Kentec Electronics Ltd

SINGLE AREA CONVENTIONAL FIRE DETECTION & EXTINGUISHANT CONTROL SYSTEM

CONSULTANT SPECIFICATION

Contents

1 Scope

Furnish a complete 24VDC Conventional, electrically supervised, combined fire detection and extinguishant release system as specified herein and indicated on the drawings.
The system shall include but not be limited to, a control panel or panels with integral power supply to provide 24VDC power and supervision of detection devices, manual initiating devices, solenoid or explosive actuator releasing devices, hold devices, audible and visual alarm devices and all accessories required to provide a complete operating system.

The fire detection and extinguishing system shall be wired in accordance with the drawings and according to the appropriate standards and codes of practice.
All circuits shall be electrically supervised for open and short circuit faults. Status indicator units shall be connected as necessary to provide additional indication of critical system status at entrances to the protected area.

Ancillary relay boards shall be available to interface to other systems as required.

2 Codes and Standards

The following codes and standards shall apply to this document.

- BS EN 54-2:1997+A1:2006 - Fire detection and fire alarm systems – Control and indicating equipment
- BS EN 54-4:1998 - Fire detection and fire alarm systems – Power supply equipment
- BS EN54-13:
- BS EN 12094-1:2003 - Fixed firefighting systems – Components for gas extinguishing systems – Requirements and test methods for electrical automatic control and delay devices
- BS EN ISO 9001:2015 - Quality management systems. Requirements
- BS 5839-1:2017 - Fire Detection and fire alarm systems for buildings – Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises
- BS 7273-1:2006 - Code of practice for the operation of fire protection measures. Electrical actuation of gaseous total flooding extinguishing systems
- EN15004-1 - Fixed firefighting systems – Gas extinguishing systems Design, Installation and Commissioning

2.1 Qualifications of Manufacturers

Manufacturers of the products supplied for the fire detection and extinguishant system shall have been in the business of manufacturing Fire Alarm products for at least five years. The manufacturer shall be assessed and approved as complying with the requirements of BS EN ISO 9001:2015.

2.2 Qualification of Designers, Installers and Commissioners

The responsible company(s) for design, installation and commissioning of the system shall be able to demonstrate competence through third party certification i.e. BAFE SP203, LPS1014 or other recognised standard.

3 Single Area Conventional Extinguishant Control Panel (ECP)

3.1 Functional Description

The Single Area Conventional Extinguishant Control Panel (ECP) shall be the central processing unit of the system, receiving and analysing signals from fire detectors or manual releasing devices, providing audible and visual information to the user, initiating automatic alarm response sequences and providing the means by which the user interacts with the system. It shall also have the capability to electronically activate and release extinguishant by means of control of a solenoid valve or explosive actuator device.

The ECP shall be certified as meeting the requirements of **EN 12094-1** by a suitable, notified body. A certificate and test report shall be made available for inspection as evidence of certification.

The ECP shall have the capability to support up to three zones of conventional detection any or all of which may be configured to contribute to the release of the extinguishant.
Each conventional detection zone shall be capable of supporting up to 20 conventional fire detectors.

The ECP shall have the capability to operate in either manual mode or automatic and manual (combined) mode. The mode of the system shall be selectable by means of a key operated switch. In manual mode the extinguishant will not be released by automatic detection.

The ECP shall have the capability to support connection of a range of Status Units via a four-core cable (2 cores power, 2 cores serial data). Status units shall be capable of providing indication of ECP status as well as controls for Auto/Manual mode selection via key-switch and Manual Release via a dual action control. Status Unit variants shall be available as indication only, or a combination of indication plus the required controls. Status units shall be provided with a display which shows the countdown to extinguishant release It shall be possible to connect a maximum of seven status units to the ECP data bus each with a unique address identified on the ECP.

The ECP shall incorporate a display on the control panel which in the activated condition, shall show the time remaining in seconds until the extinguishant will be discharged as well as the discharge duration time. Extinguishant release time delays shall be configurable in 1 second steps and discharge duration times shall be programmable in 5 second steps. The ECP shall have independently configurable extinguishant release time delays for manual or automatic activation of an extinguishant release.

The ECP shall have the facility to provide two extinguishing outputs which can be configured for common or Main/Reserve operation and support the activation of solenoids or Metron actuators.

The ECP shall provide support for the use of HOLD and ABORT switches via dedicated monitored inputs enabling a user to halt the gas release process during the release countdown.
The display on the control panel shall have a coloured backlight. The backlight colour will be used to further highlight the status of the system, for example a flashing red backlight for pre-release and a continuous red backlight for release condition.

It shall be possible to switch off the active backlight feature and revert to a white backlight, as a configuration setting.

The ECP shall provide a fully monitored input for connecting door interlock switches to change the mode of the system from automatic and manual to manual only.

The ECP shall provide a fully monitored input for connecting pressure switches used on extinguishant cylinders which indicate loss of pressure in the cylinder. This input will be configurable for monitoring normally open or normally closed pressure switches.

The ECP shall provide a fully monitored input for connecting pressure switches used on extinguishant cylinders which indicate release of extinguishant from the cylinder. This input will be configurable for monitoring normally open or normally closed pressure switches.

The ECP shall provide a fully monitored input for connection of extinguishing hold switch units, which temporarily halts the releasing sequence for the duration the input is active.

The ECP shall provide a fully monitored input for connection of extinguishing abort switch units, which permanently halts the releasing sequence.

The ECP shall have two unmonitored programmable inputs. These inputs will be capable of being configured to the following functions;

- Evacuate
- Silence Alarm
- Reset
- General Fault
- Flooding Zone Fault
- General Disablement
- Enter access level 2
- Start Extract Fans
- Select Reserve Extinguishing
- Transparent

The ECP shall be able to provide through configuration settings a volt free output for switching on an extract fan(s). This output will be configurable for either manual or automatic activation of the extract output.

The ECP shall provide 2 sounder outputs which operate when any alarm is detected (first stage alarm). It shall be possible to programme a delay from 30 seconds or 1 minute to 10 minutes before the first stage alarm outputs activate. One of these sounder outputs will have the configuration option to become a second extinguisher control output, which then allows main/reserve cylinder support.

The ECP shall contain one sounder output which operates when the ECP is in the activated condition (second stage alarm).

The ECP shall provide six volt free normally open contacts, which are fully programmable, but have the following default settings:

FIRE –	Changes state on any fire event
FAULT –	Changes state on a fault condition (Failsafe operation)

RELEASED –	Changes state on confirmation of the release of extinguishant
MODE –	Changes state when the system is put into Manual Only mode
HOLD –	Changes state when a system “hold” input is active, and the release sequence is on hold
ABORT -	Changes state when the system “abort” input is active, and the release sequence is on aborted

The volt free outputs shall be configurable to any of the following additional states of operation:

- Alarm
- Pre-activated
- Activated
- Low Pressure
- Release Disabled
- General Disablement
- Extract fan
- Reset

The ECP Fault relay shall activate on any fault condition and shall also be configurable to toggle on and off when additional fault conditions appear on the ECP.

The ECP shall incorporate a 1000 entry event log with 1 second resolution for the date/time details. This event log is stored in non-volatile memory.

The ECP shall have 4 configurable user passcodes each time a user logs in with their specific passcode an event will be logged in the event log.

The ECP shall by fully configurable via the front panel display and controls, but shall also have a USB connection to provide the following functions;

- Configuration transfer (backup) from the panel to a computer running the panel configuration software
- Configuration transfer (restore and programming) from a computer running the panel configuration software to the panel
- Event log transfer to the computer running the panel configuration software, to create reports of event activity

4 Additional Components

4.1 Ancillary Board

It shall be possible to fit the ECP with an ancillary board to enable the extinguishing systems to communicate with additional plant control such as interfaces to BMS systems or other fire alarm systems.

Ancillary boards shall provide volt free relay contacts which signal the following conditions:

- Zone 1 fire
- Zone 2 fire
- Zone 3 fire
- Manual only mode
- Disabled
- Released
- Activated
- Hold
- Extract operated
- Manual release operated

Ancillary boards shall be connected via a four-core cable which provides power and data. The ECP shall be able to support a max of 7 Ancillary boards on the data bus each with a unique identifying address.

4.2 Hold Device

It shall be possible to fit Hold devices to the ECP and or to status indicator units.

Hold devices shall be grey or white in colour with a red, momentary pushbutton. The pushbutton shall be shrouded to prevent accidental operation

Hold devices shall be positioned as indicated on the drawings.

4.3 Abort Device

It shall be possible to fit Abort devices to the ECP

Abort devices shall be grey in colour with a large red latching pushbutton. Abort devices shall be positioned as indicated on the drawings.

4.4 Manual Release Devices

It shall be possible to fit Manual release devices to the ECP or to status indicator units.

Manual release devices shall be yellow in colour with dual action operation.

Manual release devices shall be positioned as indicated on the drawings.

4.5 Enclosure

The housing containing the ECP shall be of metal construction and shall be complete with cable knocks-outs in sufficient quantity to accommodate all likely cabling requirements.

The housing shall afford a minimum ingress protection to IP30 and it shall not be possible to open the ECP without the use of a key.
The enclosure shall be capable of housing 7Ah sealed lead acid batteries.

4.6 Front Panel Controls

The ECP shall have the following front panel controls:

- Silence Alarm (first stage)
- Re-sound Alarm
- Silence Buzzer
- Reset
- Exit navigation key (hold for Lamp test)
- Enter navigation key
- Up key (1 when used for passcode entry)
- Right key (2 when used for passcode entry)
- Down key (3 when used for passcode entry)
- Left key (4 when used for passcode entry)
- Enable controls (Key operated switch)
- Manual only or Automatic and manual (Key operated switch)
- Manual release (Lift flap, push button)

4.7 Front Panel Indications

The ECP shall have the following front panel indications:

- Fire
- Zone 1 Fire
- Zone 2 Fire
- Zone 3 Fire
- Zone 1 Fault/Disabled/Test
- Zone 2 Fault/Disabled/Test
- Zone 3 Fault/Disabled/Test
- Sounder Fault
- Sounder Disabled
- Power on
- Power Fault
- General fault
- System fault
- General Disablement
- Test
- Buzzer Silenced
- Delay Active
- Extract Fan On
- Pre-activated/Activated
- Reserve Selected
- Released

- Hold Operated
- Abort Operated
- Flooding Zone Fault/Disabled
- Extinguishant Disablement
- Low Pressure
- Manual Release
- Manual
- Auto

4.8 Internal Controls

The ECP shall have the following internal controls:

- Terminate extinguishant release
- Processor reset
- Memory Lock (Write enable)

4.9 Configuration

The ECP shall have configurable options which are programmed via the front panel pushbuttons and stored in non-volatile memory.

A facility to configure the panel via a PC based configuration software package and transfer to the ECP will also be provided

4.10 Documentation

All equipment shall be supplied with a suitably detailed operation and maintenance manual.