OPERATION MANUAL

Issue 2.4

FT420

Conventional Fire Alarm System

MA420 **Oct 2018**

DOCUMENT HISTORY

Manual		Description	Software		Written By	Checked By
Rev No.	Date		Rev. No.	Date		
Draft 1	30/8/07	Change LED indicating patterns. Fill in power consumption data. Fill in dimension and weight. Attach the mounting details. Change configuration data.	V0 – V1.4		W.Z	A.S
Draft 2	1/10/08	Minor changes			W.Z	A.S
Draft 3	12/4/10	Change PCB revisions for EMC Update manual, add components list and circuit schematics for CSIRO			W.Z	A.S
1	15/4/10	Remove CSIRO info and update	V1.5		M.R	A.S
1.1	12/5/10	Update Manual for the 1st production run	V1.5		M.R	A.S
1.2	24/5/10	Remove features under development and update software version to V1.6. The LED test in V1.6 is performed by pressing for 5 seconds the disable external strobe button rather than pressing silence buzzer and alarm devices buttons simultaneously in V1.5.	V1.6		C.A	A.S
1.3	17/8/10	Add more features; 8 Relay Expansion Board 4 Supervised Outputs Expansion Board Zone alarm priority / non-DBA Zone post alarm delay Zone alarm non-latching	V1.7		C.A	A.S
2.0	15/7/11	Review manual and update previous revisions to software V2.1.0. Removed PA volume control and High/Low Priority Zone Alarm. Add 3 minutes delay between alert & evac and fix up software issues in SUB886	V2.1.0	25/7/11	E.T. / C.A.	A.S.
		Add Gaseous extinguishing system Fix up 20 zone system with OWS	V2.2.1	18/4/12	W.Z.	A.S.
2.3	28/8/12	Add new output tab in PC S/W Combine Alarm Post Delay and Quiet Alarm Extend Gas Control New configuration file format and rectify some issues Fix up PC config. Software (V2.3.1)	V2.3.0 / V2.3.1	28/8/12 21/9/12	W.Z. / A.S.	A.S.
		Add one hour option for Delayed mains fail Rectify zone disablement function Update manual to include FT420-AL2000 config. Software V1.1	V2.3.2 / V1.1 A2000	11/3/14	A.S. / W.Z.	A.S.
2.3.3	10/6/16	Add latching PSU LED (PC Config. Still V2.3.2) Update Manual to remove Alarm 2000 section	V2.3.3	10/6/16	A.S. W.Z.	A.S.
2.4	26/10/18	Change Brooks logo and minot update	V2.3.3	10/6/16	A.S.	A.S.

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1 INTRODUCTION

1.1 General

1.1.1 Important Information

The Brooks FT420 is designed to comply with the requirements of AS7240.2 and AS7240.4 standards. It has been tested and approved under the CSIRO ActivFire scheme. The FT420 system must be correctly configured and installed to suit the site specific application to ensure fire safety.

Brooks shall not under any circumstances be liable for any incidental or consequential damages arising from loss of property or other damages or losses owing to the failure of Brooks products beyond the cost of repair or replacement of any defective products.

Brooks reserves the right to make product enhancements and change product specifications at any time.

While every precaution has been taken during the preparation of this document to ensure the accuracy of its contents, Brooks assumes no responsibility for errors or omissions.

WARNING!

- Improper operation of the CIE may result in serious injury including death, damage or loss of property and equipment and interruption to the site normal functions.
- Contact the Fire Brigade immediately in alarm condition regardless of whether the CIE is equipped with Alarm Signaling Equipment (ASE) or automatic fire protection equipment.
- The Brooks CIE monitors the wiring conditions by using end of line devices. It is however not capable of detecting the internal conditions of any associated external equipment unless the system is specially arranged to monitor those conditions. The external equipment shall be operated and maintained according to its own specific operation and maintenance procedures.

1.1.2 Overview

The Brooks Firetracker FT420 is a highly integrated and flexible 4 to 20 conventional zone Control and Indicating Equipment (CIE). It is designed to ensure fire safety and simplify system operation, manufacturing, installation and maintenance.

This manual provides system operational information on how to properly operate the Brooks Firetracker FT420 Conventional CIE system.

Please read the manual thoroughly before operating.

Refer to the FT420 Technical Manual for further information regarding installation, commissioning and maintenance. Please contact Brooks for technical support or comments if it is necessary.

1.2 Features

1.2.1 Standards and approvals

The Brooks Firetracker FT420 Conventional CIE series has been tested and assessed by CSIRO. The applied reference criteria included the Australian standard AS7240.2-2004 and AS7240.4-2004. This ensures the CIE complies with the latest compliance standards.

1.2.2 Highly integrated and flexible

The Brooks Firetracker FT420 Conventional CIE is highly integrated and flexible. It is capable of meeting most of the application requirements at minimal costs.

The **basic FT420** system includes the following standard features:

- Four zones for fire detection, sprinkler flow switches, MCPs or any compatible inputs
- Panel mounted Manual Call Point (MCP).
- Supervised Alarm Devices output and Disable facility.
- Supervised Ancillary Control Facility (ACF), independent control and indication.
- Supervised External Strobe output and Disable facility.
- A Magnetic Door Holder (MDH) circuit (control only).
- Walk Test facility.

By adding expansion boards, it is capable of providing within its architecture:

- Up to 20 conventional zones,
- Occupant Warning System (OWS),
- Multiple supervised speaker circuits,
- Multiple supervised 24V outputs.
- Multiple clean contact outputs
- Alertcom i.e. multiple tones / messages manual and automatic triggering.
- Optional Gaseous extinguishing system integration.

1.2.3 Simple and clear user interface

A simple and clear user interface is vital in emergency conditions. The modular CIE and intuitive user interface significantly simplifies the system operations. It provides users with all necessary information and controls at a glance via the individually well-grouped indicators and momentary push-button switches.

1.2.4 Audible and visual indications

The CIE is capable of providing visual and audible warning for fire alarm evacuation conditions using External Strobe Output (strobes) and Warning output (sounders). If an OWS option is added to the CIE, the FT420 system provides additional fire safety by using both alert and evacuation tones and messages.

1.2.5 Less disturbance during tests

If OWS is used, the CIE broadcasts clear and brief voice messages to the specified speakers during the alarm tests and walk test ***"Testing"***. It ensures the efficiency of the system routine tests and minimises unwanted disturbances to occupants.

1.2.6 Brooks Alertcom

By adding expansion boards, the FT420 CIE is capable of providing a complete OWS manual and automatic triggering system which includes the following features:

- **Multiple tone and voice messages**

  A total of up to ten tones and / or voice messages will be broadcast based on the system conditions.
- **Visual alarm indications**

  The Alertcom is capable of providing both audible and visual warnings in alarm or manual conditions. Its monitored dual strobe output controls the visual indications for both alert and evacuation conditions separately.
- **Automatic Alertcom system with manual tone selections**

  Up to eight tones can be broadcast based on the associated monitored trigger inputs or the manual selections on the front display. It can be used not only for the emergency warnings, but also for the general message broadcasts, such as the school and lunch bells.
- **PA**

  Public addressing can be broadcasted
- **Auxiliary audio input**

  Remote desktop microphone announcements or background music can be broadcasted when the auxiliary input is enabled and the CIE is in quiescent conditions.

1.2.7 Gaseous Extinguishing System

The gaseous extinguishing feature has been added to FT420 in firmware V2.3.x, it adds Brooks Gas interface module to the standard FT420 configuration. The Brooks series of warning signs, local control stations and voice / messages horns or speakers can be connected to FT420 via the gas interface module to offer a complete detection system as well as a gaseous extinguishing system.

1.3 Specifications

Table 1 General Specifications

Feature		Specification
Mains Power Supply		230VAC (86-265VAC), 150W (5.5 Amp), requirement is based on the CIE power supply calculations.
Backup Battery		2 x 12V SLA Battery, required capacity is based on the CIE battery calculations, refer to technical manual.
Access Security		Access Level 1: All the LED indicators are viewable through the locked acrylic front door. Access Level 2: All the controls are accessible after opening the front door using a 003 key. Access Level 3: The control and indicating circuits are behind the front plate. To repair the CIE or upgrade its firmware, a technician is required to open the front door and unscrew the inner door. Access Level 4: All the system configurations require special hardware and PC software. No configuration is available during normal operations (Access Level 1 & 2).
Operating Temperature		0°C to +40°C.
Operating Humidity		5-95%, non-condensing.
IP Rating		IP31
Enclosure Material		Zinc Anneal Steel Powder coated Oyster with grey tinted lockable acrylic front door
Enclosures	Small	480mm H x 450mm W x 220mm D (including door)
	Medium	630mm H x 450mm W x 220mm D (including door)
	Large	920mm H x 450mm W x 220mm D (including door)
Compliance		**CIE** Conforms to AS7240.2-2004, AS7240.4-2004 **OWS:** Meet the requirements of clause 3.22 of AS1670.1-2004 and clause 1.4.1, 1.4.4, 4.3.3 and 4.3.5 of AS1670.4-2004 Alert tone and message meet the requirements of ISO 7731 Evacuation tone and message meet the requirements of ISO 8201 Gaseous extinguishing system meets the requirements of AS4214
Applications		Normally used in class 2, 3, 4, 5 &6, can also be used to protect hazardous locations using intrinsically safe detectors/ MCPS via galvanic isolator. Installed to in-door environment only. Upon request it can be fitted inside IP65 enclosure.

2 USER INTERFACE

The Firetracker FT420 CIE provides system status via individual LED indicators and controls. Each control button is a momentary push-button switch. The LED indicators and momentary switches are grouped based on their functionality as shown in Figure 3. The main front display board which includes the first four zones is located on the top section as shown in Figure 1, all other display boards are optional.

Figure 1 Typical 8 Zone FT420 with OWS, acrylic door closed

Figure 2 Typical 8 Zone FT420 with OWS, acrylic door open

2.1 Main Front Display

A typical FT420 CIE standard main front display is shown in Figure 3.

Note that the FT420 CIE front layout may be different due to additional options required for different system configurations.

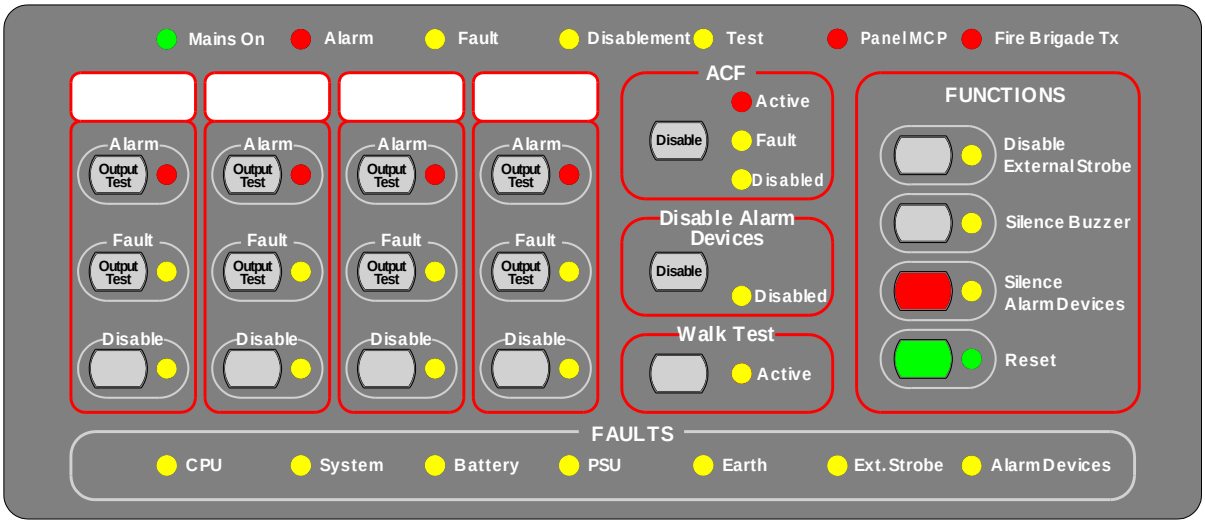

Figure 3 FT420 Main Front Display

All the switches are momentary push-button switches. The **RESET** switch on the Main Front Display in Figure 3 is a momentarily action switch.

> **Warning:** *The "Reset" button cannot reset an alarm unless the "silence Alarm Devices" button is pressed first.*

All the other switches are toggle action switches. Each of them is capable of toggling the associated controls by pressing and releasing it once.

The buzzer will give a short beep to confirm that the button was pressed.

LEDs test is performed by pushing and holding the "Disable External Strobe" for 5 seconds.

The main front display supports the basic operations of a CIE and the first four zones. Its control features and indicators are listed as shown on Table 2.

The LED indicators display the system status utilising different indicating patterns. The indicating patterns are detailed in Chapter 3.

Table 2 Main Front Display Facilities

Feature	Label	Type	Description	LED Color
General Display	Mains On	Indicating	Mains ON. (mains low fault is not detected)	Green
	Alarm	Indicating	Common alarm condition	Red
	Fault	Indicating	Common fault condition	Yellow
	Disablement	Indicating	Common disabled condition	Yellow
	Test	Indicating	Common test condition	Yellow
	Panel MCP	Indicating	MCP alarm	Red
	Fire Brigade Tx	Indicating	Fire brigade calls transmitted	Red
Fault Display	CPU	Indicating	CPU fault	Yellow
	System	Indicating	System fault	Yellow
	Battery	Indicating	Battery fault	Yellow
	PSU	Indicating	PSU fault	Yellow
	Earth	Indicating	Earth fault	Yellow
	Ext. Strobe	Indicating	External strobe output fault	Yellow
	Alarm devices	Indicating	Alarm devices output fault	Yellow
Zones Display	Alarm Test	Indicating	Zone alarm or zone alarm output test	Red
		Control	Test zone alarm output	N/A
	Fault Test	Indicating	Zone fault or zone fault output test	Yellow
		Control	Test zone fault output	N/A
	Disable	Indicating	Zone disabled	Yellow
		Control	Disable zone	N/A
ACF	Active	Indicating	ACF output activated	Red
	Fault	Indicating	ACF supervised output fault	Yellow
	Disabled	Indicating	ACF output disabled	Yellow
	Disable	Control	Disable ACF	N/A
Disable Alarm Devices	Disabled	Indicating	Alarm devices disabled	Yellow
	Disable	Control	Disable alarm devices	N/A
Walk Test	Active	Indicating	Activate walk test mode	Yellow
	Walk Test	Control	Walk test mode activated	N/A
Functions		Indicating	External strobe disabled	Yellow

Feature	Label	Type	Description	LED Color
	Disable External Strobe	Control	Disable external strobe	N/A
	LED Test (Dual function of Disable External Strobe	Indicating	All LEDs illuminate except CPU & common fault	All LEDs
		Control	Press and hold 5 seconds for LED test (External strobe output will be disabled)	N/A
	Silence Buzzer	Indicating	Buzzer silenced	Yellow
		Control	Silence buzzer	N/A
	Silence Alarm Devices	Indicating	Alarm devices silenced	Yellow
		Control	Silence alarm devices	N/A
	Reset	Indicating	Alarm and fault reset in progress	Green
		Control	Reset all the alarms and faults	N/A

2.2 Optional Zone Front Display

The optional zone front display supports 4 additional zone controls and indicators. Each zone has 3 buttons, Alarm Output Test, Fault Output Test and Zone Disable (Isolate). These indicators display alarm, fault and disablement.

Up to 4 zone front displays can be added to the basic four zones FT420 to increase the total number of zones to 12 if OWS is not fitted. However, additional space in the CIE and additional zone termination boards would be required.

Table 3 describes the control features and indicator description in the 4 Zone Expansion Front Display.

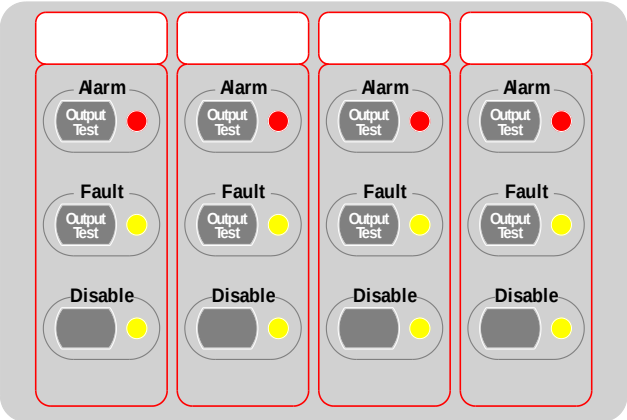

Figure 4 Front Display for Additional 4 Zones

Table 3 Optional Zone Front Control and Indications

Feature	Label	Type	Description	LED Color
Optional Expansion Zone Display	Alarm Output Test	Indicating	Zone alarm or alarm output test	Red
		Control	Test zone alarm output	N/A
	Fault Output Test	Indicating	Zone fault or fault output test	Yellow
		Control	Test zone fault output	N/A
	Disable	Indicating	Zone disabled	Yellow
		Control	Disable zone	N/A

2.3 Optional OWS

The Brooks Occupant Warning System (OWS) may be integrated with FT420 CIE. The OWS consists of:

- Tone / Message Generator board,
- Amplifier board 60W (SUB865), 120W (SUB866) or 250W (SUB867),
- Audio transformer mounted on the equipment plate in FT420 cabinet, and
- Control & front display on the cabinet door.

The OWS provides an audio output to a single 100V fully supervised speaker circuit.

The OWS components are powered by the 24V supply in the CIE for 60W amplifier only, larger amplifiers require separate power supply and power supply supervision module. The Tone / Message Generator board plugs onto the main board. Therefore, no hardware interface to the CIE is required.

An optional Supervised 4 Output Expansion board (SUB886) allows the 100V line audio output to be split across 4 individually supervised circuits. Up to 6 of these modules can be fitted to the FT420 system allowing up to 24 speaker circuits. A larger enclosure may be required depending on the space availability in FT420 cabinet.

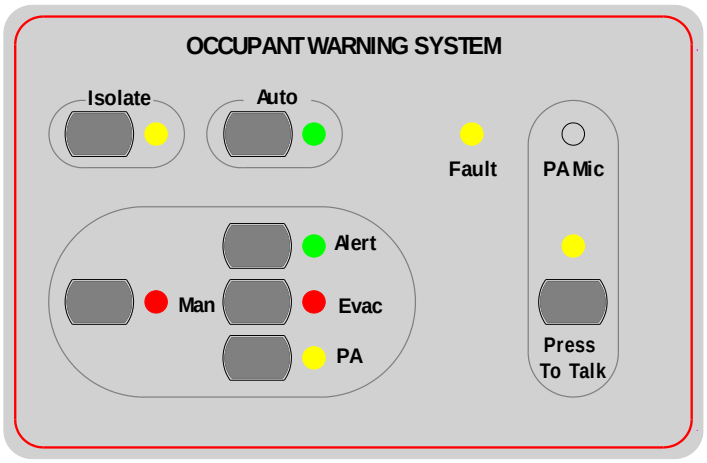

Figure 5 OWS Front Display

The Brooks OWS allows the warning system to be operated in 3 modes: Isolate, Automatic or Manual mode. The system can only operate in one of the three modes at a time as described below:

2.3.1 Isolate mode

When the isolate button is pressed, the OWS will be deactivated until the Isolate button is pressed again or either Auto or Manual mode is activated.

Note: ***A fault signal will be generated, after 5 minutes if the isolate or manual mode is selected (OWS software V1.5 and higher)***

2.3.2 Automatic mode

In this mode, if the trigger input is activated, the audio warning signals (tone and voice) will be broadcasted to all the speakers automatically. The OWS tone / voice message can be configured for evacuation tone T3 or AS2220 alert and evacuation tone with optional 3 minutes time delay between the two tones / messages depending on the PC software configuration.

Please check with your installer the FT420 configuration.

The OWS is triggered automatically when FT420 is in alarm, to isolate the OWS function, press the Silence Alarm Devices button in FT420 main display. The Isolate or Manual button can also be used to

isolate the OWS, in this case a fault signal will be generated after 5 minutes to alert the service personnel that the warning system has been left isolated.

> **Warning:** *In alarm condition, if the OWS is disabled via the OWS Isolate button, the alarm cannot reset unless the OWS is re-enabled again then disabled via the Silence alarm devices.*

2.3.3 Manual Mode:

In manual mode, the user can select between Alert Tone / Message, Evacuation Tone / Message or Emergency Public Address (PA). The OWS Front Display Board includes an inbuilt Electret type Microphone for PA and a Press-To-Talk button.

The OWS Main Front Display supports the basic operations of an Occupant Warning System. Its control features and indicators are described on Table 4.

Table 4 Optional OWS Front Display Control and Indicators

Feature	Label	Type	Description	LED Color
OWS Mode	Isolate	Indicating	OWS disabled	Yellow
		Control	Disable OWS	N/A
	Auto	Indicating	OWS auto mode	Green
		Control	Select OWS automatic mode	N/A
	Man	Indicating	OWS manual mode	Red
		Control	Select OWS manual mode	N/A
	Fault	Indicating	OWS fault	Yellow
Manual Control	Alert	Indicating	OWS alert tone activated	Green
		Control	Activate OWS alert tone	N/A
	Evac	Indicating	OWS evacuation tone activated	Red
		Control	Activate OWS evacuation tone	N/A
	PA	Indicating	OWS PA activated	Yellow
		Control	Enable OWS PA	N/A
Manual PA Press-To-Talk control	Press To Talk	Indicating	OWS PA Press-to-Talk activated	Yellow
		Control	Activate OWS PA Press-to-Talk	N/A

If an OWS is not required in the CIE, electronic sounders can be connected to the warning output. The sounders will be activated in alarm conditions.

2.4 Optional OWS Tone Selection Control & Display (Alertcom)

The optional OWS tone selection control and display board provide additional eight tone manual selections to the FT420 OWS. The front display (Alertcom) in conjunction with the 8 Zone Expansion Board (used as a trigger input) allows the user to manually select between 8 different Tones / Messages.

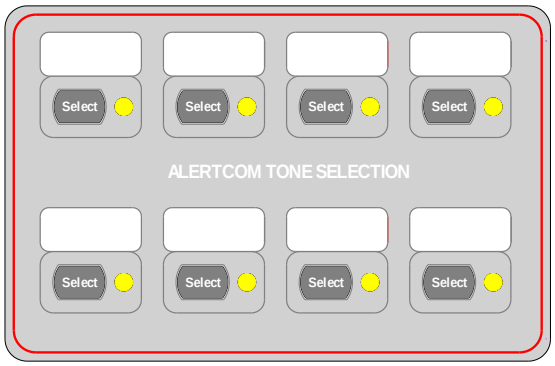

Figure 6 ALERTCOM Tone selection

The front display control and indicating facilities are listed in Table 5 and shown in Figure 6 above.

Table 5 Optional OWS Tone Selection Control and Indications

Feature	Label	Type	Description	LED Color
Tone manual selection for each of the eight tones	Select	Indicating	OWS tone activated	Yellow
		Control	Select one of the eight OWS tones	N/A

The OWS tone and voice messages are shown in Table 6. The control and display board is same PCB as the PA zone selection.

Table 6 OWS Tone and Voice Messages

Audio Indication	Type	Active conditions	Description
Evacuation message	Tone and voice message	Alarm conditions or manual evac selection	Repeat the tone below for four times. Sweeping from 500-1200Hz with the ON/OFF time of 0.5s, repeated for three times, and then followed by additional 1 second silence. Then the following evacuation voice message: “Attention, attention, fire alarm evacuate now”, follows. When the voice message is completed, the tone repeats again.
Alert message	Tone and voice message	Alarm conditions if auto alert / evac selected or manual alert selection	Repeat the tone below for twelve times. Continuous tone at 420Hz with the ON/OFF time of 0.5s, repeated for three times. The alert voice message follows: “Attention, attention, a fire alarm has been detected within the building. Standby for further instructions”.

Audio Indication	Type	Active conditions	Description
			When the voice message is completed, the tone repeats again. If 3 minutes delay is selected, the alert tone will automatically change to the evacuation tone.
Tone 1	Tone	Associated trigger input is in active conditions or manual tone selection	Continuous 420 Hz
Tone 2	Tone		Alternating, 420Hz 500ms, 2850Hz 500ms
Tone 3	Tone		Sweeping, from 2400Hz to 2850Hz, 500ms, with ON/OFF time 500ms.
Tone 4	Tone		Continuous 2850 Hz
Tone 5	Tone		TBA
Tone 6	Tone		TBA
Tone 7	Tone		TBA
Walk test message	voice message	Alarm input detected during walk test	Voice message *"Testing"* activated only once in walk test mode.

Notes:

1. Different tones and messages can be customized on request.
2. Walk test message is non-configurable however the message may be replaced with another tone / voice message.
3. Configuring optional tones/messages is limited to the memory capacity available in the system

2.5 Optional Gaseous Extinguishing System

This option enables FT420 to provide two smoke detection zones for hazardous area, as well as the associated supervised and dry-contact outputs required for a complete gaseous extinguishing system. When the option is selected, both Zone 1 and Zone 2 will be dedicated for the smoke detection in the risk area.

The two zones and their allocated outputs will be separated from the rest of system operations. I.e. the alarm conditions of the two zones will not activate system alarm conditions. Meanwhile the outputs selected by both Zone 1 and Zone 2 will not be activated by any other zone inputs.

2.6 Mains Failure Detection

New option is added to V2.3.2 to delay reporting mains fail. AS7240 requires any fault to be detected within 100 seconds, this is the default setting. When the FT420 is installed in a remote location or in an installation where blackout occurs for longer period of time, the 60 minutes delayed mains fail detection can be selected.

3 CIE INDICATIONS

3.1 Indicator Conditions

Table 7 lists the different LED indicator illumination patterns, buzzer sound patterns and speaker output Tone / Message.

Table 7 CIE Condition Indicating Patterns

Condition	LED Indicating Pattern			Buzzer	OWS where fitted
	Color	No. of Flashes	Time Sequence		
Zone Alarm	Red Zone Alarm	1 Flash	0.256S ON, 0.256S OFF	2 Sec ON 1 Sec OFF	Evacuation message
Zone Alarm (if auto alert evac selected)		1 Flash	0.256S ON, 0.256S OFF	1 Sec ON 2 Sec OFF	Alert message
Zone alarm output test		1 Flash	0.512S ON, 0.256 S OFF	2 Sec ON, 2 Sec Off	N/A
No zone alarm has been detected during the zone walk test conditions		Steady ON		N/A	N/A.
Zone alarm has been detected during the zone walk test		2 Flashes	The ON time is 0.256S The interval between the two flashes is 0.256S	N/A.	Walk test message
Fault	Yellow	1 Flash	0.256S ON time for each flash. 2 Sec OFF intervals between every sequence of flashes.	Steady ON	N/A.
		2 Flashes			
		3 Flashes			
		4 Flashes			
		Steady ON			
Zone fault output test	Yellow	Steady ON		Steady ON	N/A
Disablement	Yellow	Steady ON		N/A	N/A

3.2 LED with Multiple Indicating Patterns

LED indicators have multiple indication patterns. Use Table 8 to identify which fault has occurred.

Table 8 LED Indicators with Multiple Indicating Patterns

LED Indicator	Indication Pattern	Description
CPU Fault	Flash once	The main front display board has a CPU fault (FLASH memory or EEPROM corrupted or wrong configuration of the system data).
	Flash twice	The main control board has a CPU fault (FLASH memory or EEPROM corrupted or wrong configuration of the system data).
	Steady ON	Multiple CPU faults have been detected.
System Fault	Flash once	MCP (panel mounted) circuit fault
	Flash twice	Main front display has a front display expansion fault.
	Flash three times	Main control board has a control expansion fault.
	Steady ON	Multiple system faults have been detected.
Battery Fault	Flash once	Battery low fault detected
Power Supply Fault (PSU)	Flash once	Mains Fault, including Mains Low and Mains High faults. When mains low fault is detected, the MAINS ON LED extinguishes. When Mains High Fault is detected, the battery charger output will turn OFF.
	Flash twice	Charger Low Fault.
	Flash three times	Both mains and charger have faults.
	Steady ON	Battery Low Fault detected.
Earth Fault	Flash once	A leakage between GND and Earth is detected.
	Flash twice	A leakage between +24V and Earth is detected.
External Strobe Fault	Flash once	An open circuit fault is detected in the external strobe connection.
	Flash twice	A short circuit fault is detected in the external strobe connection.
Alarm Devices Fault	Flash once	An open circuit fault is detected in the alarm devices connection.
	Flash twice	A short circuit fault is detected in the alarm devices connection.
ACF Fault	Flash once	An open circuit fault is detected in the ACF connection.
	Flash twice	A short circuit fault is detected in the ACF connection.
Zone Fault	Flash once	Zone open circuit fault.
	Flash twice	Zone short circuit fault.

Table 9 Optional OWS LED Indicators with Multiple Indicating Patterns

LED Indicator	Indication Pattern	Description
OWS Fault	Flash once	OWS Speaker circuit fault.
	Flash twice	OWS strobe output fault.
	Flash three times	OWS auxiliary enable input fault.
	Steady ON	Multiple OWS faults have been detected.

Table 10 Optional OWS Tone Selection LED Indicators with Multiple Indicating Patterns

LED Indicator	Indication Pattern	Description
OWS Tone Selection	Flash once	The associated zone input circuit is in an open circuit fault condition.
	Flash twice	The associated zone input circuit is in a short circuit fault condition.
	Steady ON	The tone is manually selected or automatically triggered by the associated zone input circuit.

4 OPERATIONS

4.1 Fire Fighter Facilities

In a fire alarm or fault condition, the following controls are available for the CIE user. Refer to Figure 3 FT420 Main Front Display for the following control buttons and indicators:

4.1.1 Disable External Strobe

- To disable the External Strobe, press the ***Disable External Strobe*** button once.
- The ***Disable External Strobe*** LED indicator turns ON when the External Strobe is disabled.
- To re-enable the External Strobe, press the ***Disable External Strobe*** button again.
- The External Strobe cannot be re-enabled automatically.

Note: The "Disable External Strobe" button has dual functions:

1. Press and release this button, disables / re-enables the External Strobe output.
2. Holding down this button for 5 seconds will perform an LED test.

4.1.2 Silence buzzer

The ***Silence Buzzer*** button allows the CIE operator to silence the CIE buzzer in alarm or fault condition.

- To re-enable the buzzer, press the ***Silence Buzzer*** button to toggle this control.
- The ***Silence Buzzer*** LED indicator illuminates when the buzzer is silenced.
- The buzzer will be re-enabled automatically by a new alarm or fault event.

4.1.3 Silence alarm devices

- To silence the alarm devices (OWS or sounders), press the ***Silence Alarm Devices*** button. The ***Silence Alarm Devices*** LED illuminates.
- To re-enable the alarm device, press the ***Silence Alarm Devices*** button again, the LED extinguishes.
- The alarm devices will be re-enabled automatically by a new fire alarm event.

4.1.4 Reset

The ***RESET*** button allows the operator to reset the zone inputs in alarm conditions and any system fault conditions.

- To reset alarms, press Silence Alarm Devices then press the ***RESET*** button, only cleared alarms can be reset.
- To reset faults, press and release the ***RESET*** button, only corrected faults can be reset.
- The ***RESET*** LED indicates the reset is in progress.

Note: The Alarm reset action must be in the following sequence:

1. Press "**Silence Alarm Devices"** then
2. Press **"Reset"**

It is very important to follow the same sequence in order to reset an active alarm. This sequence is required by the Fire Brigade Standard AS4428.3.

4.1.5 Disable ACF

- To disable the ACF, press the ***Disable ACF*** button.
- To re-enable the ACF, press the ***Disable ACF*** button again.
- The ***Disable ACF*** LED indicator illuminates to indicate that the ACF is disabled.
- The ACF faults are indicated by ***ACF Fault*** LED indicator.

4.1.6 Disable Alarm Devices

Used to disable the alarm devices, either OWS or sounders.

- To disable alarm devices, press and release the ***Disable Alarm Devices*** button, the A***larm Devices Disabled*** LED illuminates.
- To re-enable the alarm devices, press the ***Disable Alarm Devices*** button again.

4.2 Zone Facilities

The zone indication facilities are grouped in 4 zones per display board, refer to Figure 4.

4.2.1 Zone controls

1. **Alarm Test**
   In a Zone Alarm Output Test condition, both Common Alarm and Common Test conditions will be activated. A temporary beep followed by the Voice Message **"Testing"** will be broadcasted to all speakers (if OWS is fitted).
2. **Fault Test**
   In a Zone Fault Output Test condition, both Common Fault and Common Test conditions will be activated. The buzzer will beep continuously.
3. **Disable**
   In a Zone Disabled condition, both Common Disabled condition and Common Disabled Relay Output will be activated. No alarm or fault condition will be activated by the zone input. However, the alarm and fault conditions will continue to be indicated by the Zone Alarm and fault LED indicators.

4.2.2 Zone Indications

Three indicators are available for each zone to indicate Zone Alarm, Fault and Disabled conditions accordingly.

4.2.3 Manual Call Point (MCP)

The MCP alarm provides a manual activation to a full alarm condition in FT420 CIE.

The MCP alarm condition is indicated by a separate red ***MCP*** LED indicator. The MCP input cannot be disabled, for this reason it is recommended to keep spare replacement glass in the cabinet.

The panel mounted MCP is fitted on the front face plate of FT420 cabinet and accessible via the acrylic door.

4.3 Optional OWS Facilities

4.3.1 OWS Fault Indications

- The Alarm devices fault indication on FT420 main board follows the OWS fault indication on the OWS front display.
- The common fault indicator on the OWS front display will illuminate if any fault is generated in the OWS e.g. speaker fault, input trigger fault or strobe fault.

Note: ***If the OWS is left in the manual or isolate mode for more than 5 minutes, a fault will be generated.*** This facility has been added in the software to prevent accidental long-term disablement of the OWS.

4.3.2 Automatic Mode

If the OWS is in the Auto Mode, it will be activated automatically by an alarm, zone alarm test, zone walk test conditions, active conditions of the tone alert inputs and the auxiliary audio input active conditions.

- The OWS must remain in the Automatic Mode, press the ***AUTO*** button on the OWS main front display.
- The OWS Auto Mode is the CIE default mode. If the OWS Isolate or Manual Mode has been cancelled, the OWS Auto Mode will be enabled automatically.
- Only the ***AUTO*** LED indicator will remain ON when the OWS is in the automatic mode.

If the OWS is configured for automatic alert / evacuate trigger, an alarm condition will activate the alert tone / message for 3 minutes followed by the evacuation tone / message. The three minutes time delay between alert and evacuate is not configurable.

4.3.3 Isolate Mode

If the OWS is isolated, it will not be activated by any alarm condition.

- To disable the OWS, press the isolate button ***(Isol)*** on the OWS front display, if left in isolate mode for > 5min, a fault will be generated.
- The isolated LED indicator ***(Isol)*** will illuminate if the OWS is in the disabled mode,
- To re-enable the OWS, press the ***(Auto)*** button or ***(Manual)*** button if manual control is required. However pressing the isolate button ***(Isol)*** again, the system will automatically go to ***(Auto)*** mode.
- If the OWS is isolated, all the OWS controls will be disabled.

4.3.4 OWS Manual Mode

If manual control for emergency or testing purposes is required, press the OWS ***MAN*** then select between Alert, Evac or PA. Pressing the ***MAN*** switch again revert the system back to ***AUTO***. If the OWS is left in manual mode for > 5min, a fault will be generated

The ***MAN*** LED indicator will stay ON when the OWS is in the manual mode.

All the manual controls are accessible after the OWS is placed in the Manual Mode.

4.3.4.1 OWS Manual Evacuation

The OWS will broadcast the evacuation tone T3 / message to all the OWS speakers if the OWS Manual Evacuation control is enabled.

- To activate the OWS manual evacuation, press the ***Evac*** button located on the OWS main front display, when the OWS is in the Manual Mode.
- To disable the OWS manual evacuation, press the ***Evac*** button again.
- The ***Evac*** LED indicator will flash when the control is activated.

4.3.4.2 OWS Manual Alert Control

The OWS will broadcast the Alert Tone / Message to all the OWS speakers if the OWS Manual Alert control is enabled.

- To activate the OWS manual alert, press the ***Alert*** button located on the OWS main front display, when the OWS is in the Manual Mode.
- To disable the OWS manual alert, press the ***Alert*** button again.
- The ***Alert*** LED indicator will flash when the OWS manual alert control is activated.

4.3.4.3 OWS Manual PA & Press-To-Talk PTT Controls

When the manual PA control is activated, the audio amplifier is activated and ready for PA input. As soon as the PTT button is pressed, the OWS microphone input will be ready for broadcasting an announcement to all the speakers.

- To activate the OWS PA, press the ***PA*** button located on the OWS front display.
- To disable the OWS PA, press the ***PA*** button again.
- The ***PA*** LED indicator will stay ON if the OWS PA control is activated.
- Press and hold the ***Press To Talk*** button when a PA announcement is required to be broadcasted.
- Release the **Press To Talk** switch when the PA is not needed.
- The ***Press To Talk*** LED indicator will stay ON while the ***Press To Talk*** button is pressed.
- Push ***PA*** again to disable the PA microphone.

4.3.5 OWS Tone Selection (Alertcom)

This option requires "TONE SELECT" front display board for manual tone / message activation and zone expansion board for automatic tone / message trigger. The option is called ***Alertcom***.

4.3.5.1 OWS Manual Tone Selection (Alertcom)

- There are eight LED indicators and eight related buttons on the OWS tone selection front display.
- Each of the eight tones can be activated (or de-activated) by pressing the related button when the OWS manual mode is activated.
- When the OWS manual mode is deactivated, any manually selected tone will be deselected automatically.

4.3.5.2 OWS Automatic / Manual Tone Alert (Alertcom)

- A dedicated zone input circuit of the zone expansion board can be allocated to each of the eight tones during the CIE configurations. External trigger to the zone input is required.
- If the allocated zone input circuit is in active condition, the associated tone will be broadcasted to all the speakers. At the same time, the buzzer will beep continuously.

If the allocated zone input circuit is in fault conditions, the associated tone LED indicator will flash.

4.3.6 OWS Auxiliary Input

- The OWS provides one Auxiliary Enable Input and an Auxiliary Audio Input for background music or remote desk microphone.
- A Remote Desk Microphone (with manual enable switch) can be connected to the OWS Auxiliary Inputs directly. Brooks Remote Desk Microphone PA-1 can be used.
- The operator can broadcast background music or PA announcement to the speakers by activating the Auxiliary Enable Input connected to the remote microphone only if the two following conditions are existing:
    1. OWS is in the Automatic Mode with no alarm / fault conditions.
    2. OWS is in Manual Mode with no Evacuation / Alert tone, or any other tone being selected.
- If the CIE detects an alarm condition, the Auxiliary audio output will be terminated immediately.

Refer to FT420 technical manual for more information and wiring diagrams

4.4 Walk Test Facilities

A zone walk test facility is provided to allow a designated zone to be selected for Heat or Smoke testing. Please note the following:

- To ensure the reliability of the walk test, only one zone may be deployed a time.
- During the walk test, neither alarm nor fault condition will be established for the zone in the Walk Test Mode.
- The Walk Test Mode will be terminated automatically when:
    - The mode active period exceeds 30 minutes or
    - An alarm condition has been detected from any zone that is not selected for the walk test.

4.4.1 Walk Test Mode

To perform zone walk test, the CIE Walk Test Mode must be activated first.

- To enable the Walk Test Mode, press the ***Walk Test*** button.
- Both the ***Walk Test*** and the common test LED indicators will stay ON while the Walk Test Mode is active. The ***Walk Test*** LED indicator will flash if any zone is selected for walk test.
- To disable the Walk Test Mode, press the ***Walk Test*** button again.

4.4.2 Select Zones for Walk Test

When the Walk Test Mode is enabled, all the previously enabled Zone Alarm Test will be cancelled automatically.

In the Walk Test Mode, testers can select or deselect an individual zone to the Walk Test Mode by pressing the Zone Alarm Test switch. The Zone Alarm LED indicator will stay ON if the Zone Walk Test is activated.

4.4.3 Perform Zone Walk Test

After the zones have been selected for walk test, the tester can walk through the zone area and trigger the zone detectors one at a time.

If an alarm condition is detected on the selected zone during the Walk Test,

- The CIE will broadcast a temporary testing message **"Testing"** to the specified speakers (if OWS is used).
- The alarm zone in Walk Test Mode will be automatically reset after a zone alarm condition is detected.
- The zone alarm LED indicator continues flashing twice every 2.56 seconds until the end of the Walk Test Mode.

Warning: Operated detector in the walk test mode must be allowed to auto reset before attempting to test another detector.

5 Guarantee

If the product has any defect due to faulty workmanship or material it is to be returned to Brooks freight paid. Brooks will, at its sole discretion, repair or replaced the item free of charge.

On returning a component or complete product, proof of purchase will be required. If returning the complete product all accessories and documentation MUST be returned.

This guarantee does not cover damage caused to the product or its components as a result of incorrect installation, accident, neglect, misuse, unauthorised or dismantling howsoever caused, careless handling or where repairs have been made or attempted by others. Onsite warranty repairs will be carried out at the discretion of the manufacturer.

No other guarantees written or verbal are authorised to be made on behalf of Brooks. All other conditions and warranties whether expressed or implied are, to the extent permitted by law, hereby excluded.

As Brooks Australia has no control over the system's design, installation to the relevant Australian Standard or maintenance, the Company and its agents take no responsibility for any damage, consequential loss or injury caused to any equipment, property or persons resulting from the use of the FT420 systems.

Brooks guarantees system components for a period of either fifteen (15) months from the date of purchase or twelve (12) months from the date of operation, whichever is the lesser.

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