



Fire Products & Solutions



# FT12819 Analogue/Addressable Fire Detection & Alarm Systems



Client/Consultant Specification

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## 1. GENERAL

The Fire Detection Control and Indicating Equipment (FDCIE) shall conform to the Australian standards AS7240.2 Control and Indicating Equipment, AS7240.4 Power Supply Equipment and AS4428.3 - 2010 Fire Brigade Panel and be listed in the ActivFire Register of Accredited Products. The FDCIE shall be designed and manufactured in Australia.

## 2. CONTROL AND INDICATING EQUIPMENT (FDCIE)

### 2.1 Configuration

The FDCIE shall be analogue addressable and of a microprocessor based design. It shall be capable of interfacing to conventional circuits and devices with the addition of conventional zone expansion boards or loop modules. It shall be possible to mount up to four expansion boards in each control unit.

Expansion boards shall be based on the following configurations:

- 8 Zone Expansion Board, 8 conventional detector zone line inputs.
- 8 Relay Expansion Board, 8 programmable change-over relay contacts.

The FDCIE shall provide as standard:

- 1 x Programmable Input (NO/NC non supervised)
- 2 x Programmable Supervised Voltage Outputs
- 2 x Programmable Relay Outputs
- 2 x Auxiliary 24V DC outputs
- Dedicated relay outputs for routing equipment (General Fire Alarm, General Fault & General Disablement conditions)

The FDCIE shall:

- Be fitted with one loop and have a capacity of 253 analogue sensors, manual call points, inputs and outputs devices.
- Continually monitor loop integrity for both open and short circuit conditions.
- Be capable of bi-directional communication on the loop.
- Provide standard inputs and outputs, each shall be configurable in their functionality.
- Incorporate circuitry to provide a high level of transient suppression and protection when interfaced to the field devices.



## 2.2 Software

The system configuration programming shall be windows based PC software. It shall be capable of creating, editing, downloading, uploading the site specific data (SSD) and provide for maintenance routines and new software upgrades.

## 2.3 FDCIE Display

The Display shall include an alphanumeric / character Liquid Crystal Display (LCD) with 2 lines of 40 characters and be no smaller than 180mm x 14.5mm in size.

The LCD shall be backlit to make it easier to read in low light conditions. The backlight shall be activated and deactivated through the FDCIE door switch. An open door shall indicate on the LCD (i.e. an "open door" icon).

The LCD shall have a contrast adjustment to ensure after installation the displayed messages are easily read in the ambient conditions. Notification messages shall contain text descriptions of the event, device description, zone description, time, date and number of events. The FDCIE shall provide up to 40 characters for each Alarm Zone or device description.

In addition to annunciation via the alphanumeric display, the CIE shall include the following indicators:

<i>LED Indicator</i>	<i>Indicating</i>
System Fault	Software, CPU or Memory Fault
Test Mode	One or more Zones are in Test Mode
General Fault	Any Fault on the System
General Disablement	Any Disablement on the System
Alarm Device	Alarm Devices either Disabled or in Fault
Fire Brigade TX	Routing Equipment either Disabled or in Fault
Fault Tx Activated	Routing equipment fault signal to ASE
Fire Brigade Tx delay	Routing equipment output to ASE has been delayed i.e. alert annunciation alarm

## 2.4 Operational, service and maintenance menus

The CIE shall include numerical keypad to gain access to the system operational, maintenance and service menu trees.

The menu trees shall have a hierarchical authority structure. Each level shall require an authorisation code to access the specific menu tree.

Menus trees shall be provided for operational control of the FDCIE, service and maintenance routines.



## 2.5 Mounting

The FDCIE enclosure shall be provided with fixed mounting points to facilitate ease of installation.

## 2.6 Cabinet

The FDCIE shall be available in a 19" Rack style modular enclosure to facilitate customisation to meet system design requirements. The FDCIE shall be housed in a powder coated metal cabinet, oyster grey in colour.

The cabinet shall have an inner and outer door. The outer door shall be fitted with a 003 key to provide access level 1 and shall be made of tinted high impact plastic to allow easy viewing of all indicators and controls.

Access to the inner door shall be gained by opening the outer door providing access to the inner door fixing screws. Opening the inner door allows access to the control unit hardware for the purpose of maintenance or servicing.

Each cabinet shall be fabricated from not less than 1.5mm zinc anneal steel. All screw, bolts, nuts, washers, etc. shall be chrome, nickel or cadmium plated.

## 3. FIRE BRIGADE PANEL (fbp)

The fire brigade panel (fbp) shall be integrated into the CIE. The fbp shall be in accordance with AS4428.3-1010. The enclosure shall have space for different brigade (ASE) interface brackets e.g. Romtech, Tyco ASE.

### 3.1 fbp Controls

The fbp shall incorporate the following controls:

- Silence Buzzer – Used to silence the panel buzzer during an active event.
- Silence Alarm Devices – Used to disable the alarm devices (occupant warning system or sounders) during an active alarm event.
- Reset – Used to reset an active alarm event.
- Disable – Used to disable an active alarm event.
- Several Alarms – Used to scroll through active alarms.

The functionality of these pushbuttons shall be clearly displayed above each button.

### 3.2 fbp Indicators

<i>LED Indicator</i>	<i>Indicating</i>
Fire	Fire Alarms and/or Quiet Alarms.
Fire Protection Activated	Output(s) for extinguishing equipment activated.



Smoke Control Activated	Output(s) for fire/smoke ventilation equipment activated.
Alarm Routing Activated	Output "Fire alarm" for fire brigade (routing equipment).
Several Alarms	More than one alarm point / zone have activated fire alarm.

## 4. POWER SUPPLY

The FDCIE shall include a primary power supply and backup batteries, all supervised directly by the microprocessor.

The FDCIE shall incorporate a mains isolation switch.

The FDCIE shall incorporate a general-purpose outlet on the switched side of the mains isolate switch for connection of programming tools or laptops.

The primary power supply shall be rated for a maximum output current of 1.8 Amps @ 24V dc.

The standby batteries fitted to the FDCIE shall be sized in accordance with AS1670.1.

The charger shall be capable of charging the standby batteries within 24 hours from a fully discharged condition to a capacity capable of maintaining the system for 24 hours in normal quiescent condition and 30 minutes in alarm condition.

Only batteries with a specified "Final voltage" of 10.5 V must be used.

## 5. SENSORS and DETECTORS

### 5.1 General

The FDCIE shall be compatible with a range of analogue addressable sensors, conventional detectors, manual call points, inputs and outputs units, etc.

All smoke sensors and detectors shall comply with AS7240.7.

All heat sensors and detectors shall comply with AS7240.5.

The sensors, detectors and mounting bases shall be low profile and be of a color to prevent discolourisation over the service life of the device.

### 5.2 Analogue addressable sensors

Analogue addressable sensors shall have a common mounting base.

Sensor information shall be stored in a non-volatile memory.

Alarm thresholds (pre-alarm and fire alarm levels) shall be set from the FDCIE.

The technical address shall only be set or changed by the use of an address setting tool.



The FDCIE shall communicate with each sensor and monitor the sensors status. The analogue data from each sensor shall be processed by the FDCIE with the alarm condition being determined by the FDCIE not within the sensor itself.

The system configuration software shall allow the setting of individual alarm algorithms for each sensor.

Individually or as a zone of analogue sensors shall be able to be tested and/or isolated from the FDCIE.

Analogue addressable sensors shall incorporate twin LED's for alarm status indication.

### **5.2.1 Analogue Photoelectric Smoke Sensors**

Photoelectric smoke sensors shall maintain constant sensitivity over a range of contamination levels providing immunity to nuisance alarms the highest possible reliability.

The detection algorithm shall be set from the FDCIE and allow for different setting for sensitivity and sampling time. Three sensitivity thresholds and three sampling time periods shall be available.

### **5.2.2 Analogue Heat Sensors**

Analogue Heat sensors shall have the detection algorithm set from the FDCIE. The standard algorithms for class A1, A2 S and BS as per AS7240.5 shall be provided.

An IP rated heat sensor shall be available for use in wet areas.

### **5.2.3 Analogue Multi-Sensor**

Analogue Addressable Multi-sensor shall conform to AS7240.5 & AS7240.7.

Multi-sensor shall incorporate both photoelectric and heat sensing technologies.

The multi sensor shall be programmable from the FDCIE for either independent, the smoke and heat sensors function as separate sensors, or multi-criteria, where the fire growth responses of the smoke and heat sensors are combined to provide a better response to a developing fire.

## **5.3 Conventional Detectors**

Conventional detectors shall be available in smoke, heat or combination heat formats.

An IP rated heat detector shall be available for use in wet areas.

Conventional detector bases shall be compatible across the detector types to allow for interchangeability.

Conventional detectors shall be compatible with both conventional zone expansion boards within the FDCIE and loop modules which provide a conventional zone circuit input.

Each alarm zone circuit shall be able to be individually tested or disabled at the FDCIE.

## **6. FDCIE Options**

The FDCIE shall have optional 4 fan/ damper module conforms to AS1670.1, section 7.15

The FDCIE shall have optional 15 zone display / disable module



The FDCIE shall have programmable generic LED / Switch modules for sprinkler systems, pump status and general purposes.

## **7. REMOTE STATUS AND CONTROL**

### **7.1 Webserver**

The FDCIE shall be capable of being fitted with a Webserver to provide signaling between the FDCIE and remote monitoring options.

In the event of an alarm, fault or disable condition, the FDCIE shall provide a status signal over the Ethernet which is displayed as a web page or graphically using EBLNet and Graphic Package.

The Webserver shall support a number of forms of TCP/IP communications, email, open protocol TCP communications Modbus and secure HTTP web pages. This allows customization for site specific requirements.

The Webserver web pages shall be continually updated to reflect the latest status of the FDCIE.

The webserver shall be capable of displaying the status of each zone or addressable/analogue sensors within the entire site.

The webserver shall provide control elements for alarm and disable to the FDCIE.

All the web pages shall be fully encrypted to the high level industrial web security standards. The access to the system controls is further secured by means of three level password authentications.

For conventional circuits the web page information shall be limited to the alarm, isolate and fault status.

For addressable/analogue sensors full data interrogation shall be available.

The webserver is supported by remote monitoring software allowing system status to be displayed via a suitable PC and screen. The remote monitoring software shall be customized to suit specific site requirements.

The monitoring software shall be capable of running on multiple front end computer stations located strategically around the site. A graphic page shall provide an overview of the site.

The monitoring system software is windows based and therefore non-proprietary software.

The Web server software shall be suitable of being viewed and maintained from any Windows based PC.

### **7.2 High Level Interfaces**

The CIE shall be capable of transmitting alarm information in a serial format to third party systems such as Building Management and Nurse Call. The format shall be Modbus.