A
- › Output type B
- › Output type C
- › Fault monitoring of fire protection equipment
- › Output to fault warning routing equipment
- › Standardised input/output interface

Displays

- › Alarm counter
- › Fault signals from points
- › Power Supply Equipment Functions:
 - › Operation from a main power supply
 - › Operation from a standby battery
 - › Monitor and charge the standby battery
 - › Recognise and notify supply faults

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
- › Auxiliary Power Supply Output
- › Auxiliary Relay Outputs

Clauses

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Inspire – Fire Alarm Control Panels



EN54 parts 2 & 4

2 - 8 Loop INSPIRE Fire Alarm Control Panels	
Part Numbers:	HOP-131-206 (Notifier INSPIRE E10 Panel with 6-Module slots, 240 W PSU, 10”display, CPU Module, Charger Module & Dual Loop Module)
Dimensions:	Height: 443mm Width: 485mm Depth: 165mm
Options:	HOP-433-100 (Dual Loop Module) HOP-631-100 (Network Module ID²NET) HOP-404-100 (I/O 4CH AUX 24VDC Module) HOP-405-100 (Serial Communication Interface Module) HOP-406-100 (Fire/Fault Routing Module) HOP-407-200 (FBF / FAT Communication Module) HOP-608-200 (Net Converter Fibre Multi Mode) HOP-202-102 (2-Slot Module Carrier) HOP-202-200 (Link Module for Module Carrier expansion) HOP-238-110 (Semi-flush Mounting KIT E10) HOP-208-111 (Rack Mounting Kit (4 x 5U large brackets)
Key Features:	› 2 Loop Control Panel expandable to 8 Loops – PSU 240W – standby batteries Max. 24Ah. › 318 Devices per Loop (159 Detectors / 159 Modules) › Modular system architecture with 6-Module slots expandable till 10-Module slots › Modules easily inserted into their slots without any mechanical effort › Fully Networkable peer-to-peer Network (ID²NET) up to 32 Panels › Capacitive 10” Colour Touchscreen Display › Compatible with ID3K Networks and Repeaters › Standard surface mounting, semi-flush or rack mounting options › Common Fire and Fault relay › CLSS Gateway connectivity for remote Connected Life Safety Services over ‘The Cloud’ › Licensable features to enable Country Code specific functionality and languages, CLIP Loop protocol and Third-Party Protocol connectivity

Inspire – Fire Alarm Control Panels



EN54 parts 2 & 4

2 - 8 Loop INSPIRE Fire Alarm Control Panels	
Part Numbers:	HOP-134-412 (Notifier INSPIRE E10 Panel with 12-Module slots, 480 W PSU, 10" display, CPU Module, Charger Module & Dual Loop Module)
Dimensions:	Height: 665mm Width: 485mm Depth: 240mm
Options:	HOP-433-100 (Dual Loop Module) HOP-631-100 (Network Module ID²NET) HOP-404-100 (I/O 4CH AUX 24VDC Module) HOP-405-100 (Serial Communication Interface Module) HOP-406-100 (Fire/Fault Routing Module) HOP-407-200 (FBF / FAT Communication Module) HOP-608-200 (Net Converter Fibre Multi Mode) HOP-202-102 (2-Slot Module Carrier) HOP-202-200 (Link Module for Module Carrier expansion) HOP-238-115 (Semi-flush Mounting KIT E15) HOP-208-111 (Rack Mounting Kit (4 x 5U large brackets)
Key Features:	2 Loop Control Panel expandable to 8 Loops – PSU 480W – standby batteries Max. 38Ah. 318 Devices per Loop (159 Detectors / 159 Modules) - Modular system architecture with 12-Module slots expandable till 14-Module slots - Modules easily inserted into their slots without any mechanical effort - Fully Networkable peer-to-peer Network (ID²NET) up to 32 Panels - Capacitive 10" Colour Touchscreen Display - Compatible with ID3K Networks and Repeaters - Standard surface mounting, semi-flush or rack mounting options - Common Fire and Fault relay - CLSS Gateway connectivity for remote Connected Life Safety Services over 'The Cloud' - Licensable features to enable Country Code specific functionality and languages, CLIP Loop protocol and Third-Party Protocol connectivity

Control and Indicating Equipment (C.I.E)

Functional Description

The C.I.E shall be the central controller of the complete system. It shall receive and process analogue and digital information from the detection devices, provide audible and visual indication of alarm and other conditions to the user, automatically initiate alarm response sequences and provide the user interface.

Updates to the C.I.E operating software shall be simple to undertake and shall not require the use of replaceable components. The operating program and configuration memory shall be stored in a non-volatile memory and shall not rely on batteries for retention.

The C.I.E shall incorporate separate microprocessors for signalling Loop control and central operation, C.I.E Networking shall be controlled from a separate microprocessor.

The C.I.E shall provide a user interface from which; controls can be operated, manual operations can be carried out, indications are audible and/or visible and system information can be obtained. It shall also be capable of unambiguously indicating the following functional conditions: Quiescent Condition, Fire Alarm Condition, Fault Warning Condition, Test Condition, and Disablement Condition. Furthermore, the Fire Alarm Condition shall always be capable of clearly being indicated without any prior manual intervention at the C.I.E.

The C.I.E shall be easy to configure with a PC Tool operating under Windows to fully program the Panel and satisfy the detection zone and output mapping of the premises.

The C.I.E shall support up to 318 devices per signalling Loop. The C.I.E shall fully support the sub-addressing capabilities of the relevant input and output devices.

The C.I.E shall contain two up to eight signalling Loop drivers depending on the system design requirements. Each signalling Loop shall be capable of supplying 750mA of power for Loop-based sounders or other output devices.

The signalling Loop should be capable of supporting field-based devices on fire rated cabling up to 3500m in length.

The C.I.E shall incorporate a real-time clock for time stamping of in excess of 10,000 events in the Event History Log and for scheduling of time related functions, the real-time clock shall have battery back-up and shall adjust to daylight savings time automatically. The Event History Log shall be stored in non-volatile memory and shall be able to be recovered even in case of total power failure to the Control Panel.

It shall be possible to install a Network Communications Card to allow connection of up to 32 Network Nodes to include C.I.E, remote terminals, Mimic displays or other peripheral devices. The Network shall offer peer-to-peer operation and be fault tolerant. The time to propagate a Fire Alarm Condition across the

Network shall not exceed 2 seconds even in the event of a single Network fault. The Network shall have a message priority system to ensure that fire messages are transmitted to all Network Nodes within two seconds even in case of multiple faults being simultaneously generated.

A single C.I.E shall have the capability for displaying 130 Fire Alarm zones concurrently on one screen (up to 1000 zones scrolling). In a Network system with INSPIRE Panels only, the overall system shall have the capability for up to 3000 Fire Alarm zones (1000 Detection Zones, 1000 Alarm Zones and 1000 Control Zones).

It shall be possible to adjust sensitivity settings for all detection devices based on a time clock. It shall be possible to select device modes for both active and inactive time periods for multi-Detector Detectors.

It shall be possible to configure the Panel for Stage 1/ Stage 2 Investigation operation based on a time clock. It shall be possible to configure the devices used for investigation on an individual basis. This shall also include Manual Call Point devices. It shall be possible to configure up to 8 independent time clocks. Each time clock shall be capable of up to two active time periods for each day of the week.

All Fault Conditions shall be latching.

A Pre-Alarm Condition shall be able to be recognised from Detectors approaching their alarm threshold. The Pre-Alarm Condition shall be able to be used as an input to the Cause & Effect programming such that an appropriate warning may be given to staff monitoring the system.

All input devices shall have the capability of being latching or non-latching except when configured for Fire Alarm input. It shall be possible to configure complex Cause & Effect operation for phased evacuation and output control operations at the Panel. The Cause & Effect must be able to define at least 1000 separate relationships between Cause & Effect. These relationships must be capable of controlling separate sounder tones, intermittent or constant tones and disablement of other devices. The inputs must be able to be operated singly or using coincidence between devices or zones, they must be able to be time-related and include not only the ability to switch on alarm but also on Fault, Pre-Alarm.

The individual rules must be able to be combined using logical relationships to define operational priority, including definition of a "first-come-first-served" strategy to prevent clashes of priority in case of multiple alarms.

It shall be possible to connect optional equipment in accordance with the requirements of EN54-2 Standardised I/O such as Mimic Panels and Remote-Control Terminals.

Control and Indicating Equipment (C.I.E)

C.I.E Construction

The system architecture and design of the C.I.E shall be modular to allow a system to grow with the needs of the building.

It shall be capable of surface or semi-flush mounting. 30 x 20mm top mounted, 16 x 20mm rear mounted and 26 x 20mm bottom mounted cable entry holes shall be provided to accommodate all likely wiring requirements.

The housing shall meet IP30 (EN60529) minimum ingress protection classification. It shall not be possible to open the enclosure without a special tool.

The modular C.I.E. enclosures will be supplied with a CPU Module, a PSU Module, a Charger Module, and back plane with 6 Module slots (expandable till 10) or 12 Module slots (expandable till 14) depending on the size of the enclosure (standard or extended). The slots are available for plugging in one or more of the below Modules:

- › Dual Opal Loop Module
- › Network Module ID²NET
- › I/O 4CH AUX 24VDC Module
- › Serial Communication Interface Module
- › Fire/Fault Routing Module
- › FBF / FAT Communication Module

Dual Opal Loop Module

Loop Module supports 2 Loops

- › 159 intelligent Opal Detectors per Loop
- › 159 Modules (A/V, MCP, input/output Modules) per Loop
- › 130 zones of fire detection with on screen zone indication
- › Maximum 512 fire Detectors and/ or Manual Call Points according to EN54-2

ID2net Network Module

- › Standard copper on terminal block
- › Two isolated RS-485 ports available as standard
- › Fibre optics support with Net Converter Fiber Multi Mode (HOP 608 200)
- › Any combination of RS-485 / Optical Fibre allowed

Input/Output Module (4 Channel)

- › 4 - configurable Input or Output channels
- › Sounder Circuit (1A)
- › Digital Input
 - › Monitored
 - › Not monitored
- › Software configurable
- › Auxiliary power 24 V DC ± 5 % at 500 mA, 1000 mA, 1500 mA and 2000mA
- › Maximum of 3 A across all I/O channels

Serial Communication Module

- › Provides an RS485 port and a configurable RS232 / RS485 port
- › Auxiliary 24V dc supply. Current configurable to 0.5A, 1A, 1.5A and 2A
- › For communication with external equipment, such as Notifier Repeat / Mimic Panel

Fire/Fault Routing Module

- › Interface for FARE (DIN14675)
- › Interface for FRE (e.g. Dialler)
 - › Fault Out
 - › Fault In
- › Interface for Key Box Adapter (VdS 2105)
- › 24Vdc Aux / 1A

Dual FBF/FAT COM Module

- › Dual Serial Loop interface incl. Power supply
- › 2 x RS485
- › 2 x 24Vdc
- › Fully compatible with ADP4000 Loop interface
- › Support FBF/FAT/GMT4000/ABT4000
- › Configurable with IFAM Prog4000 configuration tool

The Network Module will contain two slide-in provisions for insertion of Multi-Mode Fibre Convertors.

All Modules have integrated PCBs for easy handling and protection of electronic circuits against dust and dirt. All Module variants are colour coded and contain laser marked wiring diagrams. QR codes on the front of each Module will allow for data sheet and wiring information to be downloaded from the Notifier website.

C.I.E. Indications

The C.I.E. shall include a fully featured Operator Interface Control and Annunciation Panel that shall include a backlit 800 x 1200-pixel Capacitive Graphic Colour Touchscreen, individual, colour-coded system status LEDs.

The C.I.E. shall meet the requirements of EN54 Pt. 2 & 4 without the need for separate indication LEDs for each zone of fire. Mandatory annunciation shall be carried out with the use of system status LED’s and the LCD alone. The display shall incorporate a backlight that will illuminate upon any event or button press.

The primary display shall be simultaneously capable of indicating the presence of Fire Alarms, Faults, Disablements and Tests in accordance with the requirements of EN54-2. Up to 130 zonal indications will be visible on the LCD Touchscreen.

In addition, the following minimum LED indicators shall be provided in accordance with the requirements of EN54-2:

- | | |
|---------------------------------------|---------------|
| › Power On - | Green |
| › Fire Alarm - | Red |
| › Fault - | Yellow |
| › Disable - | Yellow |
| › Test - | Yellow |
| › Pre-Alarm - | Yellow |
| › System Fault - | Yellow |
| › Delay Active - | Yellow |
| › Alarm Fault/Disablement - | Yellow |
| › Fire Protection Active - | Red |
| › Fire Protection Fault/Disablement - | Yellow |
| › Fire Output Active - | Red |
| › Fire Output Fault/Disablement - | Yellow |
| › Technical Alarm - | Yellow |

Panel Controls

The C.I.E shall be provided with the following minimum manual controls:

- › Mute Buzzer
- › Sound Alarms
- › Resound Alarms
- › Silence Alarms
- › Reset System
- › Extend Delay
- › End Delay
- › Disable Fire Output

- › Disable Fire Protection Devices
- › Disable Alarm Devices

In addition, the following controls shall be provided for menu operation and programming:

- | | |
|----------------------|---|
| › Navigation keys | ← → ↑ ↓ |
| › An Asterisk | *, used to initiate context-sensitive shortcuts |
| › A confirmation key | ✓ |
| › A qwerty keypad | 0-9, also providing the function for letter / character programming |

Access to the controls above shall be able to be accomplished via either a user-specific access code or by a control enable access key. All Control Panels on a Network shall be supplied with common pattern control enable keys.

Panel Features

The Fire Alarm Control Panel shall be provided with the following minimum features:

- › Device Blink Control
- › Log/Display Reports
- › Alarm Delays
- › Non-Alarm Module Reporting
- › Non-addressed Device Detection (Address 0)
- › Duplicate Address Detection
- › Walk Test
- › Upload/Download to PC Computer
- › “Auto Learn” Facility
- › Class Change Facility
- › Real Time Display of Analogue or Digital Data
- › Degraded Mode of Operation
- › Powerful Diagnostics for Easy Fault Finding

Networking

The Fire Alarm Control Panel shall be capable of Networking up to 32 Nodes on a secure Network complying to EN54-2 as a distributed C.I.E.

A zoning facility to allow the Networked system to share up-to 3000 zones giving non-confusing indication and allowing true peer-to-peer cross Panel report, control and site-wide Cause & Effect functionality.

Control and Indicating Equipment (C.I.E)

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 link 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. In case of one or more fire messages “over-taking” a lower priority message the lower priority message shall be stored on the Network for continued transmission once the high priority messages have all been sent.

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

The Network shall be capable of accepting up to 32 C.I.Es. The propagation delay though any Network Node shall not exceed 50mS 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 Network transmission. 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, disablements, testing or the display of device statuses including analogue or digital real time value.

Supervision of open and 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.

Messages shall be transmitted simultaneously in both directions around the Network so that messages are received as fast as possible at all points. The second time a message is received at each Node it shall not be ignored but registered and passed on

to the next point so that full confirmation of receipt is available to the sending Node.

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 cables suitable for the purpose. This shall include capability of using standard fire-retardant cables of the types used for addressable Loops for the Network. The maximum distance between adjacent Network Nodes (using standard 1.5mm fire retardant cable) shall be at least 1.6km.

The C.I.E. will support fibre Network cabling based on Multi-mode Optical Fibre with ST connectors for 50/125µ duplex fibre cable.

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

Software

A PC Configuration Tool shall be available for configuration of the C.I.E and for retention of configuration data. The PC Configuration Tool shall be graphically based and operate under Windows™ operating systems.

All system information including Loop device configuration and Cause & Effect programming can be stored or uploaded on a removable USB memory device. It shall be possible to configure ALL basic configuration parameters and settings from either the C.I.E front Panel or from the PC Configuration Tool.

A PC Configuration Tool shall be available to allow the site to re-configure device text labels without affecting the C.I.E Cause & Effect programming. The text labels shall be able to be exported to Microsoft Excel for typing independently of the system configuration.

It shall be permitted to configure enhanced/extended features and functions from the PC Configuration Tool only.

Loop Design

A tool shall be provided to demonstrate that the Loop as designed provides critical signal path redundancy, e.g. all Loop powered alarm devices will function in case of a single Loop fault if the system was designed in line with the tool output by the system designer.

Repeater / Mimic Panels

It shall be possible to provide remote access to monitor or control the operation of the installation.

The Repeaters and Mimic controllers shall communicate with the Fire Alarm Control Panel via an RS485 (multi-drop) communications link. Three Repeater/Mimic Controller (Number to be increased in future releases) may be connected to the RS485 communications cabling. If critical signal path redundancy to Repeaters is required, they shall be capable of being connected directly to the Panel Network.

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 the following functions:

- › Mute Buzzer
- › End Delay / Evacuate
- › Silence / Resound Alarm Devices
- › Change Tabs
- › Zones in Alarm
- › Reset

Power Supplies

The Fire Alarm Panel with integrated power supplies shall be certified to EN54-4 and shall be capable of supporting:

A 240W PSU and charger Module in an E10 enclosure is capable to hold batteries 2x12 volt 24Ah, Sealed Lead Acid type batteries or a 480W PSU and charger unit in E15 enclosure can hold batteries up to 2x12 volt 38Ah, Sealed Lead Acid Type batteries.

Batteries shall have sufficient capacity to power the Fire Alarm System for not less than 24 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. All power supplies shall be capable of operating from a main supply of 230VAC 50/60Hz.

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 & Effect can be implemented without the addition of further interface hardware during the life of the system.

Service Mode and Automatic Detection of Real Fire Events During Testing

The system shall have a service mode capable of automatically capturing real fire events whilst the Self-Test process is underway.

Upon an alarm condition being identified during the Self-Test process, the system will be overwritten and initiate the Panels’ Cause & Effect logic at the FACP in no greater than 60 seconds.

Connected Life Safety Services (CLSS)

Summary

The INSPIRE™ fire detection and alarm system shall have the facility to report and connect, via “The Cloud” to provide real time data for the ongoing management of the system by the end user and/or the building service provider.

Connection

Connection to the fire detection Control and Indication Equipment (CIE), will be a direct connection to the Mother Board of the CIE to allow full access to the fire detection system protocol. Reading of the printer port only of the CIE shall not be permissible.

The CIE shall be able to connect to “The Cloud” via a Fixed Gateway Device. The Gateway shall be 24v DC in operation and shall derive its power either directly from the CIE or a separate Power Supply Unit. The Gateway shall have the following connectivity capabilities:

- › Wi-Fi
- › Clients’ IT infrastructure (IP)
- › Or GSM - the GSM connectivity must be internal to the Gateway and the use of an external ‘Hotspot’ type device will not be permissible.

Security

The Gateway shall have a lockable door. The Gateway shall have Bluetooth functionality to be used as part of the security association of the Fire Alarm System to ‘The Cloud’, engineer, and end user, and should be part of the system’s Cyber Security process.

Security for both the Gateway and “The Cloud” shall be secure and the supplier must demonstrate the Cyber Security measures taken for the software, hardware, and the hosting of ‘The Cloud’ servers. The system data shall be hosted by Microsoft Azure. The Gateway, Cloud and associated software shall only be supplied by a member of the Cyber Security Alliance.

Supported Devices

The data transmitted from the CIE to “The Cloud” shall be able to be reported via either a Desktop Browser or a Mobile App. The Mobile App must be compatible with both IOS and Android mobile phones or tablets.

Data Transmission and Software Types

The data transmitted shall not be reliant upon the storage of any Panel configuration data in “The Cloud” and shall be taken and updated live from either a permanent connection or Portable connection. Where data is transmitted via a portable connection and the device information has changed since the last site visit, the data gained via the connected device shall not be overwritten without consent via the Mobile App by a licenced engineer / end

user. Only the detail of the devices that have changed or have been added shall be transmitted to “The Cloud” storage. The connected device software shall be available for:

- › System Administration
- › Site Technician
- › End User

Access to the above shall be via a secure user licence that will be renewable on a 12-month basis. It shall be possible to revoke both Administration and Technician licences easily in order to protect site and client data.

Personal Data

Software and data shall always be protected and be fully in compliance with GDPR regulations.

Functionality

The following data shall be able to be transmitted from the CIE to the App or Browser:

- › Device Address and Label
- › Device Type
- › Zone Number Allocated
- › Loop Number (Connected to)
- › Panel Address and Label
- › Status of Device (Condition)
- › Active Fire
- › Active Faults
- › Active Disablements

The Mobile App for Technicians shall have two pathways for engineers to be able to follow, being – Service / Maintenance or Commissioning each pathway having differing functionality in terms of reporting and control during the process. The Mobile App shall have the following control functionality:

- › Find Outstation (Interface outputs must be excluded from this functionality)
- › Change Device Label
- › Disable Devices
- › Enable Devices
- › Simulate a Fire (Commissioning pathway only)

Remote Functions

The Mobile App shall have the capability, with end user agreement, for an engineer to remotely manage a site / estate and be able to:

- › Silence Alarm
- › Reset Fire
- › Disable Devices
- › Enable Devices

The control functionality shall only be available to a licenced Technician. In order to ensure site security, this functionality cannot be accessed automatically and the Technician attending the site will have to pair their mobile device with the site Gateway via Bluetooth to confirm they are on site. The control functionality will be available for a configurable period not exceeding 10 hours following ‘pairing’ with the site Gateway.

Test Sessions

“The Cloud” based Inspection Manager mobile shall be able to create and manage Test Sessions for the Self-Test process on Self-Test devices and allow manual testing for any other non-Self-Test device in the building. Each test session will allow the site technician to test the devices in the building or an area of the building.

It shall be possible to make notes against each device via the Mobile App and create corrective actions. The App shall have the capability of taking and storing photographs of each device / corrective action, the photographs shall not be stored on the mobile device and shall be transmitted directly to ‘The Cloud’. The system installed must allow multiple test sessions to be carried out by multiple engineers concurrently.

Support for Third-Party Devices

The system must be capable of allowing inventory to be transmitted to ‘The Cloud’ using a standard database to non-connected devices and a fire detection system configuration for larger data loads.

It shall be possible to test non-connected devices using bar codes which shall be scanned directly within the Mobile App or using a Bluetooth connected Third-Party scanner.

When adding a non-connected device using a bar code and scanner, the device reference and label shall be editable to identify the device type and location. Using bar code scanning, it shall be possible to create test sessions on non-connected sites without the need to have a connected Gateway on the site.

Client Connection

End users must be able to access data for their site via either a Mobile App or Desktop browser. There shall be two levels of access:

- › Information
- › Management and Control

Management control at end user level shall be via a controlled end user licence and shall allow the end user to have the following control:

- › Silence Alarm
- › Reset Fire
- › Disable Devices
- › Enable Devices
- › Find Outstation (Interface outputs must be excluded from this functionality)
- › Change Device Label

From the PC Browser it shall be possible to:

- › Manage Technician, Administration and End User Access Licences
- › Purchase Usage Access
- › Manage and view data at:
 - › Account Level
 - › Site Level
 - › Building Level
- › Mange the Control functionality of the Technician’s app from 10 mins to 10 hours

The Browser shall be able to produce standard reports for the following:

- › Assets
- › Events
- › Building Reports including ‘Corrective Actions’
- › Maintenance Reports to BS 5839-1
- › Device Age and Device Condition Reports
- › Custom Reports
- › Maintenance and Commissioning Completion Documentation
- › Length and Type of Licencing on Self-Test Detectors

Usage

Only a Notifier authorised service representative trained to operate the CLSS software shall be allowed to Test and Inspect components, assemblies, and equipment installations, including connections.

Self-Test Fire Detection

Annual Maintenance and Compliance to Code or Practice

Annual Test and Inspect ion using Self-Test Detectors: One year after date of installation, the Fire Alarm System shall be tested in compliance to BS 5839 Part 1:2017 and shall generate an automated report from the CLSS Mobile App to prove that the system has been fully tested using the Self-Test Detector process.

Reporting

A report compliant to your local Code of Practice shall automatically be generated from the Mobile App upon completion of the maintenance inspection and provided to applicable parties either printed, electronically or stored in ‘The Cloud’ for future reference. Reports shall be produced directly from data stored in ‘The Cloud’ and shall be able to be exported in PDF, Word, and CSV file formats.

Self-Test

SUMMARY

The Fire System shall be capable of supporting Self-Testing initiating devices without the need of traditional physical testing methods using magnets or smoke poles. Actuation of Self-Test process shall be done via the Connected Life Safety Services (CLSS) Mobile App. The detection devices to be installed shall be capable of automated testing using the physical phenomena that triggers the alarm event. The use of algorithm/ software/ light based automated testing, where no real smoke or heat is introduced into the detection chamber, shall not be permitted.

The devices that shall be available with the Self-Testing capability include:

- › SELF-TESTING Optical Heat
- › SELF-TESTING Optical
- › SELF-TESTING Heat

Compliance with Standards

The addressable Self-Test Multi-Criteria Detector shall be Third-Party approved to EN54-5, EN 54-7, EN 54-29 & EN54-17

Detector Functionality

Smoke Detection

The Detector shall use the photoelectric (light-scattering) principle 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.

Multi-Criteria

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. Self-Test Detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signaling Line Circuit Loops.

The Detector shall operate on a digital protocol to give reduced power consumption, up to 159 Detectors and 159 Modules may be connected to a single Loop. The Detectors shall be fitted with a Loop isolation device in-built into the device.

Loop Mapping

Location of devices on the Loop circuit shall, with the aid of a Loop Mapping Tool (POL-200), be able to identify its location and address on the Loop allowing for a schematic layout drawing to be produced and printed for use in the O&M Manual.

Installation

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

Group Polling

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

Address Setting

The Detectors shall provide address setting on the Detector head using decimal rotary 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 store an internal identifying code that the Control Panel shall use to identify the type of Detector.

Visual Indication

The Detectors shall provide dual Tri-colour LEDs. The LEDs 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 LEDs shall be configurable from the C.I.E to give visual indication of:

- › Device Healthy
- › Fire
- › Fault – Isolation in Use
- › Test Mode
- › Chamber Fault
- › Self-Test Functional Test and Visual Inspection Mode

If required, the flashing mode operation of the Detector LEDs 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 automatically be adjusted by the Panel on a time-of-day basis.

The Detector shall be capable of six 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 & 29 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 parts 7 & 29.

Additional requirements

Up to 159 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.

Self-Test Initiating Devices

Initiating devices shall be capable of providing both a functional test and smoke entry test using a Self-Test function. Detectors shall be compatible with standard and sounder VAD bases. The Detector shall transmit a wireless beacon activated only during Self-Test mode designed to communicate with the CLSS app to prove successful completion of a visual inspection.

Self-Test Functions

Smoke Testing

The photoelectric chamber Self-Test Multi-Criteria Detectors shall be capable of providing both a functional test of the photoelectric chamber and smoke entry test using an automated smoke based Self-Test function placed within the Detector. The Self-Test Detector shall generate a controlled amount of smoke into the chamber which will test the optical chambers response to a real smoke simulation.

A Fault Condition shall be generated if the Self-Test Detector determines that the photoelectric chamber is not functioning. The Self-Test Detector shall be capable of an anti-masking function that shall measure the dilution of smoke within a set time frame to determine if there is anything obstructing the smoke inlets of the Self-Test Detector. A Fault Condition shall be generated if the Self-Test Detector determines that the smoke inlets are obstructed.

Heat Testing

The Self-Test Detector shall generate a controlled amount of heat into the thermistor which will test the thermal response to a real heat simulation. The thermistor Self-Test Multi-Criteria Detectors shall be capable of providing a functional test of the thermistor using an automated Self-Test function placed within the Detector. A Fault Condition shall be generated if the Self-Test Detector determines that the thermistor is not functioning.

Visual Inspection Testing

The Detector shall transmit via a wireless beacon, communicating its address and device label to an engineer using the CLSS App. When the inspecting technician is within the visual inspection range of the Self-Test device, they shall be able to view the Device Number, Label, Zone and Device Type. If multiple devices are within visual inspection range, the Mobile App shall clearly display the Self-Test device in the closest proximity at the top of the list. The engineer shall validate the successful completion of a visual inspection whilst in visual inspection range of the device via the CLSS App. They shall also be able to pass or fail any visual inspections whilst recording any outstanding corrective actions needed.

This document is not intended to be used for installation purposes.
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