FIRECLASS

FC500 Series. Specification.

The power behind **your mission**

Johnson Controls

Contents

FIRECLASS

REVISION CONTROL

Author	Approved by	Revision number	Date	Comments
FC	MS	FC500AE01	21/05/20	First Issue - internal feedback
GT	PE	FC500AE02	12/08/20	Approved for release

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BRIEF

This is document is intended for use by Consultants and Architects for the purpose of designing a Fire Detection System.

SUSTAINABILITY MANDATE

Sustainability is an integral part of the vision and values of this project. It is therefore imperative that any manufacture selected should be capable of demonstrating the following:

Supporting their customers' increasing expectations for more sustainable products and services.

Fostering a culture of sustainability that engages and attracts people who want to make a difference.

Improving their operational efficiency, including lowering costs and reducing the environmental footprint of our operations and supply chain.

Expanding engagement with their stakeholders on environmental issues, including leading in global partnerships that increase the scale of their sustainability impact.

Demonstrating their commitment from the top, including continued integration of sustainability into company goals and decision-making

The design of the Fire Detection system shall demonstrate whole life cycle cost.

SUITABLE APPLICATIONS

Johnson Controls considers the FC503 and FC506 series to be suitable for the following applications:

Care homes

Theatres and Cinemas

House of Multiple Occupancy

Hotels

Health Centres

Retail

Offices

For other application please consider FC700 Series specification.

Please note this document does not include the FC501 panel.

GENERAL REQUIREMENTS

The Fire Alarm contractor shall:

Be responsible for Design, supply, installation, commissioning and maintenance of a digital addressable fire detection and alarm system, having an adequate number of competent staff trained and experienced in such and having available a complete set of technical manuals for all equipment installed.

Be capable of providing a remote alarm monitoring service with a direct communications link to the Fire Service

Be able to demonstrate experience in designing, installing, commissioning and maintaining fire detection and alarm systems, (at least 5 years of which must be with digital addressable systems) and be LPS 1014 or BAFE certificated and be approved to BS EN ISO 9002.

Permit the buyer, or its nominated agent, to conduct a quality audit at the premises where the proposed equipment is manufactured

EQUIPMNENT

All equipment central to the operation of the digital addressable fire alarm system (including control and indicating equipment, repeater equipment, addressable ancillary equipment, power supplies and automatic point detection equipment) shall:

Be designed and manufactured by the same company.

Installing and commissioning the system must be done by an approved (and officially trained) partner/customer of the manufacturer.

VARIATIONS

All variations from this specification that the contractor proposes to make shall be clearly indicated in writing, making reference to the relevant paragraph(s) of this specification.

SYSTEM LIFESPAN

Have a typical lifespan of at least 20 years and be fully backwards and forwards compatible during that lifespan for all software, firmware and hardware developments and innovations.

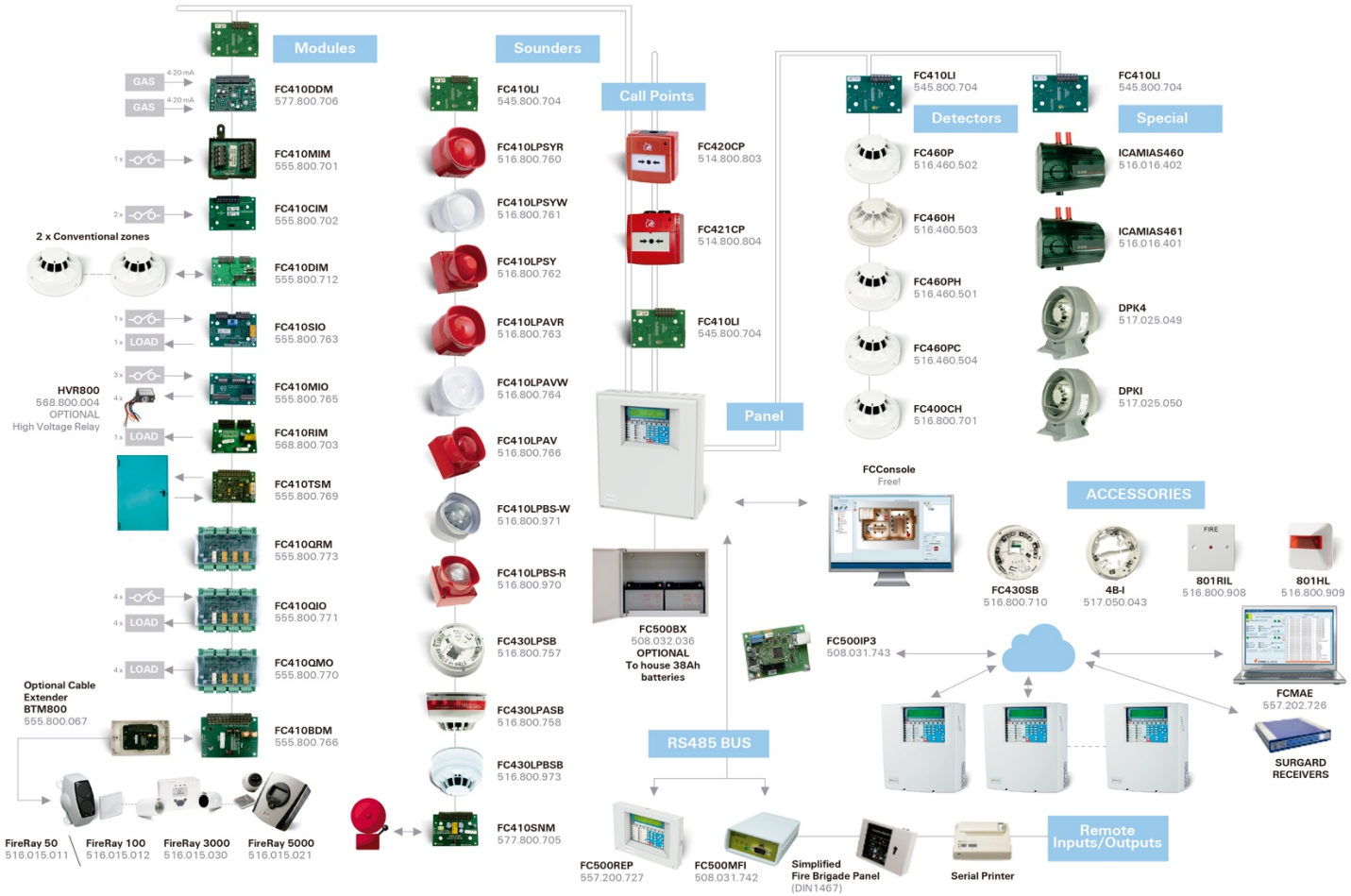
Provide an easy, cost effective upgrade path at end of life, utilising such methods and devices so that upgrades can be carried out without any loss of functionality, downtime or need to re-commission during any phase of works whilst upgrading.

Upgrades can be delivered and engineered in a flexible programme of works in incremental stages.

EQUIPMENT MANUFACTURER

Johnson Controls - Global Fire Detection Products, Tyco Park, Grimshaw Lane, Newton Heath, Manchester, M40 2WL http://fireclass.co.uk - +44 (0) 161 875 0491

SYSTEM CAPABILITY DRAWING



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STANDARDS AND PROCEDURES

Where applicable, the fire detection and alarm system, and installation, shall comply fully with the following British Standards and/or other nominated rules and regulations:

Standard	Revision	Description
BS 5839	BS 5839-1:2017	Code of practice for system design, installation commissioning and maintenance
	BS 5839-3:1988	Specification for automatic release mechanisms for certain fire protection equipment.
	BS 5839-6:2004	Code of practice for the design and installation of fire detection and alarm systems in dwellings.
	BS 5839-8:1998	Code of practice for the design, installation and servicing of voice alarm systems
	BS 5839-9:2003	Code of practice for design, installation and maintenance of emergency voice communication systems.
BS 4678	BS 4678-4:1999	Specification for cable trunking made of insulating material.
BS 5446	BS 5446-1:2000	Specification for smoke alarms
BS 6266	BS 6266:2002	Code of practice for fire protection for electronic equipment installations
BS 7273	BS 7273-1:2000	Electrical actuation of gaseous total flooding extinguishing systems.
	BS7273-4:2007	Actuation of release mechanisms for doors.
BS 7846	BS 7846:2000	Electric cables. 600/1000V armoured fire resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire.
BS7671	BS7671: 2001	Requirements for electrical installations. IEE Wiring Regulations Sixteenth Edition.
BS 7807	BS 7807	Code of practice for design, installation and servicing of integrated systems incorporating fire detection and alarm systems and/or other security systems for buildings other than dwellings.
HTM05	HTM05-03	Fire safety in health care premises. Alarm and detection systems.
FIA	FIA	FIA Code of practice for category 1 aspirating detection systems.
BS EN 54	BS EN 54	Fire detection and fire alarm systems
	BS EN 54-2:1998	Control and indicating equipment

	BS EN 54-3:2001	Fire alarm devices-Sounders
	BS EN 54-4:1998	Power supply equipment
	BS EN 54-5:2001	Heat detectors-Point detectors
	BS EN 54-7:2001	Smoke detectors- Point detectors using scattered light, transmitted light or ionisation.
	BS EN 54-10	Flame detectors
	BS EN 54-11:2002	Manual call points
	BS EN 54-12	Smoke detectors- Optical beam detectors
	BS EN 54-20	Test methods and performance criteria for aspirating smoke detectors
	BS EN 54-23	Fire detection and fire alarm systems. Fire alarm devices. Visual alarm devices
BS EN 50200	BS EN 50200	Method of test for resistance to fire of unprotected small cables for use in emergency circuits.
BS EN 50281	BS EN 50281-1-2:1999	Electrical apparatus for use in the presence of combustible dust-Selection, installation and maintenance
BS EN 60079	BS EN 60079-14:1997	Electrical apparatus for explosive gas atmospheres- Electrical installations in hazardous areas (other than mines).
BS EN 60702	BS EN 60702	Mineral insulated cables and their terminations with a rated voltage not exceeding 750V.
	BS EN 60702-1	Cables
	BS EN 60702-1	Terminations

2.1 A list all relevant standards

SPECIAL NOTE ON RELEVANT STANDARDS

It shall be noted that the standards would and could have been updated on an annual basis and the existence of an earlier date used in the product approval is still valid. Products that have earlier dates are from manufacturers that have an established product in the market place there by providing less risk of product related issues.

CONTROL AND INDICATING EQUIPMENT

GENERAL

The control and indicating equipment shall:

Be Open Protocol and modular in construction to allow for future extension of the system.

Incorporate two alternative methods to prevent unauthorised use of the manual controls (with the exception of the 'SILENCE BUZZER' control) using a key, and/or a password.

Be microprocessor based and operate under a multitasking software program. Operating programs and configuration data must be contained in easily up-datable non-volatile memory (EEPROM). The use of 'burnt' EPROM's will not be permitted.

Incorporate a real-time clock (with the ability to automatically adjust for daylight saving compensation).

Comprise separate processors, cross-monitoring each other's' correct operation, for the major functions of the systems. In particular, different processors must be used for the main control function, the detection input and alarm output functions, and the display and control function.

Have the capability to run between 250 to 500 addressable devices from each panel respectively with the address code for each held within the addressable device and programmed via either the control and indicating equipment or a dedicated programming tool.

Be field configurable by USB device or PC with configuration data being capable of back up on to a central storage system.

Meet the requirements of BS EN 54 part 2 and BS EN 54 part 4, shall be capable of being installed to BS 5839 part 1 and shall be approved, together with associated ancillary equipment, by a recognised third party accreditation body.

The Manufacturer shall provide a full Building Information Modelling (BIM) image for all the fire detection products. The integrator must adhere to BS EN ISO 19650-1 2018.

The Manufacturer shall provide a suite of software packages to simplify the design process. The software shall incorporate features such as Loop loading and battery calculation requirements.

The Manufacturer shall provide a software package that allows for programming of the system to include:

Device Addressing

Device naming

Cause and effect programming

The manufacturer shall provide a software package that will allow for cause and effect scenarios to be validated before being uploaded to the panel.

The manufacturer shall provide a software package that will allow simulation of the panels cause and effect to be displayed on a PC screen.

The software shall allow for individual or multiple devices to be triggered. The resulting output conditions to be represented in a graphical form.

The manufacturer shall provide an enclosure to cater for additional batteries.

The Fire Detection monitoring System shall support capability to be integrated with such systems as CCTV. Also be able to reference other documents within the PC or externally such as web sites for critical product information.

SYSTEM CONFIGURATION

The control and indicating equipment shall be capable of:

Working with either conventional or digital addressable types of automatic detection equipment. This should include ATEX approved intrinsically safe conventional detectors. Operating 1 fully loaded addressable loop, extendible up to a maximum capacity of 2 addressable loops.

System can contain up to 256 software zones. Loops must be capable to have isolators fitted to meet the requirements of Local standard such as BS5839-1.

Driving and monitoring up to 8 repeater panels providing a repeat of the panel indications and also incorporating the full set of system manual user controls.

Connection of external power supplies, either local or distributed throughout the system.

It shall also be possible to download configurations from a USB memory device without the use of a comp

The panel shall be capable of Flexible single or dual hardware loop configurations to optimise loop power and address capacity. The loop power shall be a maximum of 1000mA, to support up to 250 addresses, with up to 2000m of loop cable.

The panel will display a warning on the screen when the current exceeds 80% of the maximum value.

The loop can be split into three separate circuits and have the power intelligently distributed so that each loop can support the power it requires. For example the loop could be split to support 800/200mA or any combination up to the maximum 1000mA.

Preventing opening of the control and indicating equipment without the use of a tool.

It shall be possible for addressable input and output devices:

To be connected to addressable loops capable of accepting 250 devices.

To allocate all 250 addressable devices on the loop to a single zone.

To allocate addresses to devices independently of their physical arrangement on the loops

BASIC SYSTEM FUNCTIONS

The control and indicating equipment shall:

Monitor the status of all devices on the addressable loops for fire, short-circuit fault, open-circuit fault, incorrect addressing, unauthorised device removal or exchange, pre-alarm condition and contaminated detector condition.

Monitor the status of all internal connection and interfaces, including charger, battery and remote signalling functions provide discrete visual indications for all key function.

Provide the following facilities for signalling the following system conditions to a remote (Central Station) and/or an on-site monitoring centre: Alarm, Pre-alarm, Fault.

Be capable of monitoring and controlling remote site devices, such as door release units and relays for the control of plants and dampers, directly from the addressable loops, on conditions such as Fire Alarm, Fault, or Pre-Alarm.

Shall provide programmable outputs to activate emergency lighting in the event of a mains supply failure.

The fire detection system shall deploy a digital loop protocol based on frequency shift key.

Shall have a high resilience to electrical interference.

Shall support multiple wiring configurations.

Shall support 250 addresses per loop.

REPEATERS FULLY FUNCTIONAL

The control panel shall support up to 8 functional repeaters.

The repeater shall be capable of mounting in a remote enclosure or directly on a wall.

The wall mount shall be capable of flush or surface mounting.

The repeater shall provide an interface that provides features such as Zone identification, and allow for silencing and resetting of the alarm, viewing of event logs.

The repeater shall be managed by user level password with unique identification for up to 2 installers and 8 users.

ALARM MONIITORING FUNCTIONS

The control and indicating equipment shall:

Interrogate each addressable device at least once every 5 seconds.

Incorporate fire decision algorithms specifically adapted to the response characteristics of the digital addressable detectors employed. Algorithm processing in each detector will not be permissible.

Meet the response time requirement of the relevant part of EN54 and shall not exceed 10 seconds.

Have a special scanning sequence so that designated manual call points provide alarm indication and warning within 3 seconds of operation.

Have a facility to automatically adjust the sensitivity of addressable detectors to a higher level for periods of time when the building is unoccupied.

As a software enhancement, have the ability to annunciate a delay to alarm event designed, to give a delay to enable programmable output indication of an alarm condition without raising the full alarm Sounder outputs.

Have as standard a feature called Drift Compensation, this feature shall provide the ability to automatically adjust the alarm and pre-alarm threshold levels to compensate for changes in detector sensitivity due to contamination over a period of time.

Have as standard, the ability to provide automatic warning that a detector has reached a level of contamination which requires that it be replaced or serviced.

Have the ability to display the levels returned from the sensors in a meaningful way. I.e. temperature in degrees C, smoke in %/m and carbon monoxide in ppm.

ALARM OUTPUT FUNCTIONS

The control and indicating equipment shall:

Provide the necessary outputs, driving a sounder load of up to 500mA per circuit, to separately operate two monitored circuits of common system sounders.

Be able to monitor and control the integrity of zonal sounder circuits, via a suitable addressable module.

Be capable of providing a two-stage alarm sounder facility that can be programmed, on a common system basis, to meet the requirements of the fire authority. Two possible sound output signals shall be available including: Alert pulsed tone (1 second ON, 1 second OFF), Evacuate continuous tone.

Have the facility to change, on a per sounder basis, the sound output signal dependent upon whether the source is an alarm, a manual call point, an EVACUATE command, a non-fire event (for example plant alarm etc.)

Shall be capable of generating client definable time delay sequences to upgrade alarm sounder responses, without the need for external timers, as follows: Silent to Alarm, Silent to user defined tone.

Shall have the ability to delay the transmission to the Fire Brigade of fire alarm signals from automatic detectors. Configurable to a maximum of 2 minutes, extendable to 10 minutes if required. This function should be automatically inhibited when the building is unoccupied and should not apply to alarms generated by manual call points which shall always be transmitted immediately.

SUPERVISION AND FAULT REPORTING

The control and indicating equipment shall:

Monitor all critical system components and interconnections (internal and external). In the event of a failure occurring which prevents correct operation of the alarm functions, a FAULT indicator will light, and a message shall be given on the graphical display within 100 seconds of occurrence.

Provide text messages to indicate the precise location of where a fault has occurred in the system.

Be capable of monitoring and indicating the status of auxiliary units, such as a remote signalling transmitter.

SYSTEM MANAGEMENT FACILITIES

The control and indicating equipment shall:

Incorporate comprehensive system management facilities that can be restricted to Customer Manager Access level or above.

Have an event log capable of storing up to the last 4,000 events that have occurred

The loop powered sounder/ beacon shall incorporate an integral line isolator.

TECHNICAL SPECIFICATION

The control and indicating equipment shall operate on a mains power supply of:

230Vac +10% -15% @ 50 Hz

The control and indicating equipment, standard power supply unit and standard repeater unit shall comply with the following environmental conditions:

Operating temperature range: - -5 C to +40 C

Storage temperature: - -40 C to +80 C

Relative humidity: up to 95% RH (non-condensing)

IEC protection category: IP30 minimum

The control and indicating equipment, standard power supply unit shall comply with, at least, the EMC requirements described in BS EN 54 part 2 and BS EN 54 part 4.

AUTOMATIC FIRE DETECTORS

GENERAL REQUIREMNTS

The Fire Alarm contractor shall have available the following types of automatic detectors for direct connection to the system addressable loops:

Automatic Detector Type	Digital Addressable Version Required	Conventional Version Required
Triple sensing detection (heat, optical smoke & carbon monoxide)	Yes	
Optical smoke detectors	Yes	Yes
High performance optical smoke detectors	Yes	Yes
Infra-red flame detectors		Yes
Heat detectors	Yes	Yes
Carbon monoxide fire detectors	Yes	Yes
Aspirating smoke detection	Yes	Yes
High performance optical smoke detector for hazardous areas		Yes
Infra-red flame detectors for hazardous areas		Yes
Infra-red array flame detectors		Yes
Heat detectors for hazardous areas		Yes
Linear heat detection		Yes

Have a typical lifespan of at least 20 years and be fully backwards and forwards compatible during that lifespan for all software, firmware and hardware developments and innovations.

The detector base shall be designed to snap fit into a ceiling tile adaptor kit.

The base shall be uniform across the detector range.

The base shall have an optional model that incorporates line isolation.

The fire detectors shall deploy a digital loop protocol based on frequency shift key.

The digital loop protocol shall have a high resilience to electrical interference.

Shall support multiple wiring configurations.

Shall support 250 addresses per loop.

With all the devices wired in the loop, The system shall be capable of auto addressing by the engineer using an intuitive menu structure. The devices shall be automatically assigned to 1 of 128/256 zones, or according to the physical loop they are connected to, the system shall then be ready to protect the site.

If the system configuration needs to be modified and the devices re-addressed or the zones re-programmed, the powerful Intelli-Zone feature shall be used which significantly reduces the configuration time allowing the installer to perform, test and programme in one phase.

The configuration software shall be user friendly and shall be capable of providing a graphic interface that displays all devices connected to the different zones.

The manufacturer shall provide a service tool that allows for addressing of all detectors and ancillary devices.

The service tool shall allow for diagnostics of all the following readings provided by the detector to facilitate diagnostics of environmental conditions within the room.

% of obscuration or dirtiness

PPM measured for CO

The equipment manufacturer shall be capable of providing evidence that unwanted alarm management is paramount in its product design.

The manufacturer shall be capable of demonstrating and training on the importance of unwanted alarm management.

Black smoke is produced by partition walls with cladding and can prove difficult to select via the light scatter technology. The smoke detector shall be capable of detecting black smoke via sophisticated algorithms.

The automatic fire detectors shall be fixed to the installation by means of a lockable plug-in detector bases using a common base for both addressable and conventional products to simplify future upgrades.

Addressing of any devices directly connected to the system will be carried out in a manner that does not require manual setting of switches, or the use of programming cards, in either the head or the base.

Addressable detectors must be able to transmit to the control and indicating equipment a pre-set and unique identifier to detect unauthorised changes in the system configuration.

It must be possible to connect and mix automatic detectors, manual callpoints and addressable modules within the same zone sub-division of an addressable loop.

THE FIRE ALARM CONTRACTOR SHALL:

Have available equipment to test and exchange all four main types of automatic detectors.

Produce standard accessories for installing smoke detectors in air ducts.

Smoke detectors shall be designed to have high resistance to contamination and corrosion.

All smoke sampling shall be designed to prevent small insects from creating unwanted alarms.

All heat detectors must have a fully coated thermistor to resist environmental contamination.

All detectors shall have separate Fire and Fault LED indication built into the device.

All Carbon Monoxide (CO) cells used in the construction of gas detection channels shall have an extended service life of 10 years before requiring replacement.

All smoke sampling optical chambers shall have an extended service life of 20 years (in a benign environment) before requiring replacement.

TRIPLE SENSING DETECTOR

Triple sensing detectors shall be approved and listed by the Loss Prevention Certification Board (LPCB) and shall combine heat (designed in accordance with BS EN 54 part 5), optical smoke (designed in accordance with BS EN 54 part 7) and carbon monoxide detection.

The triple detector shall be capable of operating as a single address employing all three detection technologies.

When employing all three detection technologies the operation of the optical chamber in the triple detector shall be enhanced by the presence of CO and/or heat.

Each detection technology shall be monitored individually such that the failure of a single detecting element must not affect the operation of the remaining two elements.

The optical chamber within the triple detector shall employ the pedestal principle to enhance the monitoring of the chamber and the detector ability to detect both thin burning white smoke and thick black smoke.

The optical smoke detector shall incorporate a separate fire and fault LED indication, clearly visible from the outside, to provide indication of an alarm or fault actuation.

OPTICAL SMOKE DETECTOR

The optical smoke detectors shall be capable of detecting visible combustion gases emanating from fires.

The optical smoke detectors shall employ the forward light-scatter principle, using optical components operating at a wavelength of 4.35nm.

The design of the optical smoke detector sensing chamber shall be optimised to minimise the effect of dust deposits over a period of time.

The optical smoke detector shall incorporate an LED, clearly visible from the outside, to provide indication of alarm actuation.

High Performance Optical Smoke Detectors

The high-performance optical smoke detectors shall be capable of detecting visible combustion gases emanating from fires.

The high-performance optical smoke detectors shall employ the forward light-scatter principle, using optical components operating at a wavelength of 4.35 nm.

The high-performance optical detectors shall monitor and use rapid changes in temperature to increase the normal sensitivity of the light-scatter optical sensor to obtain an improved response to fast burning fires.

The high-performance optical detectors shall not generate an alarm condition from a rate of rise of temperature or absolute temperature alone.

The design of the high-performance optical smoke detector sensing chamber shall be optimised to minimise the effect of dust deposits over a period of time.

The high-performance optical smoke detectors shall incorporate a fin structure designed to eliminate the effect of very small insects such as thunder flies.

The high-performance optical smoke detector shall incorporate a separate fire and fault LED, clearly visible from the outside, to provide indication of an alarm or fault actuation.

INFRA-RED FLAME DETECTOR

The infra-red flame detectors shall be capable of detecting infra-red radiation produced by flaming fires involving carbonaceous materials.

The infra-red flame shall be able to detect a fuel fire of 0.1 square meter area from a distance of 30 meters for the following fuels: Petrol (gasoline), N-heptane, Kerosene, Diesel oil, Alcohol (I.M.S), ethylene glycol.

The infra-red flame detectors shall employ narrow band optical filters that block unwanted radiation such as that emanating from the sun or tungsten filament lamps. The flame detector must be immune from direct or reflected sun radiation and from 1kW modulated radiated heat up to 1m.

The infra-red flame detectors shall be designed to be sensitive to modulation of the received radiation in a small range of frequencies corresponding to the flicker of flames.

The electronic assembly of the infra-red flame detectors shall be encapsulated in high resistivity epoxy resin

The infra-red flame detector shall incorporate an LED, clearly visible from the outside, to provide indication of alarm actuation.

INFRA-RED ARRAY FLAME DETECTOR

The IR array flame detectors shall detect flames using an IR array with a resolution of 256 x 256 and must have a wide band IR guard channel and a sunlight detector.

The IR array flame detector must be capable of reporting pre-alarms and areas of interest where a heat build-up is seen. It must be able to identify up to 4 distinct fires in the field of view and report the size of the effect on the sensing array and any change in size.

The IR array flame detectors must be able to heat the detection window to keep it clear of condensation. The detectors shall also monitor and report on window cleanliness.

The IR array flame detectors shall have a consistent response across their field of view (90° horizontally).

The detector housing should be 316L Stainless Steel and be rated at IP66/67 and the detector must meet the requirements for vibration endurance as stated in FMRC 3260 [clause 4.9].

HEAT DETECTOR

The heat detectors shall be capable of detecting rapid rise in temperature and fixed absolute temperatures.

The heat detectors shall employ two heat sensing elements with different thermal characteristics to provide a rate of rise dependent response.

The temperature sensing elements and circuitry of the heat detectors shall be coated with epoxy resin to provide environmental protection.

The heat detectors shall include RFI screening and feed-through connecting components to minimise the effect of radiated and conducted electrical interferences.

The heat detector shall incorporate a separate fire and fault LED, clearly visible from the outside, to provide indication of an alarm or fault actuation.

LINEAR HEAT DETECTOR

The linear heat detectors shall be capable of detecting fire (or overheat) conditions in confined or polluted areas.

The sensor cable of the linear heat detectors shall be unaffected by dust, moisture or vibration and require little maintenance.

The detectors shall have a calibration switch mounted internally to set the alarm sensitivity threshold. Where the Linear Heat is digital it shall comply with BS EN 54-28:2016 for non-resettable Linear heat detection.

The detectors shall generate an alarm condition if the pre-determined alarm threshold is exceeded.

The detectors shall generate a fault condition if the sensor cable has an open or short circuit condition present.

The detectors, upon detecting a cable open or short circuit or fault, shall be capable of signalling the condition to the main fire controller. Unless digital cable is used where short circuit is an alarm.

The detectors shall be suitable for use in hazardous areas and have mechanical protection for cables in areas where damage may occur.

The detectors shall incorporate red Fire and yellow Fault LEDs, clearly visible from the outside, to provide indication of alarm condition.

BEAM SMOKE DETECTOR

The optical beam smoke detector shall include a transmitter unit, a receiving unit and a control unit.

The detector should compare the infrared (IR) and ultraviolet (UV) signals to determine if there is a real fire alarm in the environment.

Each receiver unit shall analyse the incoming signal and send the alarm signal to the control unit if it detects smoke.

The control unit shall be able to make all settings of the beam detectors for control of the whole system from a single location.

Normally open, normally closed relay contact can be sent in case of alarm.

The unit shall be capable of operating at a supply voltage of 24 VDC. The unit must be able to continue operation even if the voltage supplied drops to 17 V.

The beam detector should be effective from 9 meters to 150 meters and the sensing width must be effective up to 7.5 meters from the midpoint of the beam to both sides.

The unit shall be able to provide self-control function and automatic compensation against dust accumulations, component aging and aging.

Must have one of the LPCB or VdS approvals.

ASPIRATING SMOKE DETECTOR

The aspirating smoke detectors shall be capable of detecting the presence of smoke particles in air samples drawn from many different locations.

The detectors shall be capable of responding to a developing fire situation with multiple staged alarms.

The fire alarm output of the detectors shall be programmable to allow sufficient time for action to be taken, from a detailed investigation of the cause of the alarm to a full-scale evacuation.

The design of the detectors shall be such that they can be integrated with a fire alarm system and guard against specific pieces of equipment, such as computers, equipment racks, power boards and telecommunications switching racks, as well as entire rooms or floors.

The detectors shall include a facility to allow sensitivity threshold adjustments to suit the needs of particular environments.

Each detector shall be capable of monitoring an area up to 2000 sq. m using easy to install PVC conduit. (Depending on the level of risk or hazard involved, it may be appropriate to use a greater number of detectors.

The detectors shall incorporate a LED indicator, clearly visible from the outside, to provide indication of alarm or fault condition.

REMOTE INDICATOR UNIT

The remote indicator unit shall provide a remote indication for any conventional or analogue addressable

The remote indicator module shall be driven directly from its associated local detector.

The connection to the remote indicator module shall be monitored for open and short-circuit.

The remote indicator when used on an addressable panel must be capable of been driven from another detector to indicate other detectors in active condition.

ASSOCIATED ANCILLARY EQUIPMENT

GENERAL REQUIRMENTS

The Fire Alarm contractor shall have available a comprehensive selection of manual call points and line modules for direct connection to the system addressable loops.

All equipment connected to the system addressable loops, either directly or via interfaces, shall be proofed against electrical noise, high frequency pulses and electromagnetic influences from other equipment.

The contractor shall have a handheld programmer for management functionality. It will be capable of communicating with detection devices. It will be used for a wide range of programming and service function activity.

ADDRESSABLE MANUAL CALL POINTS

The addressable manual call points shall:

Meet the requirements of BS EN 54: Part 11 to monitor and signal to the control and indicating equipment the status of a switch operated by a resettable/deformable assembly.

Be capable of operating by means of thumb pressure and not require a hammer.

Be weather-proof affording protection to IP65.

Incorporate a mechanism to interrupt the normal addressable loop scan to provide an alarm response within less than 3 seconds.

Be field programmable to trigger an alert or an evacuate response from the control panel

Be capable of being tested using a special 'key' without the need for depressing the unit.

Provide an integral red LED to indicate activation. Call point to include the use of a yellow led to signal fault condition also to have integral isolator or short circuit

Include a line isolator.

Have as standard a protective cover fitted to a Type A manual call point.

Type A manual call point is defined in BS EN 54-11 as follows:

Type A Direct operation. A manual call point in which the change to the alarm condition is automatic (i.e. without the need for further manual action) when the frangible element is broken or displaced."

DETECTOR INTERFACE MODULE - CONVENTIONAL

The conventional detector interface shall:

Monitor and signal the status of up to 20 conventional detectors and manual call points.

Signal alarm, open-circuit fault, short-circuit fault and power supply fault status.

Be capable of monitoring automatic detectors and manual call points from existing conventional systems.

Provide integral red LED indication when in the alarm state.

Addressable 4-20mA Interface Module

Feature of the 4-20mA Interface Module is to be able to through the 4-20mA Interface Module address call point and detection as separate ID, using correct resistor value and be capable of 2 circuits (same zone) also the interconnection of 4-20mA circuits for sinking or sourcing devices.

ADDRESSABLE RELAY OUTPUT MODULE

The addressable relay output module shall:

Provide a volt free changeover relay contact operated by command

Have contacts rated at 2A at 24Vdc.

Monitor the relay coil for open-circuit and transmit the fault signal to the control and indicating equipment

Be capable of deriving its operating power from the addressable loop.

Provide a red LED indication that the relay has operated.

Addressable Contact Monitoring Module

The addressable contact monitoring module shall:

Provide monitoring of the status of switched input signals from either normally open or normally closed contacts.

Provide a red LED indication when the contact has operated.

Be capable of deriving its power directly from the addressable loop.

Provide 2 inputs that can be reported separately and therefore different causes.

ADDRESSABLE SOUNDER DRIVER MODULE

The addressable sounder driver module shall:

Be capable of monitoring and driving a circuit of alarm sounders and be rated at 2A.

Be capable of operating the sounders in a pulsing or continuous mode from a detector activation, and continuous only from a manual call point.

Provide the facility to monitor the wiring to the sounders for open or short-circuit and transmit the necessary fault signal to the control and indicating equipment

Provide the facility to monitor for failure of the power supply for the sounders and transmit the necessary fault signal to the control and indicating equipment

Provide a red LED indication that the sounder circuit has been actuated.

LINE ISOLATOR MODULE

Line isolation shall:

Be of the 3 port type so spur circuits if used are protected.

Be by the use of either separate modules, line isolator detector bases or line isolation built into ancillary modules.

Provide protection on the addressable loop by automatically disconnecting the section of wiring where a short-circuit has occurred and provide an LED indication that the module has tripped.

Derive power directly from the addressable loop without taking an address.

DOOR CONTROL MODULE

The door control module shall:

Comply with the requirements of BS7273-4:2015.

Provide output required to control a hold open fire door device, an electromagnetic release on a means of escape, or a sliding door on a means of escape.

Shall be fully addressable and provide one volt-free changeover relay contact rated at 24Vdc @ 2 Amps.

Incorporate an integral line isolator.

Be capable of switching the relay after removal of the loop voltage after 15 sec +/-5s

Include a monitored and controlled changeover relay contact.

Derive its power directly from the addressable loop. If used with holdback magnets its needs to state with 24v supply.

Have a clearly visible red LED, to provide an indication of relay operation.

MULTIPLE INPUT / OUTPUT MODULE

The multiple input / output module shall:

Be fully addressable, provide all 3 inputs and 4 outputs to interface and provide 2 volt-free changeover relay contacts rated 24Vdc @ 2A and 4 outputs to operate an external high voltage relay interface rated at 240Vac @ 10A.

Provide monitored and controlled changeover relay contacts.

Derive its power directly from the addressable loop.

SINGLE INPUT / OUTPUT MODULE

The single input / output module shall provide an input and an output. The module shall, however, take only one address on the addressable loop. The operation of the input and the output shall be independent (i.e. the output must not have to follow the input). The single input / output module shall be fully addressable and provide a volt-free changeover relay contacts rated 24Vdc @ 2A.

The changeover relay contacts of the single input / output module shall be monitored and controlled by commands signalled from the monitoring system control panel via the addressable loop

The single input / output module shall be capable of monitoring a single external relay contact.

The module shall derive its power directly from the addressable loop.

LOOP POWERED BEAM DETECTOR MODULE

The loop powered beam detector module shall:

Provide power to, and monitor the fire and fault outputs of, infrared optical beam detection.

Derive its power directly from the addressable loop.

Be capable of powered and monitoring reflective and point to point beam detection.

Be capable of monitoring multiple external relay contacts.

Have a clearly visible red LED to provide an indication of relay operation.

ADDRESSABLE LOOP POWERED SOUNDER / BEACON - WALL

The loop powered sounder/ beacon shall

Derive its power directly from the addressable loop

Be capable of producing a sound output of 103dB at 1m

Have the option of an integral LED beacon for Equality Act 2010 compliance

Have the option of an integral LED beacon, complying with the requirements of BS EN54-23 Category W. This version is classified as visual alarm device (VAD).

Be available as type A, indoor and type B outdoor versions. Type B Sounder and Sounder/Beacon shall have an ingress protection rating of IP55

Have two volume settings and 16 selectable tones

Be equipped with LED beacon that has two flash rates 1 Hz. & 0.5 Hz.

Be configured by software by a trained engineer during system configuration and commissioning. The facility to change the volume and tome settings shall not be available in the sounder.

Be available in either red or white.

Incorporate an integral line isolator.

The loop powered sounder and visual alarm devices (VAD) shall:

Emit a pulsing light with a pulse length that does not exceed 20ms.

ADDRESSABLE LOOP POWERED SOUNDER/BEACON - BASE

The loop powered sounder/ beacon base shall

Derive its power directly from the addressable loop

Have a volume range between 60dB and 90dB at 1m

Have the option of an integral LED beacon for Equality Act 2010 compliance

Shall have the option of an integral LED beacon which shall be visible from 360° and be fully compliant with BS EN 54-23 Category C. This version is classified as visual alarm device (VAD).

Have two volume settings and 15 selectable tones

Be equipped with LED beacon that has two flash rates 1 Hz. & 0.5 Hz.

Be configured by software by a trained engineer during system configuration and commissioning. The facility to change the volume and tome settings shall not be available in the sounder.

Incorporate an integral line isolator.

Be self-monitoring such that if the sounder fails to operate during a test or a genuine fire activation, an appropriate fault message is displayed on the control and indicating equipment.

Shall have independent addresses for the sounder and beacon such that they can be individually controlled and isolated by the control and indicating equipment.

Shall be synchronised so as to, as far as is practicable, avoid creating a situation whereby photo epilepsy could be induced in a person confronted by multiple beacons within their line of sight.

The loop powered sounder and visual alarm devices (VAD) shall:

Emit a pulsing light with a pulse length that does not exceed 20ms.

MINIATURE INPUT MODULE

The Module shall small enough to be discrete and allow the control of systems via an input in either normal or interrupt mode, with facility for remote indication of the input being active (LED).

NETWORKING AND GRAPHICS

SUB PANELS

The system must be capable of supporting up to 1 master and 7 client panels with the capacity to sequence multiple simultaneous alarms, faults, and circuit/point, isolate events.

REMOTE GRAPHICAL USER INTERFACE

System must be designed for use with a mouse and keyboard, and a single screen.

The Fire Alarm contractor shall be responsible for the design, supply, installation, commissioning configuration and servicing of a graphical user interface for the fire system that displays the precise location of events, giving instructions on what emergency action should be taken using a combination of symbols, floor plans, pictures text, documents, audio and video.

The graphical user interface software shall be Multi Account Engine (MAE) allowing users to monitor multiple panels located anywhere in the world over an IP connection to a single PC.

The MAE shall be designed, written and owned by the company who manufacture the control and indicating equipment.

The MAE shall provide the means for annunciation, status display, and control of the fire detection system.

The MAE shall have a minimum of 8 operator levels to prevent unauthorised access support a multiple of 32 panels with 500 addressable points connected to each panel.

The MAE shall support all standard PC picture file types (i.e./ GIF, JPG, PNG), file types

The MAE shall store a history log of all events centrally.

The MAE shall be capable of streaming video feeds from on-site and shall be able to be displayed on the graphical system. The video feeds shall display automatically on annunciation of a relevant alarm. The operator shall also be able to view the video feeds manually.

The MAE software shall deploy data encryption between panel and PC using AES18.

DOCUMENTATION

TENDER DOCUMENTATION

At the time of tendering, the Fire Alarm contractor shall fully and accurately describe the proposed fire detection and alarm system and its design concepts.

The Fire Alarm contractor shall provide a complete set of layout drawings and specifications describing all aspects of the system, including:

1. Detailed component and equipment list with model and manufacturers part numbers.
2. Product sheets for each item of equipment.
3. Theory of Operations with description of system functions.
4. Written confirmation that a manufacturer trained representative will provide:

a) on-site supervision during system installation

b) perform all final testing and commissioning of the installed system

c) instruct operating personnel on all system operations.

The Fire Alarm contractor shall provide a schedule showing the times required to design, build, install, test and commission the system. The schedule shall also include any special requirements, such as additional training for operating personnel, etc.

CONTRACT DOCUMENTATION

The Fire Alarm contractor shall provide the following set of documents (date for submission of shall be in accordance with the schedule provided by the Fire Alarm contractor and as agreed with the client):

Documentation	Drawings	System Manuals
System description	System schematic diagram	Fire controller
Checklist of equipment and components	Cabling and wiring diagram	Detectors
Installation instructions	Detailed equipment connection diagrams.	Call points
Equipment connection diagrams showing wiring detail of Addressable Device positions with addresses	Building plan showing zoning and location of fire controller, detectors, call points, sounders and ancillary devices.	Sounders
Standby battery calculations showing system power requirements and formulas used to calculate specified power		Ancillary devices
Final testing instructions		Remote monitoring link (if option is provided).
Commissioning instructions		

Certification documents		
Log book.		
System operating instructions		
Routine maintenance instructions and schedules		
Remote monitoring link description and operating instructions (if this option is being provided).		

INSTALLATION

GENERAL

The Fire Alarm contractor shall install the alarm system in accordance with the documented installation instructions and shall provide all relevant installation documentation.

Installation of the system shall be in accordance with the recommendations set out in BS 5839–1:2017 and BS 7671.

The Fire Alarm contractor shall be responsible for the correct siting of all equipment and components of the system in accordance with previously agreed plans and drawings.

All cabling and wiring shall be tested before connection to the fire controller and its associated devices.

MATERIALS

All cabling and wiring to be used in the system shall be fire resistant and approved to BSI and LPCB specifications for use in fire detection and alarm systems.

Wiring used for driving devices requiring high currents (e.g. bells, etc.) shall limit the voltage drop to less than 10% of the nominal operating voltage.

Cables used for the transmission of system data and alarm signals shall be in accordance with the types recommended by the manufacturer of the fire alarm system.

The ends of all cables shall be sealed by means of proprietary seals and associated glands. No heat shall be applied to any seal or termination. Cable tails shall be insulated by means of blank PVC sleeving anchored and sealed into the seal.

Where protection of the cable glands is required or terminations are on display, the glands shall be enclosed in red coloured shrouds of the appropriate British Standard colour.

All cables to brick/concrete shall be securely fixed by means of copper saddles sheathed with red PVC. These saddles shall be provided near bends and on straight runs at intervals no greater than recommended in the British Standards or by the manufacturer.

Where multiple cables are to be attached to a wall or soffit, copper saddles shall enclose all cables and shall be secured by means of masonry plugs and two round head woodscrews.

Where multiple cables are to be attached to the top of horizontal trays they shall be neatly run and securely fixed at suitable intervals. Copper cable fixings shall be used.

At detector and sounder locations, cables shall be terminated in approved black enamelled/galvanised BESA or MI Clamp type junction boxes.

CABLE TYPES

Cables used for all parts of the critical signal paths shall comprise one of the following:

Mineral insulated copper sheathed cables, with an overall polymeric covering, conforming to BS EN 60702-1, with terminations conforming to BS EN 60702-2.

Cables that conform to BS 7629.

Cables that conform to BS 7846

Cables rated at 300/500V (or greater) that provide the same degree of safety to that afforded by compliance with BS 7629

Standard fire resisting cables should meet the PH 30 classification when tested in accordance with EN 50200.

Enhanced fire resisting cables should meet with the PH 120 classification when tested in accordance with EN 50200.

CONTAINMENT

Cable support methods must withstand a similar temperature and duration as that of the cable used such that circuit integrity is not reduced and adequate support is maintained.

Cables should be installed without external joints where possible and other than joints within system components, should be enclosed within junction boxes, labelled ‘FIRE ALARM’

Other than joints within system components terminals used to join cables should be constructed of materials that will withstand a similar temperature and duration to that of the cable.

Any conduit used should conform to the relevant parts of BS EN 50086

Any non-metallic trunking used in the system should conform to BS 4678 part 4

The preferred colour of the cable shall be red and shall be a single, common colour throughout

INSTALLATION OF DETECTORS

All detectors (and bases) shall be installed in accordance with guidelines set out in

BS 5839-1: 2017, BS 7671 and the installation instructions provided by the manufacturer.

All detectors shall be installed in the exact locations specified in the design drawings; thus, providing the best possible protection.

The type of detector installed in each particular location shall be as specified in the drawings.

All detector bases shall be securely fixed to BESA boxes.

Cable and wire entries to detector bases shall be fitted with grommets to prevent damage

Cable and wire strain relief clamps shall be provided at all entries to detector bases.

Cable entries of detector bases used in environments with abnormal atmospheric or operating conditions shall be sealed to prevent ingress of dust, water, moisture or contaminants.

INSTALLATION OF CONTROL DEVICES

All control devices shall be installed in accordance with the guidelines set out in BS 5839-1:2017, BS 7671 and the installation instructions provided by the manufacturer.

All control devices and associated modules shall be installed in the exact locations specified.

The type of control device installed in each particular location shall be the type specified in the design drawings.

All control devices and associated modules shall be securely fixed and, if required, marked with appropriate notices or warning signs as applicable.

Cable and wire entries to all control devices and associated modules shall be fitted with grommets or glands so as to prevent possible damage to the insulation.

Cable and wire strain relief clamps shall be provided at entries to control devices and associated modules as required.

Cable entries of control devices and associated modules used in environments with abnormal atmospheric or operating conditions shall be appropriately sealed to prevent ingress of dust, water, moisture or other such contaminants.

INSTALLATION OF FIRE CONTROLLER EQUIPMENT

The fire controller equipment shall be installed in accordance with the guidelines set out in

BS 5839-1: 2017, BS 7671 and the installation instructions provided by the manufacturer.

The fire controller and its associated component parts shall be installed in the location specified in the design drawings.

The type of fire controller and its associated component parts installed shall be the type specified in the design drawings.

The fire controller equipment shall be securely fixed and, if required, marked with appropriate notices or warning signs as applicable.

Cable and wire entries to the fire controller and associated devices shall be fitted with grommets or glands to prevent possible damage to the insulation.

Cable and wire strain relief clamps shall be provided at entries to fire controller and associated devices as required.

The fire alarm system mains power connections to the fire controller shall be per the guidelines set out in the relevant British Standards and manufacturer installation instructions.

The fire alarm system mains power isolating switch shall be coloured red and clearly labelled ‘FIRE ALARM: DO NOT SWITCH OFF’.

Each circuit of the system shall be connected to the fire controller via associated fuse or circuit breaker devices located within the fire controller unit.

COMMISSIONING

GENERAL

Installation and the commissioning shall be undertaken as a single continuous operation.

Upon completion of the installation activity, the Fire Alarm contractor shall Test, Start-up, Commission and Handover the system to the client.

The fire system shall have the capability of demonstrating and proving the job specific cause and effect requirements without the need to connect the field devices.

The Fire Alarm contractor shall make use of cable test sheets, installation check report, system layout drawings and system schematic diagrams to record results of commissioning.

In addition, Point Description documentation must be returned to the Fire Alarm contractor 21 days prior to the date agreed for commencement of commissioning.

TESTING AND START-UP

The Fire Alarm contractor shall:

Be responsible for inspection / testing of the complete system.

Start up and operate the system for a trial period to ensure correct operation

Test all functions in accordance with requirements of design specification and standards.

Undertake audibility tests during which the sounders may be operated continuously over a period of two hours.

The fire controller and associated devices and modules shall be tested in accordance with the guidelines set out in BS 5839 - 1: 2017 and manufacture testing instructions

COMMISSIONING

Commissioning of the system shall constitute practical completion

The Fire Alarm contractor shall:

Demonstrate to the client that the system successfully performs per the design specification.

Provide the client with an agreed quantity of spare parts testing equipment and consumables which are to be used during routine maintenance and testing of the system.

Provide a client appointed fire system supervisor with on-site training in the use, operation and maintenance of the system and fire and false alarm procedures.

The Fire Alarm contractor shall present an Acceptance Certificate for signature by the client.

HANDOVER

At the time of hand over, the Fire Alarm contractor shall provide the client with a copy of the report, component and equipment list, product description sheets, system design specification, system design drawing(s), system schematic diagram(s), system operating and service manuals, certificate of commissioning, fire system users handbook, remote monitoring link description and operating instructions (if this option was provided).

TRAINING

GENERAL

The Fire Alarm contractor shall provide the client with details of the training required by personnel to operate and maintain the fire detection and alarm system.

The Fire Alarm contractor shall provide both System Supervisor Training and another staff training.

The Fire Alarm contractor and the client shall jointly agree the number of staff to attend the training courses.

SYSTEM SUPERVISOR TRAINING

System supervisor training shall include technical training sessions provided at the Fire Alarm contractor's premises and/or on-site training given during installation and commissioning of the system.

System supervisor training shall be given by an experienced and competent engineer familiar with the fire system being installed.

The scope of training provided shall depend on the type, size and complexity of the system.

The Fire Alarm contractor shall initially provide technical training in all aspects of the system.

OTHER STAFF TRAINING

Other staff training shall include training sessions provided on-site after hand over of the system.

The training sessions shall be given by an experienced and competent engineer familiar with the fire system installed.

The scope of training provided shall include full operating instructions in the use of the fire system. This shall include instruction in the procedures to be followed in the event of fire and false alarms.

MAINTENANCE

GENERAL

BS 5839–1:2017 recommends that fire systems should be regularly The Fire Alarm contractor shall provide detailed information about the maintenance services which can be provided after hand over of the system.

If requested, the Fire Alarm contractor shall prepare and submit a draft maintenance contract for consideration by the client.

The draft contract shall include complete details of all materials and labour required to maintain the system in correct working order. It shall also include details of the testing procedures which will be carried out and specify the proposed number of visits per year.

The Fire Alarm contractor shall be able to offer service call-out facility, with a maximum response time of 4 hours, maintained under a maintenance agreement.

SYSTEM SPARES

The Fire Alarm contractor shall provide a detailed list of the system spares which should be kept on-site for maintenance of the system.

The draft maintenance contract shall also include details of the system spares which are be kept on-site for maintenance of the system.

The Fire Alarm contractor shall guarantee the availability of all system spares for a period of not less than ten years.

SYSTEM TEST EQUIPMENT

The Fire Alarm contractor shall provide a detailed list of the system test equipment and consumables required on-site to maintain the system in perfect working order.

The draft maintenance contract shall also include details of the system test equipment and consumables which are to be kept on-site for routine maintenance and testing of the system.

The Fire Alarm contractor shall guarantee the availability of all system test equipment and consumables for a period of not less than ten years.

APPENDIX – A PARTS LIST

The following tables contain the Manufacturers parts that shall be used for quotation purposes.

This list can also assist on spare parts identification or for definition of critical spares.

PANELS AND ACCESSORIES

Product Code	Product Description	QTY
557.200.725	FC503 3 Loop Panel 250 Points	
557.200.726	FC506 6 Loop Panel 500 Points	
508.031.742	FC500MFI Multifunctional Interface	
508.031.743	FC500IP3 IP Module	
508.032.036	FC500BX Cabinet for Spare 38Ah Batteries	
508.032.037	USB 5m Cable Type A	
508.032.042	FC500DISP Spare Display	
557.202.726	FC-MAE FC500 Panels Monitoring Software	

DETECTORS AND CALL POINTS

Product Code	Product Description	QTY
516.460.501	FC460PH Photo Heat Detector	
516.460.502	FC460P Photo Detector	
516.460.503	FC460H Heat Detector	
516.460.504	FC460PC Triple Sensor	
517.050.041	4B Detector Base	
517.050.043	4B-I Isolator Base	
516.800.908	801 RIL Remote Indicator	
516.800.909	801HL Remote Indicator	
514.800.805	FC420CP-I Indoor Callpoint with isolator - no Back Box	
515.001.021	Standard Back box for manual call point	
515.001.128	Manual call point plastic hinged cover	
514.800.806	FC421CP-I OUTDOOR CALLPOINT ISOL.	
516.800.973	FC430LPBSB Loop powered open class Beacon Sounder Base	
557.080.008	Shallow Surface Back Box White	
557.080.012	Deep Surface Back Box White	
2501012	Conventional Manual Call Point with Glass Element (no back box)	
2501013	Conventional Manual Call Point with Glass Element (with back box)	
2501176	Conventional weatherproof manual call point with glass element	
2501234	Conventional Manual Call Point with Plastic Element (with back box)	
514.001.114	MCP270 Yellow conventional call point evacuate resistor with LED complete with backbox	
514.001.171	MCP200CS Conventional manual call point	
515.001.045	Spare Manual call point Keys	
515.001.119	Spare glasses for manual call point (pack of 5)	
515.001.127	Deformable FC400 MCP element	

ANCILLARY DEVICES

Product Code	Product Description	QTY
545.800.704	FC410LI LINE ISOLATOR MODULE	
555.800.067	BTM800 MODULE C/W ENCLOSURE	
555.800.701	FC410MIM MINI INPUT MODULE	
555.800.702	FC410CIM CONTACT I/P MODULE	
555.800.712	FC410DIM DETECTOR I/P MODULE	
555.800.763	FC410SIO SINGLE I/O MODULE	
555.800.765	FC410MIO MULTI I/O MODULE	
555.800.766	FC410BDM BEAM DETECTOR MODULE	
555.800.769	FC410TSM DOOR CONTROL MODULE	
555.800.770	FC410QMO QUAD MONITORED O/P	
555.800.771	FC410QIO QUAD I/O MODULE	
555.800.773	FC410QRM QUAD RELAY MODULE	
557.180.423	TM520 timer module (non addressable)	
568.800.004	HVR800 HIGH VOLTAGE RELAY	
568.800.703	FC410RIM RELAY I/F MODULE	
577.800.705	FC410SNM SOUNDER OUTPUT MODULE	
577.800.706	FC410DDM FIRE & GAS DET MOD	
517.035.007	FC470CV Ancillary cover for use with modules	
517.035.010	FC470DGB White D/Gang B/Box	
517.035.011	FC470MDGB Metel D/Gang B/Box	
517.035.014	FC470FMB	
517.035.015	FC470DLB Dry Line DBL B/Box	
547.004.002	DIN rail mounting bracket for FC470CV	
557.201.303	DIN RAIL MOUNTING KIT FOR FC410MIO	
557.201.401	D800 Ancillary Housing	
516.460.490	FireClass FC490ST programmer	
516.800.923	Service accessory kit – FC branded.	

SOUNDERS AND INDICATORS

Product Code	Product Description	QTY
576.440.001	FC440DSB Detector Base Sounder	
576.440.002	FC440SB Addressable Base Sounder	
576.440.006	FC440AVB Addressable Sounder Base VAD Std	
576.440.010	FC440AIB Addressable Base Sounder VID	
576.440.014	FC441AVB Addressable Sounder Base VAD Hi	
576.440.016	FC440CAVB Addressable Base Sounder VAD BC	
516.800.972	FC410LPBS Loop powered open class Beacon Sounder IP65	
557.080.001	B..CAP Sounder Base Blank Cap	
557.080.002	A..CON Conduit Adapt Sounder AV Base	
557.080.010	A..BOX Flush Adapt In Wall Sounder	
576.440.003	FC440SW Addressable Wall Sounder White	
576.440.004	FC440SR Addressable Wall Sounder Red	
576.440.005	FC445SR Addressable Wall Sounder IP	
576.440.007	FC440AVW Addressable Wall Sounder VAD White	
576.440.008	FC440AVR Addressable Wall Sounder VAD Red	
576.440.009	FC445AVR Addressable Wall Sounder VAD IP	
576.440.011	FC440AIW Addressable Wall Sounder VID White	
576.440.012	FC440AIR Addressable Wall Sounder VID Red	
557.080.007	Shallow Surface Back Box Red	
557.080.011	Deep Surface Back Box Red	
576.440.013	FC445AIR Addressable Wall Sounder VID IP	
576.440.017	FC445CAV Addressable Wall Sounder VAD BC	

517.001.304	MTL5525 I.S. Sounder driver	
540.001.038	XB8 Intrinsically safe xenon beacon	
576.501.053	IS28 MK6 Banshee Sounder	
540.001.039	XB11 Flameproof xenon beacon	
577.001.035	601SB Conventional Sounder base	
577.001.037	601SBD Conventional Diode Sounder Base	
20-118	Combined Roshni sounder/strobe complete with deep base IP65 VID	
2601012	6" Electronic Bell	
2601015	6" Electronic Weatherproof Bell	
2601016	8" Electronic Weatherproof Bell	
576.501.030	Squashni electronic sounder white 24Vdc	
576.501.031	Blank cover plate white for Squashni electronic sounder	
576.501.060	Banshee Excel sounder red IP45	
576.501.061	Banshee Excel sounder white IP45	
576.501.062	Banshee Excel sounder red IP66	
576.501.063	Banshee Excel Lite red sounder red xenon beacon IP45 VID	
576.501.071	H201 Electronic sounder	
576.501.072	HS201 Electronic sounder-beacon	
812005FULL-0107X	Solista LX Wall beacon Red body Red Flash Shallow base EN54-23	
812007FULL-0108X	Solista LX wall beacon red body white flash s base EN54-23 W-2.4 7.5	
812008FULL-0109X	Solista LX wall beacon red body white flash d base EN54-23 W-2.4 7.5	
812020FULL-0121X	Solista LX ceiling beacon white body white flash shallow base EN54-23 C-3-7.5	
8500023FULL-0023	RoLP LX wall beacon red body white flash rolp base EN54-23 W-2.4 7.5	
8500043FULL-0043	Symphoni G1 LX wall beacon red body white flash sym-phoni indoor base EN54-23 W-2.4 7.5	
8500048FULL-0048	Symphoni G1 LX wall w/proof beacon red body white flash outdoor base EN54-23 W-2.4 7.5	
LPB24-A-T	LED 24V Strobe Amber Lens	
LPB24-B-T	LED 24V Strobe Blue Lens	
LPB24-C-T	LED 24V Strobe Clear Lens	
LPB24-R-T	LED 24V Strobe Red Lens	
577.001.035	601SB Conventional Sounder Base	
577.001.037	601SBD Conventional Diode Sounder Base	
20-118	Combined Roshni sounder/strobe complete with deep base IP65 VID	

SPECIALTY DETECTORS

Product Code	Product Description	QTY
517.025.055	DPKF – Filter (pack of 10)	
517.025.056	DPK6 Duct Probe with 4B-C 4” Continuity Base	
517.025.058	DPK6-60 - Duct Probe Tube 60 cm	
517.025.059	DPK6-150 - Duct Probe Tube 150 cm	
517.025.060	DPK6-280 - Duct Probe Tube 280 cm	
517.025.061	DPK6-MB - Duct Probe Mounting bracket	
516.015.020	FireRay 5000 Beam Detector System (50m)	
516.015.021	FireRay 5000 Beam Detector Head (50m)	
516.015.022	FireRay One	
516.300.411	FV411f Triple infrared flame detector	
516.300.413	FV413f Triple infrared flame detector with NTSC camera	

516.300.421	FV421I IR FLAME DETECTOR	
517.300.001	MB300 Mounting bracket	
517.300.002	WH300 Stainless steel weather hood	
517.300.006	MK300 Field spares kit	
517.300.021	WT300 Walk-test controller	
517.300.022	CTI300 Off-line configuration tool kit	
517.300.025	FlameVision CTI420 Configuration Tool Kit	
516.052.041.Y	MD611Ex Conventional Fixed Temperature Heat Detector	
516.052.051.Y	MD601Ex Conventional Rate of Rise Heat Detector	
516.054.011.Y	MR601TEx Conventional high performance optical smoke detector	
516.600.066	601FEx Infra-red flame detector	
517.001.196	UC2 4 Way barrier housing	
517.001.198	MT2 2 Way zener barrier housing	
517.001.199	MT5 5 Way zener barrier housing	
517.001.200	MT12 12 Way zener barrier housing	
517.001.205	ERL7 Earth rail for I.S. systems	
517.050.023	5BEX 5” Universal Ex detector base	
DB3BDGD048N2BNR	DB3B Flameproof horn sounder high power explosion proof 122dB @ 1m	
514.001.109	MCP220Ex Conventional weatherproof intrinsically safe call point	
517.001.247	DX170 Enclosure with170mm DIN rail	
517.001.248	DX070 Enclosure with70mm DIN rail	
517.001.301	MTL7728+ Zener safety barrier for conventional detection circuits	
517.001.302	MTL5561 2 Channel galvanic isolator	
516.016.319	MZX SensorLaser Plus iBox	
516.016.320	MZX SensorLaser+ Relay ConSet	
516.016.321	MZX SensorLaser Plus power supply	
516.016.322	MZX SensorLaser Plus safety cable (per meter)	
516.016.322.C	MZX SensorLaser Plus safety connector	
516.016.323	MZX Steel wire armoured SensorLaser Plus cable	
508.031.744	BXM24/25-U Microprocessor controlled power station - Max. 2,5A @ 27,6VDC	
508.031.745	BXM24/50-U Microprocessor controlled power station - Max. 5A @ 27,6VDC	
508.031.750	BAQ140T24 Switching power supply / battery charger - Max. 5A @27,6VDC	
508.031.752	BAW50T-24 PSU 24V 1.8A extended input voltage range	
508.031.753	BAW75T-24 PSU 24V 2.7A extended input voltage range	
557.200.731	FireClass 1.9A PSU [boxed PSU 1.9A/7Ah] BRE approved.	
557.200.732	Remote 5A PSU/17Ah in large, shallow enclosure	
557.200.733	Remote 5A PSU/38Ah in large, deep enclosure	
557.202.707	FC410MIM + fixing kit for FireClass 5A/17Ah and 5A/38Ah PSUs	
557.202.708	FC410MIM + fixing kit for FireClass 1.9A/7Ah PSU	
516.600.001	601P Optical smoke detector	
516.600.002	601PH High performance optical smoke detector	
516.600.003	601H-R Rate of rise heat detector	
516.600.004	601CH Heat enhanced carbon monoxide fire detector	
516.600.006	601F Solar blind infrared point flame detector	
516.600.033	631H-F HEAT 90C DET UNBRANDED	
516.600.214	611H-F Fixed temperature 60°C heat detector	
508.031.751	MUB-RV Universal 5" base with relay	
517.050.011	Protective Cage for high base	

517.050.045	4B-D Conventional Diode Base	
517.050.051	4B-DHM Deck head Mount	
517.050.052	4B-EM Euro Mount	
517.050.056	CTA-BB CTA Back Box	
517.050.057	CTA-BC CTA Bezel and Clamp	
517.050.058	CTA-AP CTA Adaptor Plate	
517.050.060	Kit CTA (n°1 517.050.056 + n°1 517.050.057)	
517.050.614	Protective Cage	
568.001.018	MC600 RELAY BASE	

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FIRECLASS

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Johnson Controls is a global leader creating a safe, comfortable and sustainable world. Our 105,000 employees create intelligent buildings, efficient energy solutions and integrated infrastructure that work seamlessly together to deliver on the promise of smart cities and communities in 150 countries. Our commitment to sustainability dates back to our roots in 1885, with the invention of the first electric room thermostat. We are committed to helping our customers win everywhere, every day and creating greater value for all of our stakeholders through our strategic focus on buildings.

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