GENT

by Honeywell

NANO - 1 LOOP ANALOGUE ADDRESSABLE SYSTEM

CONSULTANT'S SPECIFICATION GUIDE

FIRE SYSTEM **INNOVATORS**

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1. NANO – 1 LOOP FIRE ALARM CONTROL PANEL

Manufactured to EN54 parts 2 & 4

Part Nos:

Nano-24 (1 loop Nano Fire Alarm Control Panel including batteries)

Nano-Flush (Flush Mounting Bezel)

1.1. FEATURES

- 8 line by 40 Character LCD display
- 16 zonal LED's
- Easy to navigate control and system management keys
- 2 x 24v DC 200mA monitored master alarm outputs
- Input for class change or to trigger evacuation from external system
- Monitored input
- RS232 output for connection to repeat indicator or remote serial printer
- Fire output relay, change over contacts 24v DC, 1 amp rated
- Fault output relay, change over contacts 24v DC, 1 amp rated
- USB port for connection to PC / programming tool
- Plug in SD card slot to support up to 1Gb of system data
- 24v DC, 200mA auxiliary power supply

Link to – Nano Literature

The control panel will log the following:

- The last 250 events on a last in first out basis. The SD card may be used to log a more extensive event history.

The following programmable software features shall be provided as standard without the requirement for separate software enhancements or modules.

- 16 individual detection zones
- 16 individually programmable sectors (sounder groups)
- Zone to sector linking allowing alert and evacuate signals to be controlled for a phased system of evacuation across all 16 zones.
- 3 separate sound signals: including the bell tone, with the additional ability to include voice messaging of up to 20 seconds of speech

- Sensors with speech option having 2 voice messages as standard within the flash memory component
- SAFE addressing and 'soft' addressing (does not require manual setting of switches in either, the head or the base)
- 32 character length address labels per system device connected to the detection loop
- Programmable delay for delayed operation of sounders, including EN54 Part 2 verification function
- Programmable timer to allow switching of sensor state from day to night mode
- Programmable weekly test reminder and 'Next MCP to test Prompt
- Programmable maintenance reminder
- Fire test mode allowing test mode by zone of choice and auto silence of sounders during tests

1.2. NANO LOOP PARAMETERS

- 1 loop Fire Alarm Control Panel
- Max 1km of 1.5mm 2 core fire resistant cable
- 127 addressable devices
- 125 x 85 dBa sensors with integral sounder
- 127 dedicated addressable sounders
- 100 strobes
- 60 loop powered combined electronic sounders and strobes
- 8 loop powered beam sensor pairs (transmitter and receiver)
- 4 serial repeat indicator panels direct from the control panel with the support of a supplementary power supply. One can be powered by the panel
- 4 mains powered interface units
- 4 x 4 way, loop powered and up to 16 single input or output interface units

1.3. SYSTEM OVERVIEW

The fire detection and alarm system will be single loop, supporting up to 127 devices, analogue in operation, with each sensor device providing signal levels relative to the current operating environment. These analogue samples will be transmitted to the control panel in a digital format to reduce possible corruption.

Addressing of any devices directly connected to the system will be carried out in a manner that does not require manual setting of switches in either, the head or the base i.e. all addressing will be carried out automatically by the control panel (soft addressed). Additionally the system should be SAFE addressed (Software Addressed Firm-ware Encoded), incorporating an E^2PROM allowing the soft address to be encoded permanently with each device. This will be achieved via a control panel software prompt only.

To maintain system performance & compatibility, all equipment to be provided by one manufacturer, this manufacturer will be certified by the British Standards Institute under the registered company scheme to ISO 9002.

All field devices to be connected to the control panel are to be wired directly via a 2 core loop circuit. Loop cable types to be selected in accordance with manufacturers' recommendations to ensure optimum performance. All detection alarm devices shall incorporate an internal short circuit isolation device as standard.

The fire alarm control panel shall be multi-tasking in operation with the detection loop utilising microcomputer technology to communicate with the main panel controller processor. The control panel shall be provided with access and user function keys to allow control and system programming / management.

The control panel will have an integral charger providing 24 hour standby capacity with monitored sealed lead acid cells enclosed within the control enclosure. The battery is to be maintenance free. The charger will be preset at a nominal DC output. The batteries will be provided to maintain a standby period of 24 hours (minimum) with a further 30 minutes under full alarm/control load conditions.

All analogue sensors and bases shall be provided by the manufacturer of the control system. No other make of sensors will be permissible.

The sensor bases for interfacing between the loop wiring and the sensor head shall be manufactured by means of injection moulded ABS plastic coloured white and shall not contain any electronics. The base fixings should be suitable for UK industry standard BESA or conduit boxes. All bases shall include the option to provide a programmable monitored input, which can be configured as fire input. The programmable output shall also be configurable for sending repeat fire signals to a remote LED unit.

The sensors provided shall be lockable into position if required and removal of locked sensors shall be achievable only through the use of the appropriate removal tools as specified by the manufacturer of the sensors. Sensor removal tools are to be handed over on completion of the contract as part of the spare parts profile.

Removal of a sensor from its associated base shall not affect the continuity of the detection loop.

1.4. NON-FUNCTIONAL REPEAT PANEL

Part Nos:

Compact-Rpt: (N54 LCD Non Functional Repeater Panel)

Up to 4 Non Functional Repeater Panels can be linked from the Nano Fire Alarm Control Panel

Non Functional Repeater Panels are wired in a multidrop radial circuit from the Nano Fire Alarm Control Panel.

The first Repeater can be powered from the control panel, additional Non Functional Repeaters require a local PSU.

Link to - Non Functional Repeater Literature

2. S-QUAD ANALOGUE SENSOR RANGE

The following types of analogue sensors will be available as standard:

Heat Sensors	
Heat Sensor	S4-720
Heat Sensor Sounder	S4-780
Heat Sensor Strobe Speech	S4-720-ST-VO
Optical Sensors options	
Optical Sensor	S4-715
Optical Heat Sensor	S4-710
Optical Heat Sensor Sounder	S4-770
Dual Optical Heat Sensors	
Dual Optical Heat Sensor	S4-711
Dual Optical Heat Sensor Sounder	S4-771
Dual Optical Heat Sensor Speech	S4-711-VO
Dual Optical Heat Sensor Strobe	S4-711-ST
Dual Optical Heat Sensor Strobe Speech	S4-711-ST-VO
CO Sensors	
Dual Optical Heat CO Sensor	S4-911
Dual Optical Heat CO Sensor Strobe Speech	S4-911-ST-VO
Accessories	
S Quad Sensor Base	S4-700
S Quad Remote LED	13449-01
Duct Housing *(including base and 0.6M tube)*	S4-34760

2.1. HEAT SENSOR

Standards: EN 54 Parts 5, 17 & 18

Part Nos:

S4-720 (Heat Sensor)

S4-700 (Base)

Key Features:

- 127 per loop
- Rate of Rise Sensing
- 6 configurable Sensing States
- 2 integral Line Isolators

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Heat Sensor Literature

2.2. HEAT SENSOR SOUNDER

Standards: EN 54 Parts 3, 5, 17 & 18

Part Nos:

S4-780 (Heat Sensor Sounder)

S4-700 (Base)

Key Features:

- 125 per loop
- Rate of Rise Sensing
- 6 configurable Sensing States (Heat Settings)
- Integral Sounder (85dbA typical)
- 2 integral Line Isolators

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Sounder:

Integral Sounders will be capable of providing up to 3 different sound signals, which are selected/configured via the main control panel. Individual sensor sounder volume levels shall be adjustable via the panel menu or a laptop PC with appropriate programming software from the manufacturer.

The frequency of sound signals emitted will be as follows:

- 910Hz Low Sound
- 970Hz High Sound

In order to meet with the requirements of BS5839 Part 1.

Activation of the sounder shall be independent of the detection of a fire condition by the sensing element.

Each sounder will have its own microprocessor to handle loop communications, which along with all other associated electronic components will be sealed.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Heat Sensor Sounder Literature

2.3. HEAT SENSOR SOUNDER STROBE & SPEECH

Standards: EN 54 Parts 3, 5, 17 & 18

Part Nos:

S4-720-ST-VO (Heat Sensor c/w sounder, strobe & speech)
S4-700 (Base)

Key Features:

- 60 per loop as Sounder
- Rate of Rise Sensing
- 6 Selectable Sensing States (Heat Settings)
- Integral Sounder (85dbA typical)
- 3 Speech Messages as standard
- 1 Bell Tone
- 2 integral Line Isolators

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Strobe:

The integral strobe element shall utilise a high power red LED with variable time pulsing for strobe effect. LED pulsing shall be synchronised with all other loop powered audible visual units located on the fire alarm and detection system with the option to programme changes to the pulse timings (ranging from 1 or 2 seconds). The strobe LED shall be fault monitored for working operation.

Activation of the strobe shall be independent of the detection of a fire condition by the sensing element.

Speech:

The speech function shall be provided by stored messages on an internal flash memory. Output from the flash memory processor shall be 20 seconds of speech. Additionally there shall be the capability to provide complex tones, such as bell tones. Each sensor shall include 4 standard messages within the flash memory.

As standard, the device flash memory shall contain the following messages:

Alert Message: (Female Voice)	"An incident has been reported in the building, please await further instructions"
Alarm Message 2: (Male Voice)	"This is a Fire Alarm! Please leave the building immediately by the nearest available exit"
Test Message: (Female Voice)	"This is a test message, no action is required"

It shall be possible to have bespoke site specific message and tone options recorded and installed.

A test of the message storage device, amplifier, power supply and tone generator 'piezo' within the voice enhanced sounder shall be carried out by the fire alarm control panel once an hour. Should the sounder fail to produce the required tone quality of sound output, then a fault indication shall be provided at the control panel. Sounders shall be capable of being tested for the conditions described above in both the quiescent and alarm state.

Bell Tone: In addition to the voice messages above, an 8 Inch solenoid bell recording shall be provided as a standard complex tone.

All speech outputs shall be synchronised with all other loop powered sensor speech devices and other loop powered audible visual units on the panel.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Heat Sensor Sounder Speech Strobe Literature

2.4. OPTICAL SENSOR

Standards: EN 54 Parts 7, 17 & 18

Part Nos:

S4-715 (Optical Smoke Sensor)

S4-700 (Base)

Key Features:

- 127 per loop
- Optical Sensor
- 6 Sensing States
- 2 integral Line Isolators

Optical Sensing:

Will be carried out by means of an Infra-red LED transmitting a pulse of light across an

obtuse angled chamber.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Optical Sensor Literature

2.5. OPTICAL/HEAT SENSOR

Standards: EN 54 Parts 5, 7, 17 & 18

Part Nos:

S4-710 (Optical Heat Sensor)

S4-700 (Base)

Key Features:

- 127 per loop
- Optical & Heat Sensor
- Sensing elements fully programmable to meet risk
- 11 Sensing States
- 2 integral Line Isolators

Optical Sensing:

Will be carried out by means of an Infra-red LED transmitting a pulse of light across an

obtuse angled chamber.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications

Link to - Optical Hear Sensor Literature

2.6. OPTICAL/HEAT SENSOR SOUNDER

Standards: EN 54 Parts 3, 5, 7, 17 & 18

Part Nos:

S4-770 (Optical Heat Sensor)

S4-700 (Base)

Key Features:

- 125 per loop
- Optical & Heat Sensor
- Sensing elements fully programmable to meet risk
- 11 Sensing States
- Integral Sounder (85dbA typical, +3dbA in turbo mode)
- 2 integral Line Isolators

Optical Sensing:

Will be carried out by means of an Infra-red LED transmitting a pulse of light across an

obtuse angled chamber.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Sounder:

Integral Sounders will be capable of providing up to 3 different sound signals, which are selected/configured via the main control panel. Individual sensor sounder volume levels shall be adjustable via the panel menu or a laptop PC with appropriate programming software from the manufacturer.

The frequency of sound signals emitted will be as follows:

- 910Hz Low Sound
- 970Hz High Sound

In order to meet with the requirements of BS5839 Part 1.

Activation of the sounder shall be independent of the detection of a fire condition by the sensing element.

Each sounder will have its own microprocessor to handle loop communications, which along with all other associated electronic components and will be sealed.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Optical Heat Sensor Sounder Literature

2.7 DUAL ANGLE OPTICAL/HEAT SENSOR

Standards: EN 54 Part 5, 7, 17 & 18

Part Nos:

S4-711 (Dual Optical Heat Sensor)

S4-700 (Base)

Key Features:

- 127 per loop
- Dual Optical & Heat Sensor
- Sensing elements fully programmable to meet risk
- 11 Sensing States
- 2 integral Line Isolators

This device will combine three individual sensing elements to provide excellent cover for multiple types of fires (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and other particles such as steam.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Dual Optical Hear Sensor Literature

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2.8. DUAL ANGLE OPTICAL/HEAT SENSOR SOUNDER

Standards: EN 54 Part 3, 5, 7, 17 & 18

Part Nos:

S4-771 (Dual Optical Heat Sensor c/w Sounder)

S4-700 (Base)

Key Features:

- 125 per loop
- Dual Optical & Heat Sensor
- Sensing elements fully programmable to meet risk
- 11 Sensing States
- Integral Sounder (85dbA typical)
- 2 integral Line Isolators

This device will combine three individual sensing elements to provide excellent cover for multiple types of fires (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and steam particles.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Sounder:

Integral Sounders will be capable of providing up to 3 different sound signals. Individual sensor sounder volume levels shall be adjustable via the panel menu or a laptop PC with appropriate programming software from the manufacturer.

The frequency of sound signals emitted will be as follows:

- 910Hz Low Sound
- 970Hz High Sound

In order to meet with the requirements of BS5839 Part 1.

Activation of the sounder shall be independent of the detection of a fire condition by the sensing element.

Each sounder will have its own microprocessor to handle loop communications, which along with all other associated electronic components will be sealed.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Dual Optical Heat Sensor Sounder Literature

2.9 DUAL ANGLE OPTICAL/HEAT SPEECH

Standards: EN 54 Parts 5, 7, 17 & 18

Part Nos:

S4-771-VO (Dual Optical Heat Sensor c/w Speech)

S4-700 (Base)

Key Features:

- 125 per loop as Sounder
- Dual Optical & Heat Sensor
- Sensing elements fully programmable to meet risk
- 11 Sensing States
- Integral Sounder (85dbA typical)
- 1 Bell Tone
- 2 integral Line Isolators

This device will combine three individual sensing elements to provide excellent cover for multiple types of fire (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and steam particles.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Speech:

The speech function shall be provided by stored messages on an internal flash memory. Output from the flash memory processor shall be 20 seconds of speech. Additionally there shall be the capability to provide complex tones, such as bell tones. Each sensor shall include 4 standard messages within the flash memory.

As standard, the device flash memory shall contain the following messages:

Alert Message: (Female Voice)	"An incident has been reported in the building, please await further instructions"
Alarm Message 2: (Male Voice)	"This is a Fire Alarm! Please leave the building immediately by the nearest available exit"
Test Message: (Female Voice)	"This is a test message, no action is required"

It shall be possible to have bespoke site specific message and tone options recorded and installed.

A test of the message storage device, amplifier, power supply and tone generator 'piezo' within the voice enhanced sounder shall be carried out by the fire alarm control panel once an hour. Should the sounder fail to produce the required tone quality of sound output, then a fault indication shall be provided at the control panel. Sounders shall be capable of being tested for the conditions described above in both the quiescent and alarm state.

Bell Tone: In addition to the voice messages above, an 8 Inch solenoid bell recording shall be provided as a standard complex tone.

All speech outputs shall be synchronised with all other loop powered sensor speech devices and other loop powered audible visual units on the panel.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Dual Optical Heat Sensor Speech Literature

2.10 DUAL ANGLE OPTICAL/HEAT SENSOR STROBE

Standards: EN 54 Parts 5, 7, 17 & 18

Part Nos:

S4-711-ST (Dual Optical Heat Sensor c/w Strobe)

S4-700 (Base)

Key Features:

- 60 per loop
- Dual Optical & Heat Sensor
- Sensing elements fully programmable to meet risk
- 11 Sensing States
- Integral Sounder (85dbA typical)
- High Output Strobe
- 2 integral Line Isolators

This device will combine two individual sensing elements to provide excellent cover for multiple types of fires (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and other particles such as steam.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Strobe:

The integral strobe element shall utilise a high power red LED. LED pulsing shall be synchronised with all other loop powered audible visual units located on the fire alarm and detection system. The strobe LED shall be fault monitored for working operation.

Activation of the strobe shall be independent of the detection of a fire condition by the sensing element.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Dual Optical Heat Sensor Strobe Literature

2.11. DUAL ANGLE OPTICAL/HEAT SENSOR SOUNDER STROBE WITH SPEECH

Standards: EN 54 Parts 3, 5, 7, 17 & 18

Part Nos:

S4-711-ST-VO (Dual Optical Heat Sensor c/w Sounder, Strobe & Speech)

S4-700 (Base)

Key Features:

- 60 per loop
- Dual Optical & Heat Sensor
- 11 Sensing States
- Integral Sounder (85dbA typical)
- 3 Speech Messages
- 1 Bell Tone
- High Output Strobe
- 2 integral Line Isolators

This device will combine two individual sensing elements to provide excellent cover for multiple types of fires (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and other particles such as steam.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

Sounder:

Integral Sounders will be capable of providing up to three different sound signals, which are selected/configured via the main control panel. Individual sensor sounder volume levels shall be adjustable via the panel menu or a laptop PC with appropriate programming software from the manufacturer.

The frequency of sound signals emitted will be as follows:

- 910Hz Low Sound
- 970Hz High Sound

In order to meet with the requirements of BS5839 Part 1.

Activation of the sounder shall be independent of the detection of a fire condition by the sensing element. The device shall also incorporate and activate a self test low volume audible sequence.

Each sounder will have its own microprocessor to handle loop communications, which along with all other associated electronic components will be sealed.

Strobe:

The integral strobe element shall utilise a high power red LED. LED pulsing shall be synchronised with all other loop powered audible visual units located on the fire alarm and detection panel. The strobe LED shall be fault monitored for working operation.

Activation of the strobe shall be independent of the detection of a fire condition by the sensing element.

Speech:

The speech function shall be provided by stored messages on an internal flash memory. Output from the flash memory processor shall be 20 seconds of speech. Additionally there shall be the capability to provide complex tones, such as bell tones. Each sensor shall include four standard messages within the flash memory.

As standard, the flash memory shall contain the following messages:

Alert Message: (Female Voice)	"An incident has been reported in the building, please await further instructions"
Alarm Message 2: (Male Voice)	"This is a Fire Alarm! Please leave the building immediately by the nearest available exit"
Test Message: (Female Voice)	"This is a test message, no action is required"

It shall be possible to have bespoke site specific message and tone options recorded and installed.

A test of the message storage device, amplifier, power supply and tone generator 'piezo' within the voice enhanced sounder shall be carried out by the fire alarm control panel once an hour. Should the sounder fail to produce the required tone quality of sound output, then a fault indication shall be provided at the control panel. Sounders shall be capable of being tested for the conditions described above in both the quiescent and alarm state.

Bell Tone: In addition to the voice messages above, an 8 Inch solenoid bell recording shall be provided as a standard complex tone.

All speech outputs shall be synchronised with all other loop powered sensor speech devices and other loop powered audible visual units on the Panel.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications.

Link to - Dual Optical Heat Sensor Sounder Strobe & Speech Literature

2.12. DUAL ANGLE OPTICAL/HEAT SENSOR WITH CO

Standards: EN 54 Parts 5, 7 17 & 18

Part Nos:

S4-911 (Dual Optical Heat CO Sensor)

S4-700 (Base)

Key Features:

- 127 per loop
- Dual Optical, CO & Heat Sensor
- Sensing elements fully programmable to meet risk
- 9 Sensing States
- 2 integral Line Isolators

This device will combine four individual sensing elements to provide excellent cover for multiple type of fires (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and other particles such as steam.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

CO Sensing:

The CO element shall be incorporated into the optical chamber to sense the presence of carbon monoxide gas emissions from smouldering fires. The CO element shall have a life expectancy of a minimum of 5 years. This element shall be fault and life monitored.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications. The optical/heat sensor with integral CO sensor shall include a further blue LED giving a flashing indication for presence of carbon monoxide.

Link to - Dual Optical Heat CO Sensor Literature

2.13. DUAL ANGLE OPTICAL/HEAT SENSOR WITH CO STROBE AND SOUNDER SPEECH

Standards: EN 54 Parts 3, 5, 7, 17 & 18

Part Nos:

S4-911-St-VO (Dual Optical Heat CO Sensor c/w Sounder, Strobe & Speech)

S4-700 (Base)

Key Features:

- 60 per loop
- Dual Optical, CO & Heat Sensor
- 9 Sensing States
- Integral Sounder (85dbA typical)
- 3 Speech Messages
- 1 Bell Tone
- High Output Strobe
- 2 integral Line Isolators

This device will combine four individual sensing elements to provide excellent cover for multiple type of fires (Slow smouldering and fast free burning).

Optical Sensing:

Sensing will be carried out by 2 infra-red LED transmitters using separate optical detection angles. This sensor shall process both the reflection and light absorption properties of particles entering the detection chamber of the device, allowing the detection system to differentiate between smoke and other particles such as steam.

Heat Sensing:

Will be carried out by a thermistor, sampling the surrounding environmental temperature.

CO Sensing:

The CO element shall be incorporated into the optical chamber to sense the presence of carbon monoxide gas emissions from smouldering fires. The CO element shall have a life expectancy of a minimum of 5 years. This element shall be fault and life monitored.

Sounder:

Integral Sounders will be capable of providing up to 3 different sound signals, which are selected/configured via the main control panel. Individual sensor sounder volume levels shall be adjustable via the panel menu or a laptop PC with appropriate programming software from the manufacturer.

The frequency of sound signals emitted will be as follows:

- 910Hz Low Sound
- 970Hz High Sound

Activation of the sounder shall be independent of the detection of a fire condition by the sensing element. The device shall also incorporate and activate a self test low volume audible sequence.

Each sounder will have its own microprocessor to handle loop communications, which along with all other associated electronic components will be sealed.

Strobe:

The integral strobe element shall utilise a high power red LED with variable time pulsing for strobe effect. LED pulsing shall be synchronised with all other loop powered audible visual units located on the fire alarm and detection system. The strobe LED shall be fault monitored for working operation.

Activation of the strobe shall be independent of the detection of a fire condition by the sensing element.

Speech:

The speech function shall be provided by stored messages on a internal flash memory. Output from the flash memory processor shall be 20 seconds of speech. Additionally there shall be the capability to provide complex tones, such as bell tones. Each sensor shall include four standard

messages within the flash memory.
As standard, the flash memory shall contain the following messages:

Alert Message: (Female Voice)	"An incident has been reported in the building, please await further instructions"
Alarm Message 2: (Male Voice)	"This is a Fire Alarm! Please leave the building immediately by the nearest available exit"
Test Message: (Female Voice)	"This is a test message, no action is required"

It shall be possible to have bespoke site specific message and tone options recorded and installed.

A test of the message storage device, amplifier, power supply and tone generator 'piezo' within the voice enhanced sounder shall be carried out by the fire alarm control panel once an hour. Should the sounder fail to produce the required tone quality of sound output, then a fault indication shall be provided at the control panel. Sounders shall be capable of being tested for the conditions described above in both the quiescent and alarm state.

Bell Tone: In addition to the voice messages above, an 8 Inch solenoid bell recording shall be provided as a standard complex tone.

All speech outputs shall be synchronised with all other loop powered sensor speech devices and other loop powered audible visual units on the Panel.

Each sensor will possess an integral red LED giving a flashing indication for a fire signal or a continuous indication for certain fault indications. The optical/heat sensor with integral CO sensor shall include a further blue LED giving a flashing indication for presence of carbon monoxide.

Link to - Dual Optical Heat CO Sensor Sounder Strobe with Speech Literature

3. BEAM SENSORS

EN 54 Parts 12, 17 & 18

Part Nos:

S4-34740 (Beam Sensor Pair)

S4-34741-01 (Angle Bracket & Base)

S4-34741-03 (Parallel Bracket & Base)

S4-34741-99 (Light Shield for Beam Receiver)

Key Features:

- 8 pairs connected & powered by the fire alarm loop
- Analogue Addressable Optical Technology
- 7 sensitivity states
- 2 integral Line Isolators

Addressable Beam sensors shall be wired as part of the Fire Alarm Loop & will **not** require any additional control/supply equipment. Transmitter & Receiver must be wired on the same loop.

The control panel shall possess the ability to adjust the gain of respective beam sensors either by setting a level through the control panel (direct) or by automatically adjusting the gain to a suitable level for ambient conditions (autogain).

The panel will also allow facilities to enable beams to be aligned by one person. This will involve the flashing of a series of LED's on the Beam devices giving a signal strength indication and with a remote autogain facility on the device.

It shall be possible to wire a test switch to the beam transmitter base and sited at a convenient location for periodical testing of the beam alarm function.

Link to - Loop Powered Beam Detector Literature

4. DUCT SENSOR HOUSING

Part Nos:

S4-34760 – Duct Sensor Housing & Base (does not include detector

Key Features:

- 127 per loop
- S-Quad Detection used in the Duct Detector

This device shall employ a moulded plastic housing with clear viewing window and metal probes to pick up smoke in ventilation ducts. The housing shall provide a smoke entry test point and an airflow indication. Dependant on the risk and sensitivity levels required, the sensor to be fitted shall be selected from the full range of sensors available and not factory fitted.

This unit is particularly suitable for sensing smoke particles in ducting which is likely to be in large quantity and flowing fairly quickly.

The states of operation will be as described for the particular sensor.

Link to - Duct Sensor Literature

5. S-QUAD BASES

All of the above shall be compatible with the aforementioned base providing inter-changeability between sensor heads, without the requirement for switch settings

The bases for interfacing between the loop wiring and the sensor head will be manufactured by means of injection moulded ABS plastic coloured white and shall not contain any electronics. The bases are suitable for mounting on UK industry standard BESA or conduit boxes

Bases can be provided with a plastic removable dust cover for protection during site construction as well as an IP rated sealing gasket to prevent dirt and moisture from entering through from the fixing surface.

Removal of a sensor from the sensor base shall not affect the continuity of the detection loop.

All bases include the connection to provide a monitored fire or fault input from third party equipment for display and operation at the control and indication panel or in the case of remote locations, connection to a Remote LED by means of a fault monitored 2 core cable.

6. MANUAL CALL POINTS

EN54 part 11 & 17

Part Nos:

S4-34800 (Manual Call Point c/w Glass)

S4-34842 (Manual Call Point c/w Glass & Protective Cover)

S4-34805 (Manual Call Point c/w Resettable Element, this element can be branded)

S4-34845 (Manual Call Point c/w Resettable Element & Protective Cover)

S4-34807 (Manual Call Point c/w Keyswitch)**

S4-34896 (Manual Call Point Weatherproof Enclosure)

Key Features:

- 127 per loop
- Option of glass or resettable element
- Surface or Semi Flush options
- 2 integral Line Isolators

Each MCP shall contain its own microprocessor ensuring a less than 1 second response time from initiation. All electronic devices contained within the MCP shall be sealed so as to prevent damage from hostile environment conditions: i.e. dust, up to a rating of IP32. For additional protection from environmental conditions a weatherproof version of the MCP shall be available to provide a rating of IP54.

The MCP will be available for either semi-flush or surface fixing. Semi-flush flanges shall be available in black.

The device can be tested functionally without the need to either remove the front cover and/or break the glass, using a special test key (supplied as standard). The key shall insert in a keyway concealed by a sliding cover.

Upon operation of the break glass the integral LED will flash to denote operation, this being cancelled upon the operation of a reset procedure. The system must not allow a “Fire” reset to take place until a new glass has been correctly inserted. Should a “Fire” reset be operated with a MCP still being in the operated mode, the panel will inform the user of the situation, e.g.

“Call Point not reset properly

Please investigate and try again”

These devices will comply fully with EN54 Part11

** keyswitch variant (S4-34807) is certified to EN54 part 17 and should be used in conjunction with the fire risk assessment where there is a high risk of malicious activations

Link to - Manual Call Point Literature

7. SOUNDERS

7.1. SYSTEM SOUNDER

EN54 Part 3 & Part 17

Part Nos:

S2IP-SN-R-V2 *(*103db Electronic Sounder (Red) Rated at IP55)

S2IP-SN-W-V2 (103 db Electronic Sounder (White) Rated at IP55)

Key Features:

- 127 per loop
- Red & White options
- 103 dbA @ 1 metre
- 3 Sound signals
- 2 integral Line Isolators

System sounders shall be capable of providing a minimum sound level of 103dBA

± 2 dBA @ 1 metre.

Sounder:

The sounders shall be capable of providing 3 different sound signals, which are selected/configured via the main control panel. Configuration of sounder patterns will not be carried out locally at individual sounders.

In order to meet with the requirements of BS5839 Part 1, the frequency of sound signals emitted will be as follows:

- 800Hz Low tone
- 970Hz High tone

Each sounder shall include its own microprocessor to handle loop communications and monitoring. All associated electronic components shall be sealed.

Link to - S-Cubed 103db Sounder Literature

7.2. LOW PROFILE SOUNDER

EN54 Part 3 & Part 17

Part Nos:

S3-SN-R-V2 (100db Electronic Sounder Red)

S3-SN-W-V2 (100db Electronic Sounder White)

S3IP-SN-R-V2 (100db Electronic Sounder Red Rated IP55)

S3IP-SN-W-V2 (100db Electronic Sounder White Rated IP55)

Key Features:

- 127 per loop
- Red & White options
- 100 db @ 1 metre
- 3 Sound signals
- 2 integral Line Isolators

A low profile electronic sounder shall be capable of providing a minimum sound level of 100dBA ± 2dBA @ 1 metre.

Sounder:

The sounders shall be capable of providing 3 different sound signals, which are selected/configured via the main control panel. Configuration of sounder patterns will not be carried out locally at individual sounders.

In order to meet with the requirements of BS5839 Part 1, the frequency of sound signals emitted will be as follows:

- 800Hz Low tone
- 970Hz High tone

Each sounder shall include its own microprocessor to handle loop communications and monitoring.

All associated electronic components shall be sealed.

Link to - S-Cubed Low Profile 100db Sounder Literature

7.3. ELECTRONIC STROBE

Part Nos:

S2IP-ST-RR (Red Body Red Strobe)

S2IP-ST-WR (White Body Red Strobe)

S2IP-ST-WA (White Body Amber Strobe)

S2IP-ST-RW (Red Body White Strobe)

Key Features:

- 100 per loop
- Red body / red lens
- White body / red lens
- White body / amber lens
- Red body / white lens
- All Strobe only devices rated IP55
- 2 integral Line Isolators

Strobe:

The electronic strobe shall be suitable for direct connection to the 2 core detection loop. The device shall have a matrix of high brightness LED's providing a light output equivalent to a 3W xenon strobe.

The frequency of the electronic strobe light output shall be 0.5Hz (Alert) and 1Hz (Evacuate).

The electronic strobe shall have an ingress protection rating of IP55.

The unit shall be manufactured from ABS plastic with a polycarbonate lens. Body and lens colour options shall be as listed above

Each electronic strobe shall include its own microprocessor to handle loop communications and monitoring of the internal strobe element for faults in both the quiescent and alarm conditions. The internal circuit assembly and all other associated electronic components shall be sealed to provide protection from hostile operating environments.

Link to - S-Cubed Strobe Literature

GENT
by Honeywell

7.4 LOW PROFILE SOUNDER WITH STROBE

EN54 Part 3 & 17

Part Nos:

S3-SN-ST-RR-V2 (100db Electronic Sounder Red Body Red Strobe)

S3-SN-ST-WR-V2 (100bd Sounder White Body Red Strobe)

S3IP-SN-ST-RR-V2 (100db Electronic Sounder Red Body Red Strobe IP55 rated)

S3IP-SN-ST-WR-V2 (100 db Electronic Sounder White Body Red Strobe IP55 Rated)

Key Features:

- 60 per loop
- Red & White moulding options
- Red body / red lens
- White body / red lens
- 100 db @ 1 metre
- 3 Sound signals
- 2 integral Line Isolators

Sounder:

The sounders shall be capable of providing 3 different sound signals, which are selected/configured via the main control panel. Configuration of sounder patterns will not be carried out locally at individual sounders.

In order to meet with the requirements of BS5839 Part 1, the frequency of sound signals emitted will be as follows:

- 800Hz Low tone
- 970Hz High tone

Each sounder shall include its own microprocessor to handle loop communications and monitoring.

All associated electronic components shall be sealed.

Strobe:

The electronic strobe shall be suitable for direct connection to the 2 core detection loop. The device shall have a matrix of high brightness LED's providing a light output equivalent to a 3W xenon strobe.

The frequency of the electronic strobe light output shall be 0.5Hz (Alert) and 1Hz (Evacuate).

The electronic strobe shall have an ingress protection rating of IP55.

The unit shall be manufactured from ABS plastic with a polycarbonate lens. Body and lens colour options shall be as follows:

Each electronic strobe shall include its own microprocessor to handle loop communications and monitoring of the internal strobe element for faults in both the quiescent and alarm conditions. The internal circuit assembly and all other associated electronic components shall be sealed to provide protection from hostile operating environments.

The unit shall be manufactured from ABS plastic with a polycarbonate lens. Body and lens colour options shall be as follows:

- Red body / red lens
- White body / red lens
- White body / amber lens
- Red body / white lens

Link to - S-Cubed Sounder Strobe Literature

7.5. VOICE ENHANCED SOUNDER

Part Nos:

S3-VP-R (100db Electronic Sounder with Voice Enhanced Messages Red)

S3-VP-W (100db Electronic Sounder with Voice Enhanced Messages White)

S3IP-VP-R (100db Electronic Sounder with Voice Enhanced Messages (Red) IP55 Rated)

S3IP-VP-W (100db Electronic Sounder with Voice Enhanced Messages (White) IP55 Rated)

Key Features:

- 125 per loop
- 100 db @ 1 metre
- 3 Sound signals
- 3 Voice Messages
- Bell tone
- 2 integral Line Isolators

Speech:

The system sounder, low profile sounder and combined sounder and strobe unit described previously shall be available in a 'voice enhanced' version.

The sounder unit shall incorporate a microprocessor which has up to 20 seconds of available storage space to be used for voice messages or a complex tone (for example, a bell tone in the event of class change).

As standard, the flash memory shall contain the following messages:

Alert Message: (Female Voice) "An incident has been reported in the building, please await further instructions"

Fire Message 1: (Female Voice) "Attention please, this is an emergency please leave the building by the nearest available exit"

Fire Message 2: (Male Voice) "This is a Fire Alarm! Please leave the building immediately by the nearest available exit"

Test Message: (Female Voice) "This is a test message, no action is required"

It shall be possible to have bespoke site specific message and tone options recorded and installed.

A test of the message storage device, amplifier, power supply and tone generator 'piezo' within the voice enhanced sounder shall be carried out by the fire alarm control panel once an hour. Should the sounder fail to produce the required tone quality of sound output, then a fault indication shall be provided at the control panel. Sounders shall be capable of being tested for the conditions described above in both the quiescent and alarm state.

Bell Tone: In addition to the voice messages above, an 8 Inch solenoid bell recording shall be provided as a standard complex tone.

All the voice messages shall be synchronised across the detection loops by means of a regular synchronisation signal generated by the fire alarm control panel.

With the voice enhanced sounder option, it shall be possible to mix the standard sound signals, voice messages & complex tones. Up to 3 different sound signals, which are selected/configured via the main control panel, shall be employed by the fire detection system. Configuration of sounder patterns shall not be carried out locally at individual sounders.

The voice enhanced sounder option shall be available with an ingress protection rating of IP31 or IP55 and shall be available in red or white colour options.

Link to - S-Cubed Voice Enhanced Sounder Literature

7.6. VOICE ENHANCED SOUNDER WITH STROBE

Part Nos:

S3-VP-ST-RR (100db Electronic Sounder Red Body Red Strobe with Voice Enhanced Messages)

S3-VP-ST-WR (100db Electronic Sounder White Body Red Strobe with Voice Enhanced Messages)

S3IP-VP-ST-RR (100db Electronic Sounder Red Body Red Strobe with Voice Enhanced Messages (Red) IP55 Rated)

S3IP-VP-ST-WR (100db Electronic Sounder White Body Red Strobe with Voice Enhanced

Messages (White) IP55 Rated)

Key Features:

- 60 per loop
- Red & White options
- 100 db @ 1 metre
- 3 Sound signals
- 3 Voice Messages
- Bell tone
- Integral Strobe
- 2 integral Line Isolators

Speech:

The system sounder, low profile sounder and combined sounder and strobe unit described previously shall be available in a 'voice enhanced' version.

The sounder unit shall incorporate a microprocessor which has up to 20 seconds of available storage space to be used for voice messages or a complex tone (for example, a bell tone in the event of a class change).

As standard, the flash memory shall contain the following messages:

Alert Message: (Female Voice) "An incident has been reported in the building, please await further instructions"

Fire Message 1: (Female Voice) "Attention please, this is an emergency please leave the building by the nearest available exit"

Fire Message 2: (Male Voice) "This is a Fire Alarm! Please leave the building immediately by the nearest available exit"

Test Message: (Female Voice) "This is a test message, no action is required"

It shall be possible to have bespoke site specific message and tone options recorded and installed.

A test of the message storage device, amplifier, power supply and tone generator 'piezo' within the voice enhanced sounder shall be carried out by the fire alarm control panel once an hour. Should the sounder fail to produce the required tone quality of sound output, then a fault indication shall be provided at the control panel. Sounders shall be capable of being tested for the conditions described above in both the quiescent and alarm state.

Bell Tone: In addition to the voice messages above, an 8 Inch solenoid bell recording shall be provided as a standard complex tone.

All the voice messages shall be synchronised across the detection loops by means of a regular synchronisation signal generated by the fire alarm control panel.

With the voice enhanced sounder option, it shall be possible to mix the standard sound signals, voice messages & complex tones. Up to 3 different sound signals, which are selected/configured via the main control panel, shall be employed by the fire detection system. Configuration of sounder patterns shall not be carried out locally at individual sounders.

The voice enhanced sounder option shall be available with an ingress protection rating of IP31 or IP55 and shall be available in red or white colour options.

Strobe:

The electronic strobe shall be suitable for direct connection to the 2 core detection loop. The device shall have a matrix of high brightness LED's providing a light output equivalent to a 3W xenon strobe.

The frequency of the electronic strobe light output shall be 0.5Hz (Alert) and 1Hz (Evacuate).

The electronic strobe shall have an ingress protection rating of IP55.

The unit shall be manufactured from ABS plastic with a polycarbonate lens. Body and lens colour options shall be as follows:

Each electronic strobe shall include its own microprocessor to handle loop communications and monitoring of the internal strobe element for faults in both the quiescent and alarm conditions. The internal circuit assembly and all other associated electronic components shall be sealed to provide protection from hostile operating environments.

Link to - S-Cubed Voice Enhanced Sounder Strobe Literature

8. SOUNDER CONTROL

Loop wired sounders may be grouped or **SECTORED** together to provide phased or delayed evacuation procedures. All linking of sounders and output patterns shall be easily configured within the control panel software, giving flexibility of use should any of the site criteria change at a later date.

9. INTERFACE UNITS

Interfaces will be directly connected to the loop, these being:

Loop powered 4 channel interface unit

Loop powered 1 Channel Input

Loop Powered 1 Channel Output Interface MV

Mains powered 4 channel interface c/w integral power supply and battery standby (2 versions)

9.1. LOOP POWERED 4 CHANNEL INTERFACE UNIT

EN54 Part 17 & 18

Part Nos:

S4-34450 (4 Channel Input/Output Interface)

Mounting Options available

S4-34490 Large plastic enclosure

S4-34491 Din Rail mounting bracket

S4-34492 Metal Enclosure

- 16 per loop
  - Supervisory Input
  - Fire Input
  - Fault Input
- 2 output signals which can be individually programmed as
  - Output
  - LED
- Any combination of inputs or output (Conventional Zone only available on Channel 1)
- NO or NC contacts (configurable)
- Contacts rated at 2A 24V DC
- 2 integral Line Isolators

For input applications, a delay is available

These units will not require any form of external power supply and are fully maintained under mains power failure condition by the control panel's standby batteries.

Link to - Loop Powered 4 Channel Interface Literature

9.2. LOOP POWERED 1 CHANNEL INPUT UNIT

EN54 Part 17 & 18

Part Nos:

S4-34410

Mounting Options available

S4-34490 Large plastic enclosure

S4-34491 Din Rail mounting bracket

S4-34492 Metal Enclosure

Key Features:

- 16 per loop input signals which can be interpreted as
  - Fire Input
  - Fault Input
  - Supervisory Input
- 2 integral Line Isolators

For input applications, a delay is available

These units will not require any form of external power supply and are fully maintained under mains power failure condition by the control panel's standby batteries.

Link to - Single Channel (Input) Interface Literature

9.3. LOOP POWERED 1 CHANNEL OUTPUT INTERFACE MV

EN54 Part 17 & 18

Part Nos:

S4-34411 (1 Channel Output Mains Switching Din Rail Mounted)

S4-34415 (1 Channel Output Mains Switching Metal Boxed)

Key features:

- 16 per loop
- NO or NC contacts
- Contacts rated at 13A at a nominal voltage of 230VAC/24V DC

9.4 MAINS POWERED INTERFACE UNITS

EN54 Pts 4 & 17 & 18

Part Nos

S4-34440-02 (2 amp Mains Interface Unit c/w 2.1 AH Batteries)

S4-34440-12 (12 amp Mains Interface Unit c/w 12 AH Batteries)

Key features:

- 4 per loop if fully sectored
- BS7273 pt4 Cat A & B Compliance (Door Release Standard for Fail Safe Mode)
- 3 input signals which can be interpreted as
  - Zone Fire (Conventional Zones)
  - Fire Input
  - Supervisory Input
- 2 output signals which can be individually programmed as

    - Output LED
    - Drive Conventional Bells/Sounder/Beacons
- Any combination of inputs or outputs
- 230v supply required
- 2 x 2.1 AH (S4-3444-02) or 12AH (S4-3444-12) batteries for 24hr back up
- Can provide Auxiliary 12v/24v DC
- 2 integral Line Isolators

Input channels shall be capable of supporting the specified manufacturers current range of conventional detectors and manual call points, these being 24VDC operational.

These circuits will be fully monitored for open and short circuit faults providing that these devices are installed correctly and terminated with the correct end of line monitoring device.

Output channels will be capable of providing a 24V output in the event of an alarm. This may be used for driving conventional bells/relays. Providing these devices are installed correctly and terminated with an end of line monitoring device, the output will be fully monitored for open and short circuit faults. Each channel can provide 500mA in the event of an alarm condition being initiated. (1.5 or 2.5amp total load depending on model)

Within the enclosure provision will be made for mounting up to 4 octal base relays for remote signalling along with a suitable voltage barrier.

In the event of any of the above faults occurring or a problem developing with the mains or battery supply, a suitable fault message will be displayed on the fire control panel, e.g.

- Interface Input o/c
- Mains Supply Lost
- Interface battery fault

Confirmation that loop communications between interface units and main control panel are being carried out shall be identified by means of an on-board LED, which will illuminate upon a communications breakdown. Similarly an indication will be provided to represent 230VAC is being supplied to the unit.

Link to - Mains Powered Interface Literature