OPERATION MANUAL

Issue 0.1

FireAlert
Smoke Alarm System
(FA40)

MA475
October 2025

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1 SYSTEM OVERVIEW

The Firealert smoke alarm system (SAS) has been designed to meet the specific requirement of AS1670.6 Fire Detection, Warning, Control and Intercom Systems – System Design, Installation and Commissioning Part 6 Smoke alarm systems and the National Construction Code (NCC) Specifications 20 and 23 for smoke alarm systems.

Firealart utilises a data-over-power design enabling each FA base device to identify the type of alarm connected. This identification allows the FA40 to distinguish between different alarm types - currently supporting smoke, heat, multi-sensor (smoke/heat) alarms. The FA40 user interface displays the specific alarm type that has initiated the fire alarm through dedicated LED indicators. This critical feature allows occupants to understand the nature and location of the fire alarm, which in turn, identifies the urgency and the most appropriate exit strategy.

Firealert provides the SAS designer with a full range of fire alarm devices (smoke, heat and multi-sensor) interfaced to Residential Control and Indicating Equipment (RCIE). This combination of RCIE and fire alarm devices provides the necessary design flexibility to enable a fit for purpose life safety solution within class 1a, class 1b boarding houses, class 2, class 3, class 4 & some class 9c residential building applications

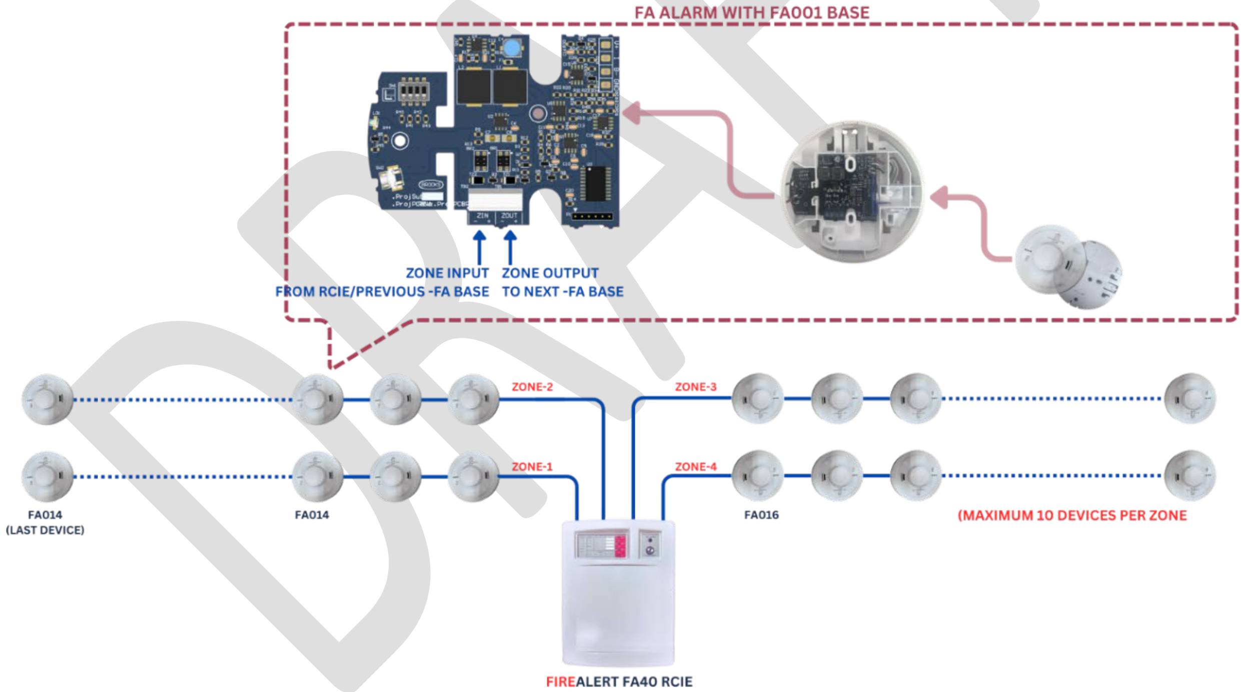


Figure 1 FireAlert Smoke Alarm System

Note: The FA40 RCIE cannot be expanded in either the number of zones or power supply output.

1.1 System Features

- AS1670.6 2023 and NCC Specification 23 compliance ready
- FA40 RCIE conforms to AS7240.2 and AS7240.4
- Four zone circuits with up to 10 devices per zone (40 devices total)
- Device type identification for alarm priority with individual LED indicators for smoke, heat, multi-sensor, and CO alarm conditions
- Individual zone and common alarm/fault indication
- Comprehensive fault monitoring including open circuit, short circuit, earth fault, PSU fault, and device removal detection
- User-friendly controls: Silence Buzzer, Locate Alarm, Silence Alarm, and Reset functions
- Two-tier access control with key switch for user and technician levels
- ACF (Ancillary Control Function) inhibit capability for maintenance operations
- Battery-backed operation with automatic charging and supervision (24V standby system)
- Dedicated alarm priority outputs (P1 for heat/MCP, P2 for smoke)
- Visual system status indicators for power, fire, fault, and disabled conditions
- Automatic resound feature for new alarm zones
- Zone-specific fault indication for targeted troubleshooting
- Easi-fit FA000 mounting base for ease of installation and servicing of alarm devices
- Supports FA016 smoke alarm, FA014 heat alarm and FA024 multi-sensor alarm (smoke & heat),

1.2 Terms & Definitions

Terms	Description
FA40	FireAlert, 4 Zone RCIE
FA000	Base interface unit for connecting FA0xx series alarms to the FA40 RCIE.
FA014	Heat alarm using a Class A1 thermistor sensor, suitable for areas with smoke or fumes.
FA016	Photoelectric smoke alarm designed to detect smouldering fires.
FA024	multi-sensor alarm combining smoke and heat detection.
RCIE	Residential Control and Indicating Equipment
Smoke Alarm	A device cable of detecting smoke and generating an alarm condition. *(FA016 & FA024) At Brooks all smoke alarms are Type A, non- radioactive photoelectric smoke alarms*
Photoelectric Sensor	A device that detects visible products of combustion by using a light beam. Light is transmitted into the sensing chamber, when combustion products enter the sensing chamber they reflect the light to the sensor receiver, the sensor sends an alarm signal.
Heat Alarm	A device capable of detecting heat and generating an alarm condition. (FA014 & FA024)
Thermistor	a type of temperature-sensitive resistor whose resistance changes significantly with temperature.
Mutli-criteria Alarm (Multi)	fire alarm device incorporating within one mechanical housing more than one fire sensor with all sensors separately monitored for the presence or absence of an output signal relating to fire development, where the output signals from each sensor are evaluated according to predefined algorithm to determine when an alarm condition is reached. Smoke + Heat sensor combined into 1 alarm where the alarm condition is determined by a response from both the smoke and heat sensors.
Combination alarm	A fire alarm device incorporating within one mechanical housing more than one fire sensor with each sensor independently signalling an alarm condition. Smoke alarm + Heat alarm combined into 1 alarm. Alarm condition can be triggered by either Smoke or Heat.
CO Alarm	A device capable of detecting carbon monoxide (CO). Note the CO sensor within the FA028 detects the development of toxic levels of CO, it is not a fire detection sensor
FA Alarm Device Type	Smoke (FA016), Heat (FA014), Multi (FA024 smoke + heat) and Multi (FA028) Heat + CO
Alarm Condition	condition within the *smoke alarm system* (Firealert) that is initiated by an *alarm device* responding to smoke or other physical phenomena of fire which results in an audible and visual signal as indicating the presence of fire
Fault Condition	**Condition within smoke alarm system or a component resulting in an** audible and visual signal as indicating the existence of an actual or incipient fault that may prevent an alarm condition or transmission of an alarm signal to interconnected devices

Smoke alarm types	**Type A:** Smoke alarm that does not contain radioactive materials.
	Type B: Smoke alarm containing radioactive materials.
Smoke alarm Bands (AS3786 2023)	**Band 1:** Response threshold greater than 0.05 dB/m
	Band 2: Response threshold greater than 0.2 dB/m
Heat Alarm Class (AS1603.3 2018)	**A1:** Response threshold greater than 54℃ but less than 65℃ *(Brooks FA0xx series heat alarms are class A1)*
	A2: Response threshold greater than 54℃ but less than 70℃
	B: Response threshold greater than 69℃ but less than 85℃
	C: Response threshold greater than 84℃ but less than 100℃
ACF	Ancillary Control Function, output used to trigger external devices during alarms
I2C	A reliable two wire communication protocol.
UART	a hardware communication protocol used for serial communication between devices.
Manchester encoding	A method of encoding data for reliable communication over power lines.
DIP Switch	A switch used to configure device settings.
EOL Device	A device installed at the end of a *transmission path* providing a signal to residential control and indicating equipment in order to supervise the transmission path E.G. End-of-Line resistor used to supervise wiring integrity in alarm zone circuits.
Alarm zone	area protected by one or more *alarm devices* which provides a common identification at the residential control and indicating equipment
Connectible device	Device with no component Standard to which the connectable device is required to conform and whose operation or failure will not jeopardize the performance of the *smoke alarm system* EXAMPLE Carbon monoxide alarms, door hold open devices, mimic panels or interfaces to graphic displays, building monitoring and control systems or for external monitoring.
Locate facility	control facility within the RCIE used in conjunction with the zone alarm devices that enables the specific device or devices in the *alarm condition* to be identified

2 SYSTEM COMPONENTS

2.1 FireAlert Series Fire Alarm Devices (FA0xx)

Note: For more information on troubleshooting FA series alarm and what the LEDs on the device themselves indicate, refer to §6.1

Note: Brooks MRF module is not compatible with the FA series alarms.

2.1.1Smoke Alarm (FA016)

2.1.1.1Overview Description

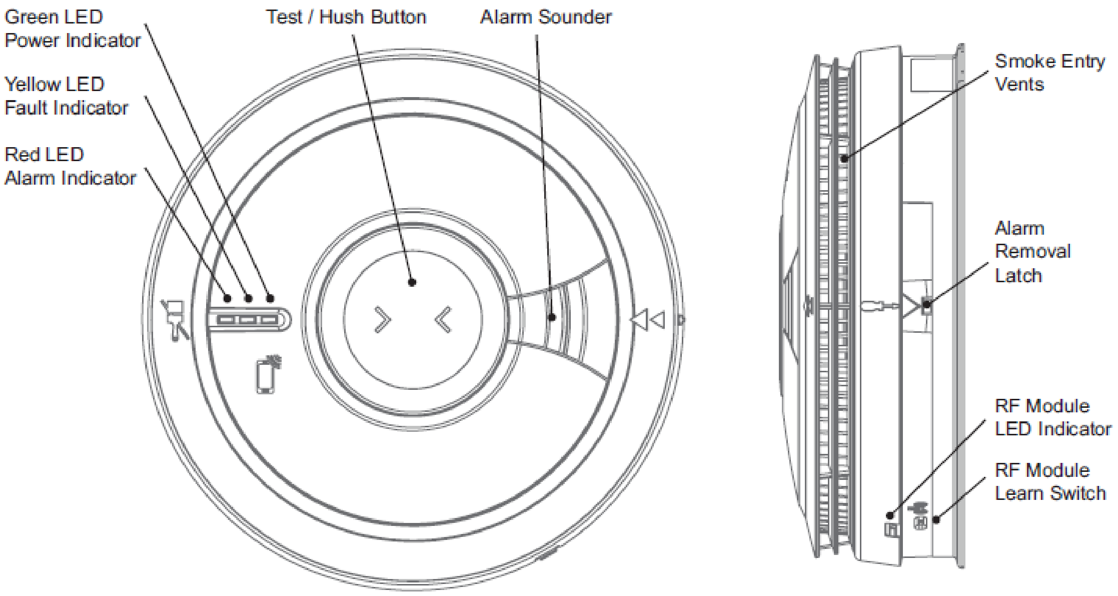


Figure 2: FA016 Smoke Alarm

The FA016 is RCIE zone powered Photoelectric Smoke Alarm designed to detect smouldering fires. It is ideal for living rooms, in all sleeping areas, and passageways, corridors, hallways stairwells that are part of a path of travel to the exit door of the building The smoke sensor is AS3786 2023 Band 1. The chamber design, integrated insect screen and unique dust compensation algorithm reduce the risk of nuisance alarms and extend the service life of the alarm. The FA024 includes a non-removable rechargeable lithium standby battery with a 10-year service life.

The FA016 mounts onto the FA000 base which draws its power from the RCIE, and also charges the standby battery. In the event of power loss from the RCIE, the standby battery provides up to 6 months of operation. This non removable rechargeable battery has a 10-year service life.

The FA016 has a memory feature to identify if that alarm device has previously been in the alarm condition (through the red flashing LED). This feature assists in identifying an alarm device prone to nuisance alarms.

FA016 self-checks its sensor, battery voltage and internal circuitry every 48 seconds. Any fault condition found will be indicated by a combination of yellow LED flashes and sounder chirp at the alarm.

FA016 conforms to AS3786:2014 Amd 2 & AS3786 2023 Band 1.

2.1.1.2 Features

- **Band 1 Photoelectric Smoke Sensor**: Proven optical sensor for smouldering fires.
- **Test/Hush Button**: Tests sensors and silences alarms for 10 minutes.
- **Visual Indicators**: Green LED (power), Yellow LED (fault), Red LED (alarm/memory).
- **Self-Test**: Automatic periodic testing of sensors, batteries, and electronics.
- **Dust Compensation**: Automatically recalibrates the smoke sensor thereby reducing false alarms caused by dust or contamination.
- Specifications **Power Supply**: 16Vdc Power available.
- **Battery Backup**: 10-year rechargeable lithium cells (6 months backup).
- **Alarm Sound Level**: 85dB(A) at 3 meters.
- **Operating Temperature**: -10°C to +40°C.
- **Humidity Range**: 15% to 95% RH (non-condensing).
- **Dimensions**: Ø150mm x 63mm.
- **Weight**: 350g (including packaging).
- **Approvals**: Conforms to AS3786:2014 Amd 2 & AS3786:2023 Band 1.
- **Service Life**: 10 years.

2.1.1.3 Operation

- Green LED indicates 16Vdc poweravailable ; flashing green indicates standby battery mode.
- Yellow LED and chirps indicate faults (e.g., sensor fault, low battery, end of life).
- Red LED indicates alarm or memory of a prior fire event.
- Use the Hush button to silence nuisance alarms for 10 minutes.

Note: Within the FA40 system, if the hush button is activated directly on the alarm unit, the FA40 panel will not indicate the silence condition.

2.1.2 Heat Alarm (FA014)

2.1.2.1 Overview Description

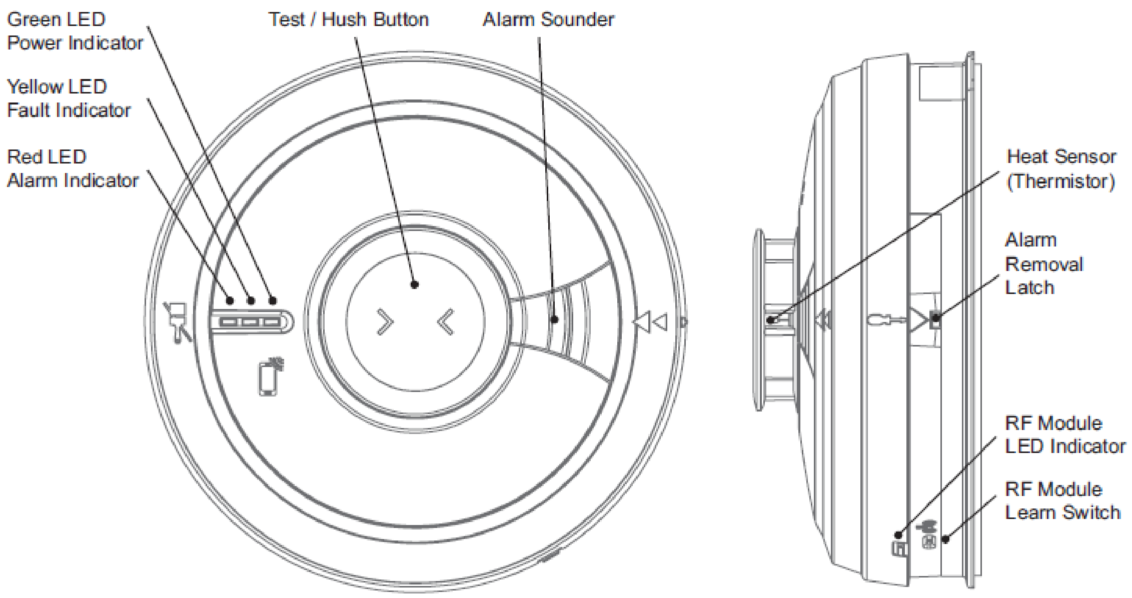


Figure 3: FA014 Heat Alarm.

The FA014 is an RCIE zone-powered heat alarm equipped with a Class A1 thermistor heat sensor. It is specifically designed for kitchens, garages, and areas with elevated levels of fumes, smoke, or dust are likely, where the installation of a smoke alarm may cause excessive nuisance alarms. FA014 detects heat and therefore is not considered as early warning of fire, The FA 014 must be used as a supplementary device to smoke alarms within Firealert. The FA014 includes an non-removable rechargeable lithium standby battery with a 10-year service life.

The FA014 mounts onto the FA000 base which draws its power from the RCIE, which also charges the built-in standby battery. In the event of power loss from the RCIE, the standby battery provides up to 6 months of operation.

The FA014 self-checks its sensor, battery voltage and internal circuitry every 48 seconds. Any fault condition found will be indicated by a combination of yellow LED flashes and sounder chirp at the alarm.

The FA014 has a memory feature to identify if that specific alarm device has previously been in the alarm condition (through the red flashing LED). This feature assists in identifying an alarm device prone to nuisance alarms.

The FA014 conforms to AS1603.3 2018.

2.1.2.2 Features

- **Heat Sensor**: Class A1 thermistor for detecting heat from fires.
- **Test/Hush Button**: Tests sensors and silences alarms for 10 minutes.
- **Visual Indicators**: Green LED (power), Yellow LED (fault), Red LED (alarm/memory).
- **Self-Test**: Automatic periodic testing of sensors, batteries, and electronics.

2.1.2.3Specifications

- **Power Supply**: 16Vdc power derived from FA000 Base
- **Battery Backup**: 10-year non removable rechargeable lithium cells (6 months backup).
- **Alarm Sound Level**: 85dB(A) at 3 meters.
- **Operating Temperature**: -10°C to +40°C.
- **Humidity Range**: 15% to 95% RH (non-condensing).
- **Dimensions**: Ø150mm x 66mm.
- **Weight**: 350g (including packaging).
- **Approvals**: Conforms to AS1603.3:2018.
- **Service Life**: 10 years.

2.1.2.4 Operation

- Green LED indicates +16Vdc power available; Flashes every 48 seconds indicates standby battery mode.
- Yellow LED and chirps indicate faults (e.g., sensor fault, low battery, end of life).
- Red LED indicates alarm or memory of a prior fire event.
- Use the Hush button to silence nuisance alarms for 10 minutes.

Note: Within the FA40 system, if the hush button is activated directly on the alarm unit, the FA40 panel will not indicate the silence condition.

2.1.3 Multi-Sensor Alarm (FA024)

2.1.3.1 Overview description

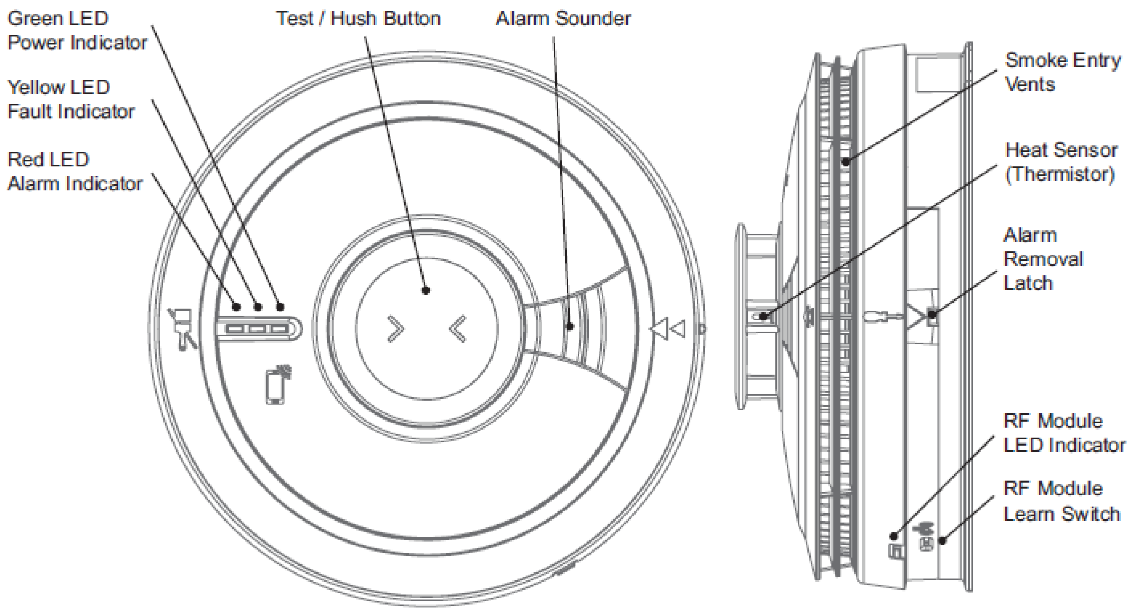


Figure 4: FA024 Multi-Sensor Alarm

The FA024 is an RCIE zone-powered multi-sensor alarm equipped with a photoelectric smoke sensor (AS3786 2023 Band 1) and a Class A1 thermistor heat sensor. This combination of smoke and heat sensors in conjunction with the FA024 sensor algorithm monitors for both smoke and heat development during a fire. The algorithm monitors the status of both sensors. With no heat signal, the smoke sensor is set to Band 2 (less sensitive). which provides a measure of nuisance alarm mitigation from none fire related conditions.

As a real fire generates both heat and smoke, the sensor algorithm enables the FA024 to respond more quickly to a real fire. If a heat sensor signal is present the smoke sensor is automatically recalibrated to band 1 (more sensitive). Monitoring the signal from both sensors confirms there is an actual fire. By combining sensor signals, the FA024 will initiate a fire alarm prior to either sensor reaching its separate alarm threshold. The heat sensor enhancement enables the FA024 to respond to a real fire faster than a single sensor smoke alarms. The FA024 complies with all test fires (TF1 to TF6 and TF8) thereby providing effective fire detection across a broader range of fire types.

The FA024 is a smoke alarm for the purpose of system design and is ideal for living rooms, in all sleeping areas, and passageways, corridors, hallways and stairwells that are part of an escape path from the building. The FA024 includes a non-removable rechargeable lithium standby battery with a 10-year service life.

The FA024 mounts onto the FA000 base and draws its 16Vdc power from the RCIE, which also charges the standby battery. In the event of power loss from the RCIE, the standby battery provides up to 6 months operation.

The FA024 self-checks both of its sensors, battery voltage and internal circuitry every 48 seconds. Any fault condition found will be indicated by a combination of yellow LED flashes and sounder chirp at the alarm.

The FA024 has a memory feature to identify if that specific alarm device has previously been in the alarm condition (through the red flashing LED). This feature assists in identifying an alarm device prone to nuisance alarms.

The FA024 conforms to both AS3786:2014 Amd 2, AS3786:2023 Band 1 & AS1603.3 2018

2.1.3.2 Features

- **Photoelectric Smoke Sensor**: Proven optical sensor for smouldering fires
- **Heat Sensor**: Class A1 thermistor for detecting heat from fires.
- **Interconnection**: Supports up to 40 alarms per system/ 10 alarms per RCIE zone (via hardwired interface with FA-BASE)
- **Test/Hush Button**: Tests sensors and silences alarms for 10 minutes.
- **Visual Indicators**: Green LED (power), Yellow LED (fault), Red LED (alarm/memory).
- **Self-Test**: Automatic periodic testing of sensors, batteries, and electronics.
- **Warranty**: 5 years.

2.1.3.3 Specifications

- **Power Supply:** Main Power Source derived from FA001 Base (+16VDC)
- **Battery Backup**: 10-year rechargeable lithium cells (6 months backup without module).
- **Alarm Sound Level**: 85dB(A) at 3 meters.
- **Operating Temperature**: -10°C to +40°C.
- **Humidity Range**: 15% to 95% RH (non-condensing).
- **Dimensions**: Ø150mm x 66mm.
- **Weight**: 350g (including packaging).
- **Approvals**: Conforms to both AS3786:2023 & AS1603.3:2018.
- **Operational Life**: 10 years.

2.1.3.4 Operation

- Green LED indicates +16Vdc power; Flashes every 48 seconds to indicate unit is running on battery.
- Yellow LED and chirps indicate faults (e.g., sensor fault, low battery, end of life).
- Red LED indicates alarm or memory of a prior fire event.
- Use the Hush button to silence nuisance alarms for 10 minutes.

Note: Within the FA40 system, if the hush button is activated directly on the alarm unit, the FA40 panel will not indicate the silence condition.

2.2Easi-fit FA Base (FA000)

2.2.1 Overview Description

The Easi-fit FA000 has an interface card that connects FA series alarm devices to the FA40 RCIE zone circuits. DIP switches on the FA000 select the device type (FA014 heat, FA016 smoke or FA024 smoke & heat) for proper identification by the RCIE. The FA40 I displays device removal alerts when an alarm is removed from its base. The FA000 provides terminals for all field wiring connections and includes status LEDs to indicate operational state.

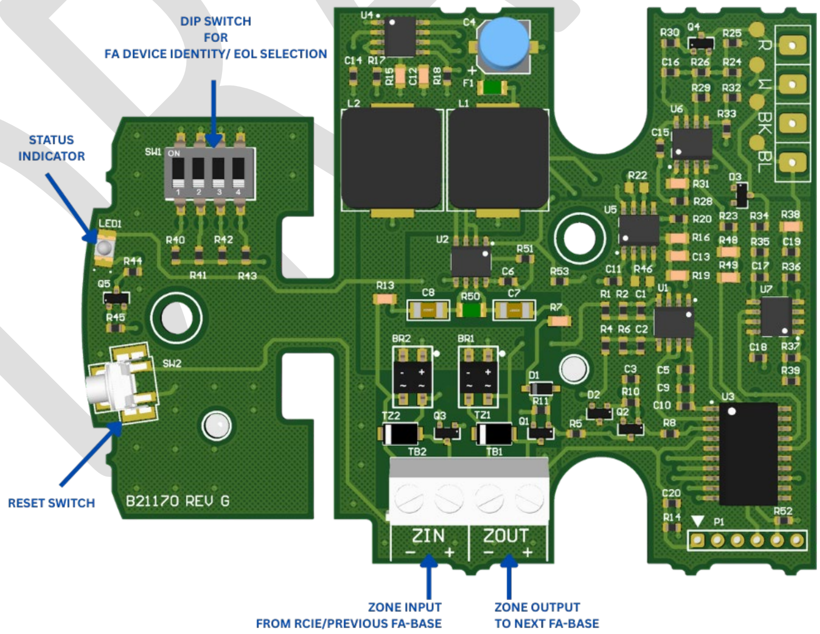


Figure 5 Easi-fit FA001 Interface Board

The status indication is observable when the alarm point is attached in its normal orientation. Power status and sensor status is still retained in the connected alarms. A reset provision is made to provide a config or install mode whilst the Alarms are installed in their normal orientation. This will generally be used to expand the circuit or force the attached alarms into its default mode of operation.

2.2.2 Head Configuration

The FA000 base uses DIP switches to identify the alarm type connected (FA014, FA016 or FA024) to the FA40 RCIE. Switch 4 must be set to ON when the FA000 is the last device on a zone circuit (end-of-line position).

Table 1 Dip Switch Settings of FA001 Base

Function	1	2	3	4
FA016 (Smoke)	OFF	OFF	OFF	
FA014 (Heat)	OFF	OFF	ON	
FA024 (Multi-Sensor)	OFF	ON	ON	
Last Device				ON

2.2.3 Fault Indicator

The yellow fault indicator LED on the side of the FA000 Base is designed to signal abnormal operating conditions. Its behaviour varies depending on the nature of the fault:

Table 2: FA001 Base Fault Indicator

Condition:	LED Behaviour:	Description:
Unconfigured FA001 Base	ON	Indicates the device is not configured; requires attention.
Internal Fault	Fast flash (4 Hz)	Hardware or checksum error detected.
System/Communication Fault	Slow flash (1 Hz)	Bus error or communication issue present
Normal Operation	OFF	System functioning normally

At start up the address is indicated via the flashing of the Fault indicator, Count the flashes to identify the address. For address larger than 5 a long flash is used following by shorter flashes to indicator up to address 10.

2.3 Residential Control and Indicating Equipment (FA40)

2.3.1 Overview Description

The FA40 RCIE is a four-zone fire alarm control panel housed in an injection-moulded plastic enclosure and provides four zone circuits, with each zone supporting up to 10 fire alarm alarm devices for a system maximum of 40 devices. Communication with field devices occurs through the FA000 base units using UART with Manchester encoding, ensuring reliable fire detection, alarm notification, and system monitoring.

The FA40 includes a main control board with integrated zone circuits, a power supply supervision board, a 3.5-amp switch mode power supply, field wiring terminations, AC mains input termination with fuse protection, and a 24V standby battery system (2 × 12V 9Ah batteries in series). The 3.5-amp power supply sets the system's power budget, which determines the actual number of devices that can be connected based on their individual power requirements.

The system provides zone-specific alarm indication, comprehensive fault monitoring, user control functions, and common alarm/fault outputs.

The FA40 RCIE has an integral zone display on the front panel which provides all the necessary indicators for indication of alarm condition, system status and system control. Custom zones descriptions can be added to the display –Refer to §3.1.5 for installation instructions.

The injection moulded enclosure provides for the mounting of a zone block diagram as per AS1670.6 –Refer to §3.1.6 for installation instructions.

The FA40 conforms to the applicable requirements of AS7240.2 and AS7240.4

Note: The FA40 RCIE cannot be expanded in either the number of zones or power supply output.

Table 3: FA40 Specifications

Item:	Specification:
Mains 230Vac	195 / 253V AC, 1.3A
Systems Voltage	24Vdc @ 3.5A
P_{min}	4.0 Watts
Pa_{max}	62.7 Watts
Pb_{max}	89 Watts
R_i	0.8Ω
Battery Backup	2 x 12V 9Ah Fire Rated SLA batteries
Ambient Temperature: Operating Storage	 -5 to +40℃ (indoor use only) -5℃ to +50℃
Ambient Humidity (%RH)	Maximum 90, non-condensing
Altitude	< 2000 m above sea level
Cabinet Size (mm)	450 x 350 x 125 (H x W x D)
Cabinet Weight (kg)	4kg, excluding batteries. 9kg with 2 x 12V 9Ah batteries
Cabinet Material	UL 94 V-0 Fire rated plastic (Full compound ABS)
Ingress protection	IP 30
Acceptable Pollution Degree	Degree 1 and 2, *non-conducting pollution, and occasional temporary condensation is to be expected.*
Approvals	Conforms to AS7240.2:2018, AS7240.4:2018

2.3.2 FA40 Main Control Board

2.3.2.1 Description

The main control board performs all processing and control functions for the FA40 system. It supplies both power and data communication to field devices via two-wire zone circuits, utilizing data-over-power technology with UART/Manchester encoding. All zone circuits are continuously supervised for open circuit, short circuit, and device removal faults to ensure system integrity.

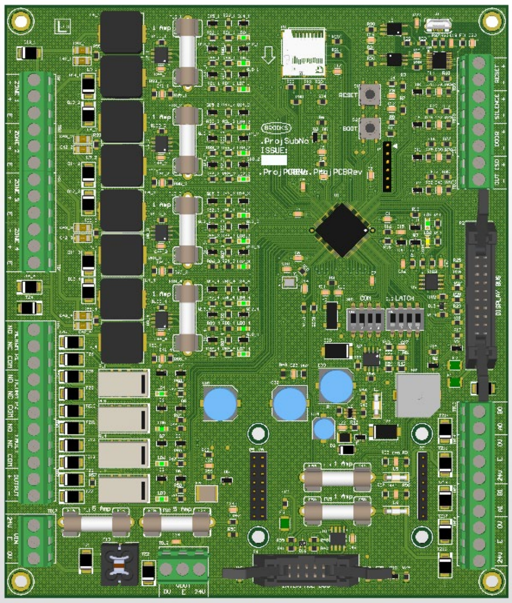


Figure 6 FA40 Main Control Board

Four zone circuits, each supporting up to 10 alarm devices (40 total system maximum) Two-wire data-over-power technology for combined power and communication Full supervision for open circuit, short circuit, and tamper (device removal) conditions Manchester encoding for reliable communication in electrically noisy environments.

The FA40 Main control board provides some level of customisation by way of dip switches, refer to §2.3.2.4 for further information.

System Outputs:

- Priority 1 (P1) relay - Activates for heat, MCP, or sprinkler alarms (voltage-free contacts with maximum switching capability 24VDC/1A)
- Priority 2 (P2) relay - Activates for smoke alarms (voltage-free contacts with maximum switching capability 24VDC/1A)
- General Fault relay - Indicates any system fault condition (voltage-free contacts with maximum switching capability 24VDC/1A)
- ACF Output - Supervised 24VDC output (550mA maximum) with inhibit control for maintenance §2.3.2.3

Internal Communications:

- I^{2}C bus connectivity to user interface display board
- I^{2}C bus connectivity to power supply supervision board
- Bidirectional alarm signalling with field devices

2.3.2.2 Board Connection

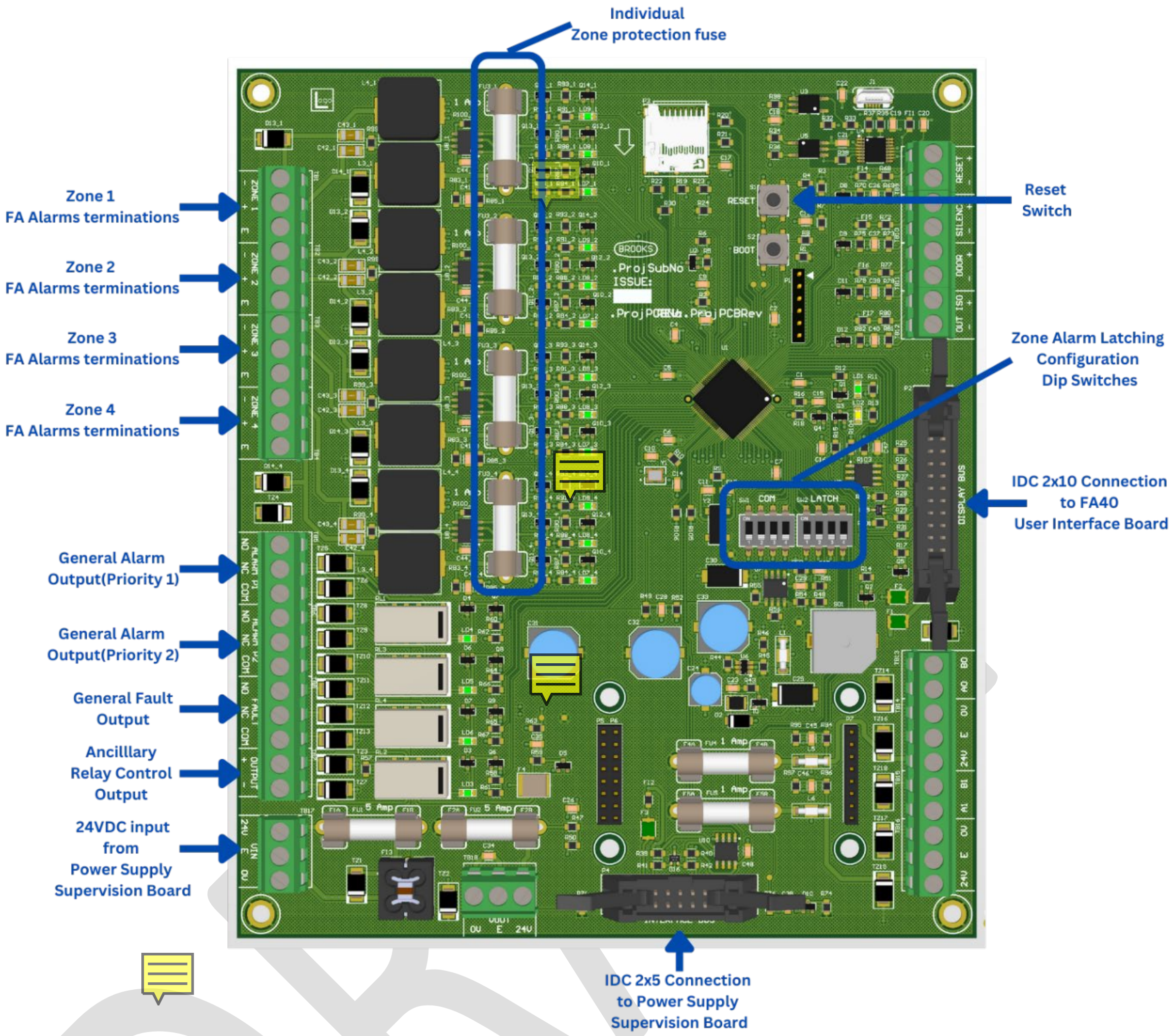


Figure 7 FA40 Main Control Board Connection

Table 4 FA40 Main Control Board Connection

Designator	Type	Label	Pin	Description
TB1	Screw Terminals	Zone 1	- + E	To FA Alarms Devices at the field
TB2	Screw Terminals	Zone 2	- + E	To FA Alarms Devices at the field
TB3	Screw Terminals	Zone 3	- + E	To FA Alarms Devices at the field
TB4	Screw Terminals	Zone 4	- + E	To FA Alarms Devices at the field
TB5	Screw Terminals	Alarm P1	NO NC COM	Priority 1 General Alarm Dry-contact output (Heat/MCP/Sprinkler)
TB6	Screw Terminals	Alarm P2	NO NC COM	Priority 2 General Alarm Dry-contact output (Smoke)
TB7	Screw Terminals	Output	+ -	Ancillary Control Function Output +24VDC, 550mA Maximum current output.
TB8	Screw Terminals	Fault	NO NC COM	General fault Dry-contact Output
TB17	Screw Terminals	Vin	24V E 0V	24VDC connection from Power Supply Supervision Board
P2	IDC header 2x10	Display Bus		Power & I2C Bus Data Comms to FA40 User Interface
P4	IDC header 2 x 5	Interface Bus		I2C Bus Data Comms to Power Supply Supervision Board

2.3.2.3 Ancillary Control Function (ACF) output

The ACF output is a supervised 24VDC output (550mA maximum) designed to trigger external equipment during alarm conditions, such as door holders, ventilation shutdowns, or alarm transmission equipment.

The ACF output requires a 47kΩ end-of-line (EOL) resistor connected across the positive and negative terminals at the last device. This resistor enables the FA40 to continuously monitor the circuit integrity. Without this resistor, the system will indicate an ACF output fault §4.3.

ACF output is monitored for:

Open circuit (broken wire or missing EOL resistor)

Short circuit (wiring fault) When a fault is detected, the ACF Fault LED illuminates and the fault buzzer sounds.

An ACF inhibit control is provided for allowing authorized service technicians/personnel to temporarily disable the ACF output during maintenance or testing, refer to §4.2.5 for more information.

2.3.2.4 Dip Switches Settings

The specifications for dip switches settings are as follows.

COM (Common Alarm) Switches:

When a zone's COM switch is set to ON, that zone operates in common alarm mode. In this mode, if any alarm activates in that zone, it will trigger ALL alarms across ALL zones in the system, regardless of the other zones' COM settings. This creates a building-wide alert from a single zone activation.

When set to OFF, the zone operates independently - alarms in that zone will only sound the devices within that specific zone unless another zone with COM=ON is triggered.

Example: If Zone 2 COM is ON and Zone 2 detects smoke, all alarms in Zones 1, 2, 3, and 4 will activate simultaneously, providing full building notification.

Table 5 "COM" Dip Switch Positions

Function	1	2	3	4
Zone 1 setup for common activation	ON	OFF	OFF	OFF
Zone 2 setup for common activation	OFF	ON	OFF	OFF
Zone 3 setup for common activation	OFF	OFF	ON	OFF
Zone 4 setup for common activation	OFF	OFF	OFF	ON

LATCH (Latching Alarm) Function:

When a zone's LATCH switch is set to ON, the zone operates in latching mode.

In this mode:

LATCH ON: Once an alarm condition is detected, the fire indication and associated outputs at the FA40 RCIE remain active—even after the triggering condition clears (e.g., smoke dissipates)—until manually reset via the **RESET** control. This ensures that any alarm event is recorded and acknowledged by an operator.

LATCH OFF: The zone operates in non-latching (auto-reset) mode. When the alarm condition clears (e.g., smoke dissipates) at the zone, the FA40 RCIE zone automatically returns to normal without requiring manual intervention.

Important Note: When latching is enabled, manual reset action via the RESET button is required to return the FA40 RCIE to normal operation. The reset function requires Access Level 2.

Example: If Zone 1 LATCH is ON and a smoke alarm activates then clears, Zone 1 will continue to show an alarm condition on the FA40 Display with all associated indicators and outputs active until an operator with appropriate access manually presses the RESET button on the FA40 RCIE.

Table 6 "LATCH" Dip Switch Positions

Function	1	2	3	4
Zone 1 setup for Latching activation	ON	OFF	OFF	OFF
Zone 2 setup for latching activation	OFF	ON	OFF	OFF
Zone 3 setup for latching activation	OFF	OFF	ON	OFF
Zone 4 setup for latching activation	OFF	OFF	OFF	ON

Table 7 Main Control Board Fuse Specifications

Designator	Circuit Protected	Specification
FU1	Power Input	Fast Acting M205 Ceramic Fuse 1A.
FU2	Power Output to Zone Extension Module	Fast Acting M205 Ceramic Fuse 1A.
FU3-1, FU3-2, FU3-3, FU3-4	Individual Zone Circuit 1-4	Fast Acting M205 Ceramic Fuse 1A.
FU4	Power Output 1 to Optional Module	Fast Acting M205 Ceramic Fuse 1A.
FU5	Power Output 1 to Optional Module	Fast Acting M205 Ceramic Fuse 1A.

2.3.3 FA40 User Interface Display Board

2.3.3.1 Description

The FA40 user interface display board provides a simplified zone description and indicators of each zone status, general system status. The FA40 provides four intuitive, user-friendly controls laid out in a specific sequence to control Firealert system during a fire alarm event. The interface display board directly communicates with the main control board via I2C bus for displaying system status and controlling the system at proper access levels. The unit incorporates a cover detection switch to monitor access and identify any tampering attempts when the system is opened without authorised access.

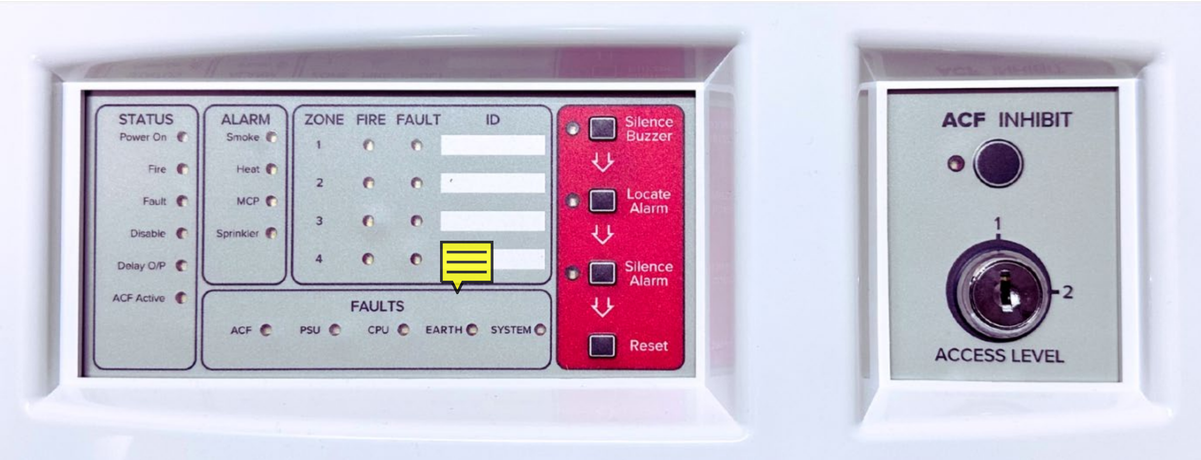


Figure 8 FA40 User Interface Display Board

Indicators:

- Power ON (Green)
- General Fire (Red)
- General Fault (Amber)
- General Disable (Amber)
- Delay O/P (Amber, – Output delay feature has been activated)
- ACF Active (Red)
- Zone Fire (each zone, Red)
- Zone Fault (each zone, Amber)
- Smoke (Red, flashing interlocked to zone alarm – identifies the zonal alarm condition has resulted from smoke detection)
- Heat (Red, interlocked to zone alarm – identifies the zonal alarm condition has resulted from Heat detection)
- MCP (Red, interlocked to zone alarm – identifies the zonal alarm condition has resulted from Manual call point activation)
- Sprinkler (Red, interlocked to zone alarm – identifies the zonal alarm condition has resulted from residential sprinkler system activation)
- ACF fault (Amber– Supervised Alarm O/P fault)
- PSU Fault (Amber)
- CPU fault (Amber)
- Earth fault (Amber)
- System Fault (Amber)

Controls with Indicators:

- Silence Buzzer – mutes the integral RCIE fire/fault buzzer. Automatically resets to normal after the fault condition is cleared.
- Locate Alarm – silences all FA alarms except the Alarm(s) that have actuated. Used to locate the source of the fire or contaminated Smoke / Alarm.
- Silence Alarm – silences all FA alarms
- ACF Inhibit –Inhibit Ancillary Control Facilities output at main control board.

Controls without Indicators:

- Reset – Place the system into normal condition.
- 003 Key Switch –Access Level control.

2.3.3.2 Board Connection

Table 8 Connection of FA40 User Interface Board

Designator	Type	Label	Pin	Description
P1	IDC header, 2x10	TO MAIN BOARD		Connection to Main Board for Power & I2C data comms
TB1	Screw Terminals	DOOR Switch I/P	C NO	Door input, door open/close detection
TB1	Screw Terminals	KEY Switch I/P	C NO	Access Key in, 003 Key for access level 1 & 2

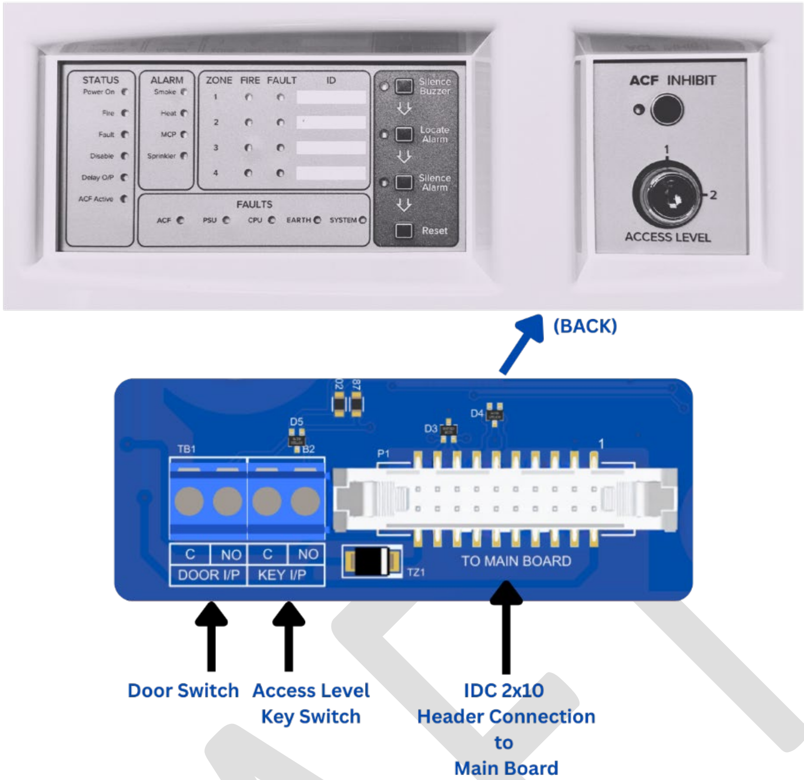


Figure 9 FA40 User Interface Board connection

2.3.4 The FA40 Power Supply

2.3.4.1 Description

The FA40 RCIE consists of power supply supervision module, 3.5A switch mode power supply and 2 x 12V 9Ah batteries. The power supply supervision module used in the FA40 RCIE is configured to be working only as 100W power supply with 9AH batteries back-up via dip switch.

The power supply supervision module constantly monitors the main power source status and standby (Batteries power source status . The power supply supervision module also has capability to detect the earth fault in the system and shown on the display board. The power supply supervision will periodically test batteries to ensure they are still in their optimal operation conditions. This module will also automatically charge the connected batteries. Power faults are indicated at the FA40 user interface display board

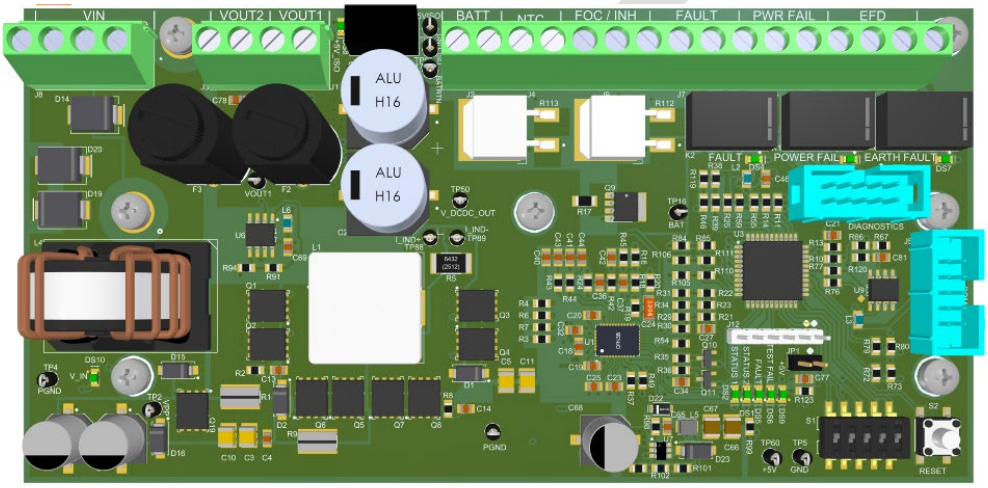


Figure 10 Power Supply Supervision Board

The power supply supervision module continuously monitors the battery charging and batteries status to detect any of the following fault conditions:

- Mains failure.
- Batteries disconnected.
- Batteries voltage low.
- Batteries internal resistance high
- Earth fault
- Fuses status for outputs 1 & 2

2.3.4.2 Features

Inputs:

- Batteries input (2 x 12V 9AH batteries, in series)
- DC voltage input (from Switch Mode Power Supply)
- Test Inhibit Input. Operates when the terminals INH(IN) and INH(OUT) are shorted together.
- Battery temperature sensor (NTC thermistor) input. NTC terminal uses NTC thermistor to monitor battery temperature.

Outputs:

- Two +24VDC outputs
- Power Fail Fault– voltage free contact

- General Fault – voltage free contact.
- Earth Fault – voltage free contact.
- Open collector fault output FOC(OC). The terminal is high impedance on normal state and active low when a fault occurs.
- Mains output (MO). The terminal is a current limited terminal to indicate a voltage presence on the primary power source.

Others:

- Interconnect capability to main control module via I2C bus to retrieve general status of power supply supervision module
- Selectable power supply/ battery capacity via dip switch setting (100W/ 150W & 320W)
    - Note: the FA40 has a maximum power output of 100W
- Periodic battery internal resistance check

2.3.4.3 Specifications

The specifications shown in the table below include absolute maximum ratings. Exceeding these limits, will cause permanent damage to the module.

Table 9 Power Supply Supervision Specifications

Parameter	Value
Nominal Input Voltage	24V ±10%
Nominal Output Voltage	26.5V ±10%
Current Consumption @ Quiescent	89 mA
Max System Power	100/ 150/ 320watts
Max System Current	3.5/ 6.5/ 12A
Max Charge Current	0.8/ 1.8/ 2.8A
Recommended Battery Type	Fire Rated, Sealed Lead Acid
Min Battery Size	7Ah
Max Battery Size	7/ 42/ 65Ah
Relay Contact rating	30VDC, 1A, 30watts max

Note: The power supply supervision is configured as 100W/ 7AH setting for the FA40 RCIE

2.3.4.4 DIP Switch Settings

Note: The Power supply supervision card can be configured for systems that exceed the capabilities of the FA40 system. The FA40 Power supply will be pre-configured from factory and should not be adjusted.

The FA40's power supply DIP switch configuration should be all OFF, expect for the Earth Fault detection enable (DIP switch 5).

Table 10 Power Supply Supervision DIP switch & configurations

Function	1	2	3	4	5
PSU Selection (100W)	OFF	OFF			
PSU Selection (150W)	OFF	ON			
PSU Selection (320W)	ON	OFF			
BATT Selection (7-18AH)			OFF	OFF	
BATT Selection (18-42AH)			OFF	ON	
BATT Selection (42-65AH)			ON	OFF	
Earth Fault Detection Enable					ON

Note: Invalid Dip Switch Settings will result in showing PSU Fault on startup of the PSSC the +24V output will not be enabled.

Table 11 Power Supply Supervision Fuse Specifications

Designator	Circuit Protected	Specification
F2	Power Output-1	Fast Acting M205 Ceramic Fuse 3.5A.
F3	Power Output-2	Fast Acting M205 Ceramic Fuse 3.5A.

2.3.4.5 Board Connection

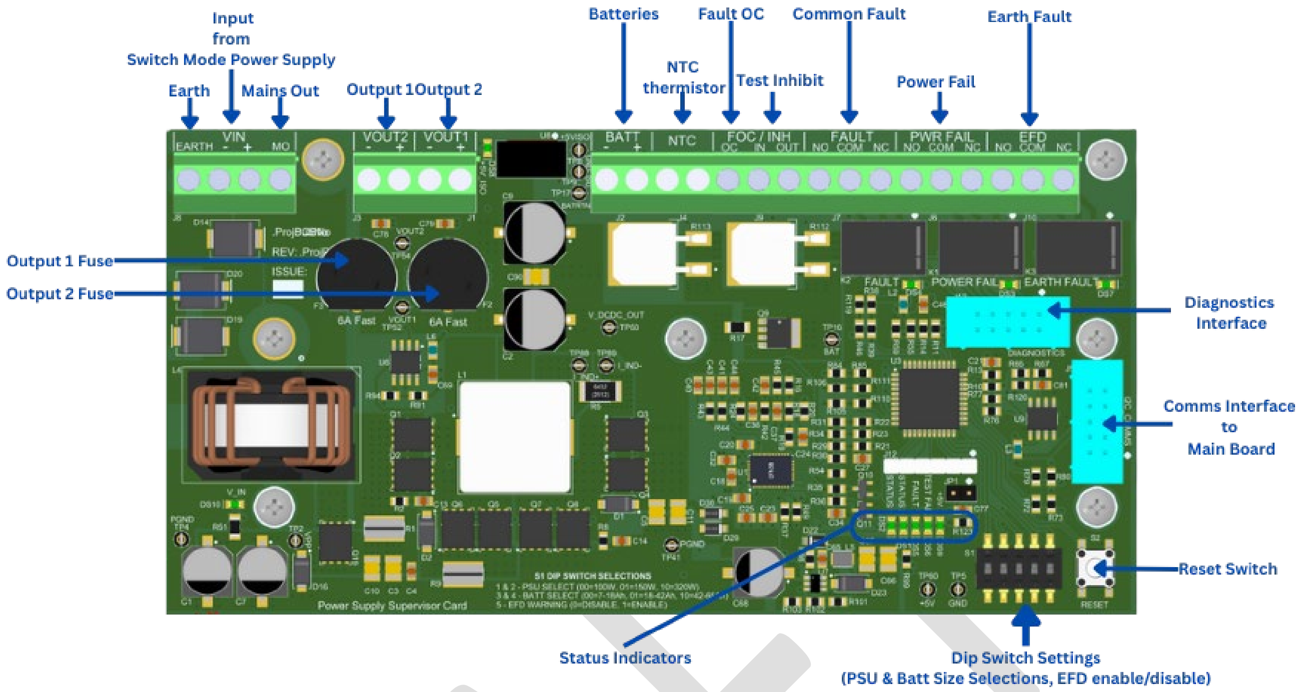


Figure 11 Power Supply Supervision Board Connection

Table 12 Connection of the Power Supply Supervision Board

Designator	Type	Label	Pin	Description
J1	Screw Terminals	VOUT1	+	Power source output 1
			-	
J2	Screw Terminals	BATT	+	Secondary power source input
			-	
J3	Screw Terminals	VOUT2	+	Power source output 2
			-	
J4	Screw Terminals	NTC	1	Battery temperature sensor input
			2	
J5	IDC header, 2x5	I2C_COMMS		I2C Connection to Main Control Board
J6	Screw Terminals	POWER FAIL	NO	Voltage free primary power source fails relay contact output. This output is normally energized.
			COM	
			NC	
J7	Screw Terminals	FAULT	NO	Voltage free common fault relay contact output
			COM	
			NC	
J8	Screw Terminals	VIN	EARTH	Earth Terminal
			-	Primary power source input.
			+	
			MO	Primary power source status output.
	Screw	FOC/INH	OC	Open collector fault output

J9	Terminals		IN OUT	Test Inhibit Input. Shorting this contact IN & OUT will inhibit the periodic battery test
J10	Screw Terminals	EFD	NO COM NC	Voltage free earth fault relay contact output
J12	Pin Header			Programming Header (Internal Use)
J13	IDC header, 2x5	DIAGNOSTICS		Diagnostics Interface (Internal Use)

Table 13 Power Supply Supervision LED indications and description-1

Designator	Label	Color	Conditions			
DS1	Status 2	Green	ON	ON	OFF	OFF
DS2	Status 1	Green	ON	OFF	ON	OFF
			Bulk Charging Stage	Absorption Charging Stage	Float Charging Stage	Not Charging

Table 14 Power Supply Supervision LED indications and description -2

Designator	Label	Color	Conditions	Description
DS3	Power Fail	Green	ON	Output Voltage is present
DS4	Fault (Relay)	Amber	ON	General PSSC fault relay is activated
DS5	Fault	Amber	ON	General fault at PSSC
DS6	Test Fail	Amber	ON	Battery impedance test fail
DS7	Earth Fault	Amber	ON	Earth leakage detected
DS8	+5V_ISO	Green	ON	Output Switch 5V Bootstrap Supply is present
DS9	+5V	Green	ON	Main 5V Supply is present
DS10	Vin	Green		Vin 24Vdc is present

3 INSTALLATION & COMMISSIONING

3.1 FA40 Cabinet Installation:

FA40 LV fixed wiring installation and connections must be carried out by a licensed electrician.

FA40 cabinet to be installed in accordance with Australian Installation requirements as detailed in AS 1670.6

The FA40 cabinet is designed to be wall mounted. To access the internals and for mounting of the FA40 you will need to unscrew the front cover, via the M3 screw found at the bottom of the cabinet:

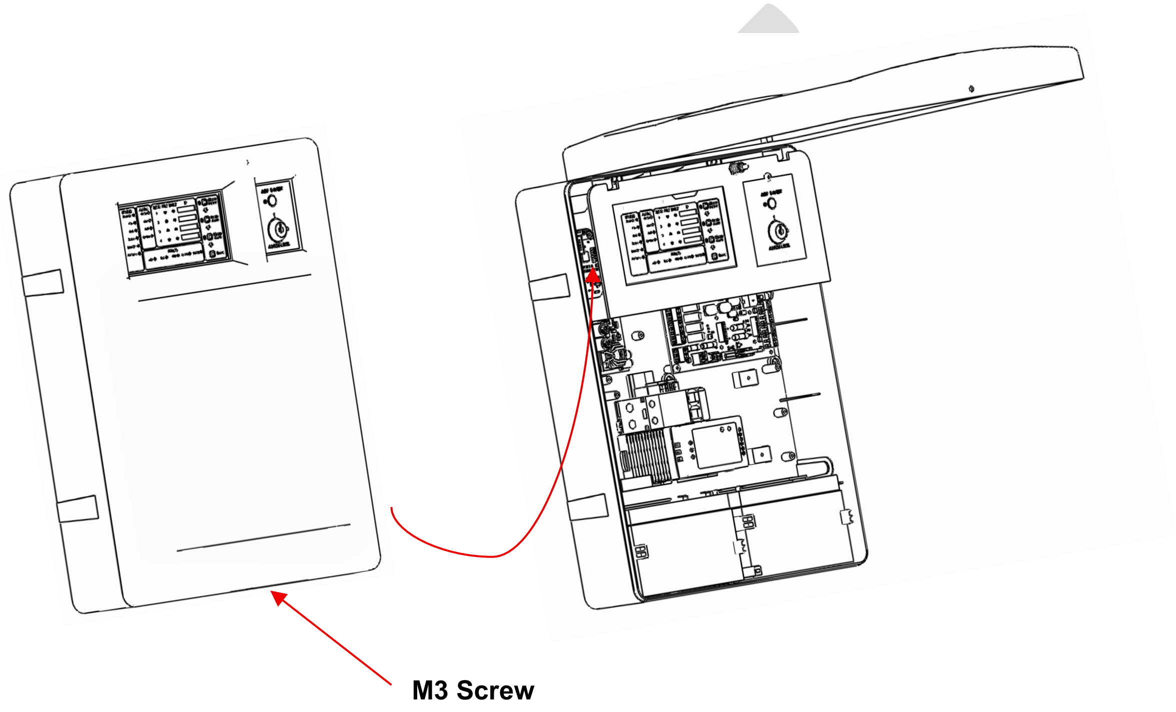


Figure 12: Access to FA40's internals.

3.1.1 Electrical Safeguards

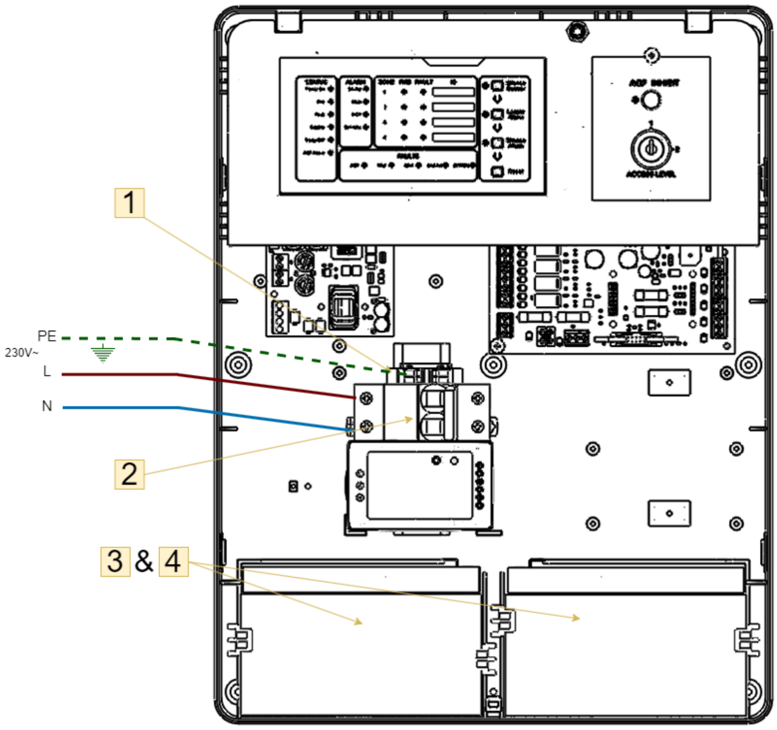


Figure 13: FA40 Electrical Safeguards

Table 15: Electrical Safeguards

Item	Description	Marking / Instructions
1	Protective earth (ground). Make sure to connect the protective earth conductor when installing the FA40.	
2	Mains power disconnects. Make sure to disconnect the equipment from the power before servicing.	
3	Make sure to disconnect Battery connection spade lugs before servicing.	
4	Risk of explosion if batteries are replaced by incorrect type. See §2.3.4	

3.1.2 Cabinet Mounting

6 Positions for fasteners are provided with OD = 4mm. The FA40 shall be mounted vertically, more than 750mm above the floor and not more than 1850mm.

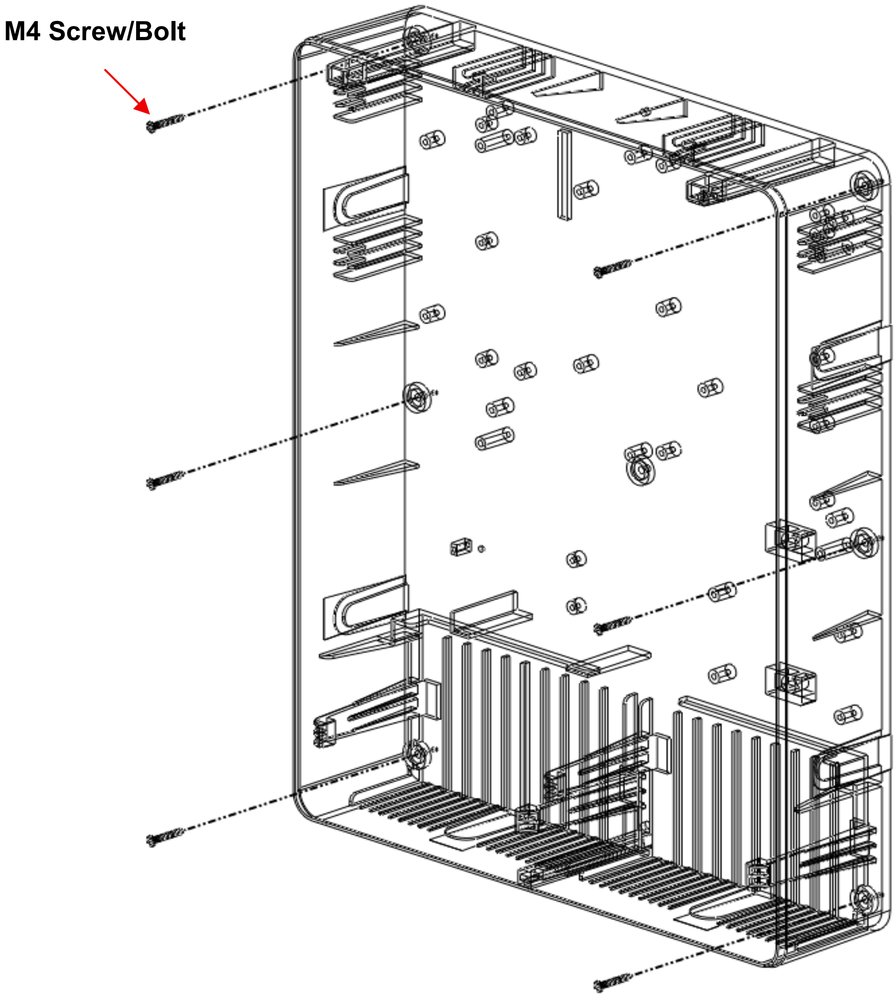


Figure 14: FA40 cabinet's mounting positions

3.1.3 Battery Mounting

The 2 x 12V 9Ah batteries can be mounted at the bottom of the FA40 in the two battery compartments shown below:

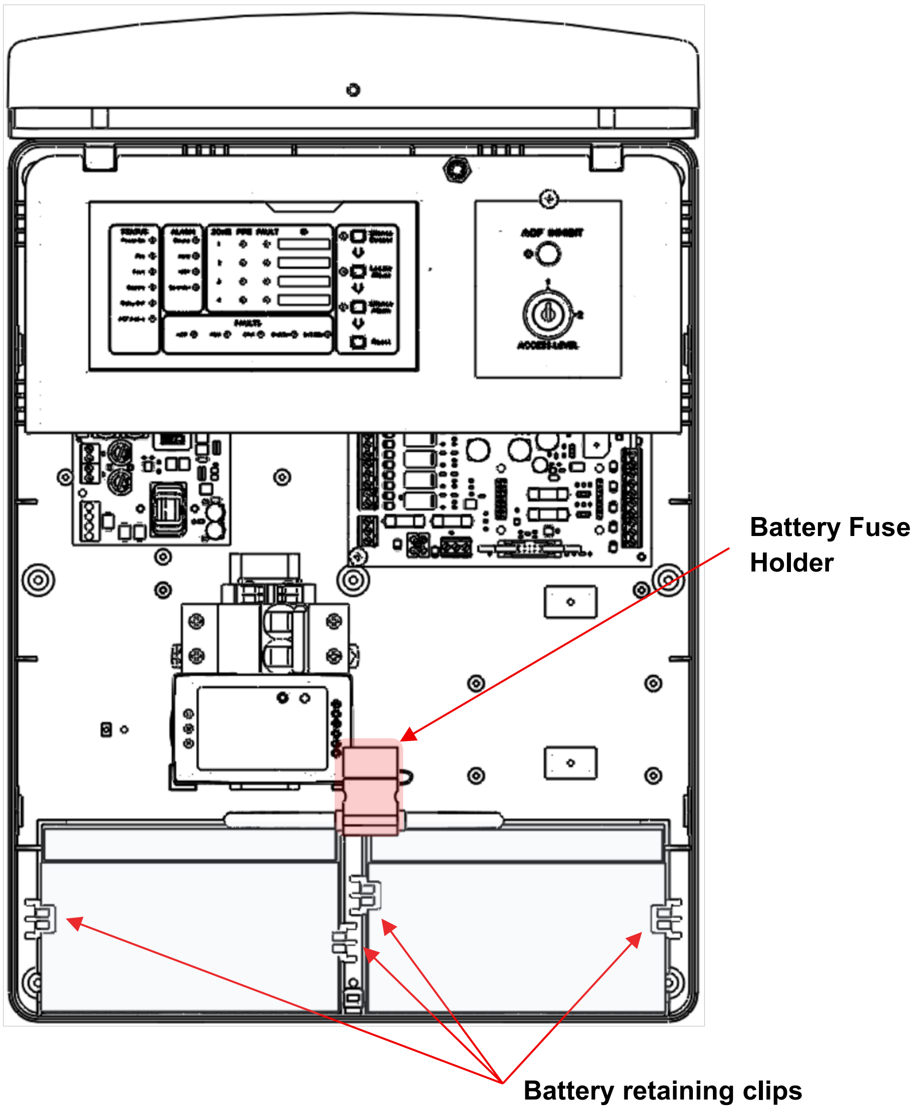


Figure 15: FA40 Battery Compartment

To install the batteries into the compartment:

- Align each battery with its lugs facing inward, toward the other battery.
- Gently push the retaining clips apart while sliding the batteries in evenly.
- Ensure both batteries are seated securely in place.
- Do not connect the battery lugs at this stage.
- Reconnect the fuse wires to the lugs once the batteries are properly positioned.
- Tuck the fuse holder inside the compartment.
- Leave the battery lugs disconnected until the FA40 unit has been powered on.

Refer to §7.2 for information regarding maintenance of the batteries.

3.1.4 FA40 Wiring

3.1.4.1 Mains Wiring

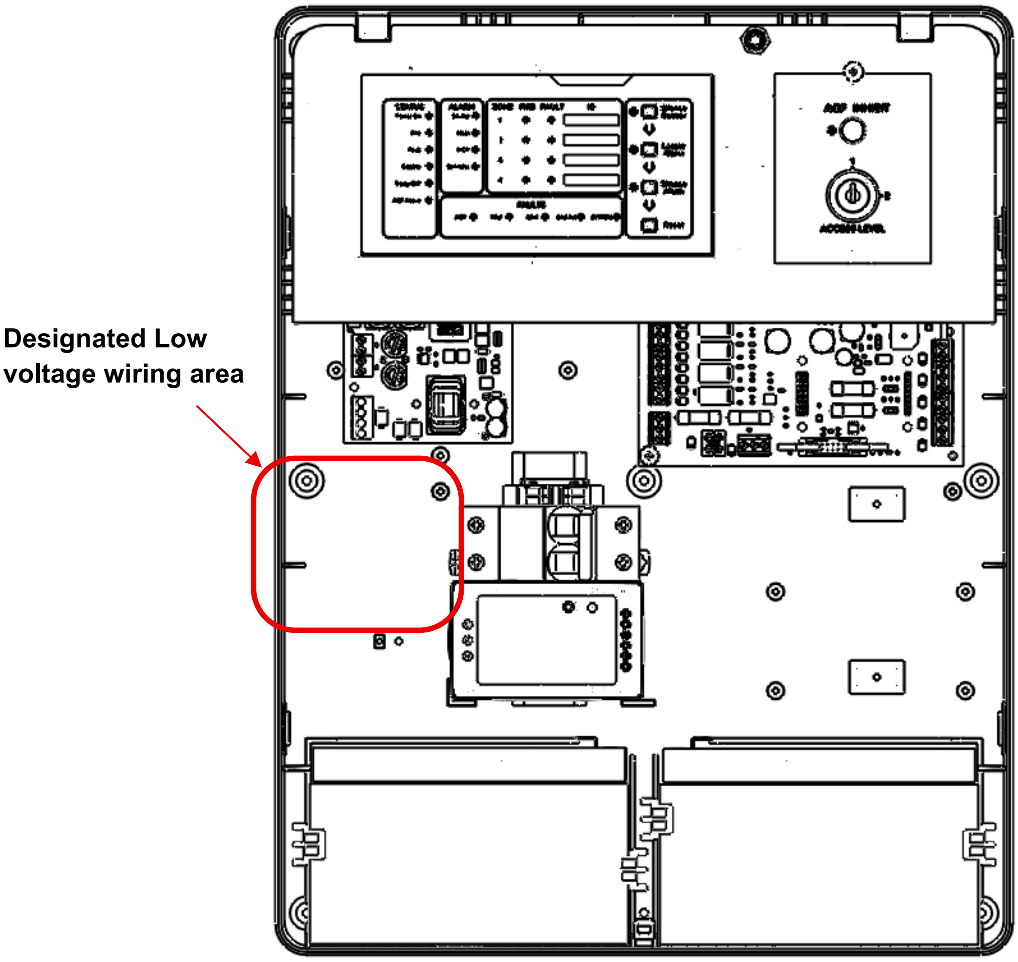


Figure 16: FA40 designated Mains voltage connection

If the low voltage wiring is recessed in the wall, cut a hole in the rear of the cabinet and bring the double insulated wiring into the FA40 cabinet as highlighted in the red area above.

If the low voltage wiring is wired along the surface of the wall, cut a hole on the left side of the FA40 cabinet and route the cable in through the highlighted red area above.

3.1.4.2 Field Wiring

Field wirings for Zones 1 – 4 and other FA40 ancillary functions:

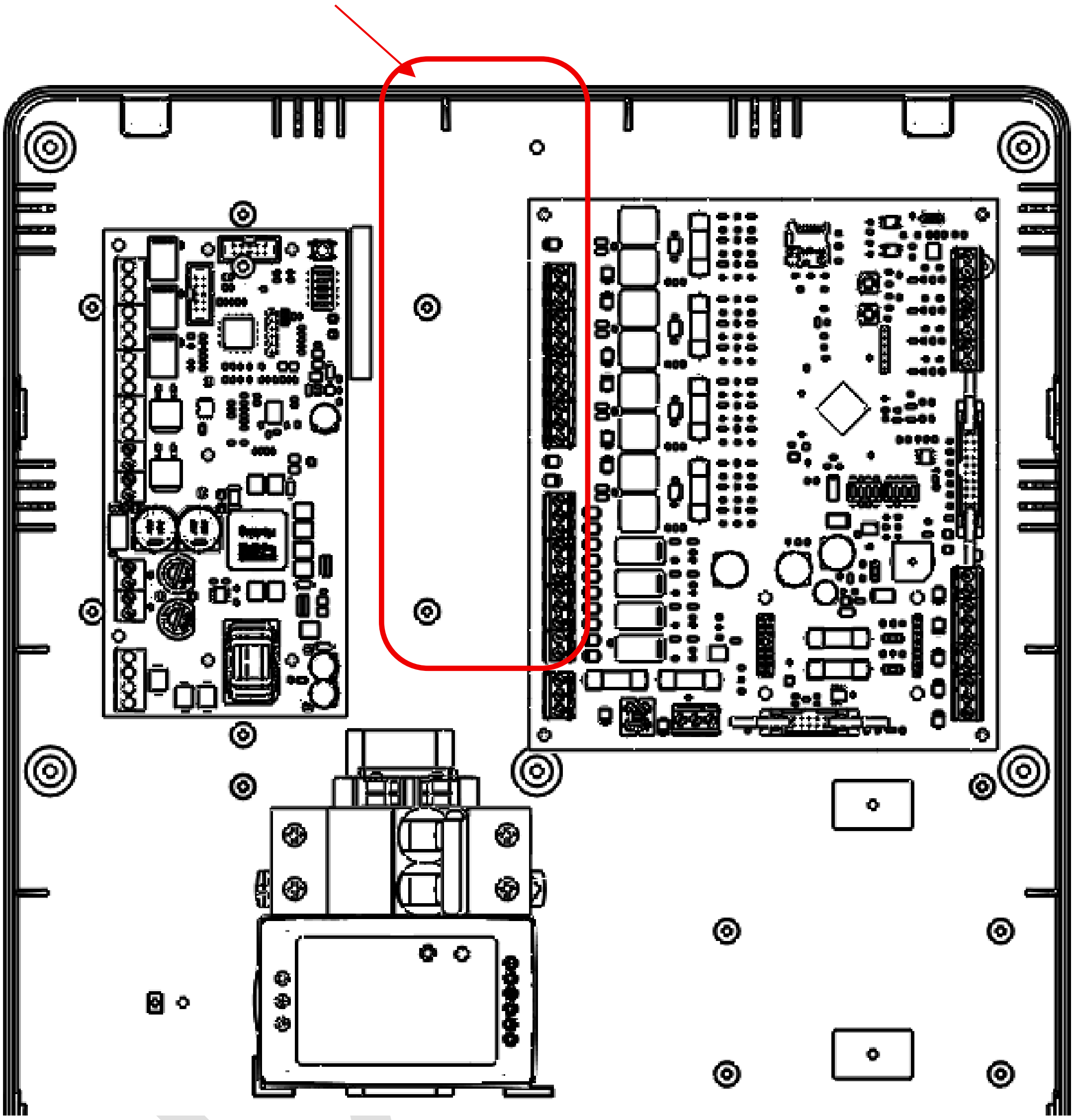


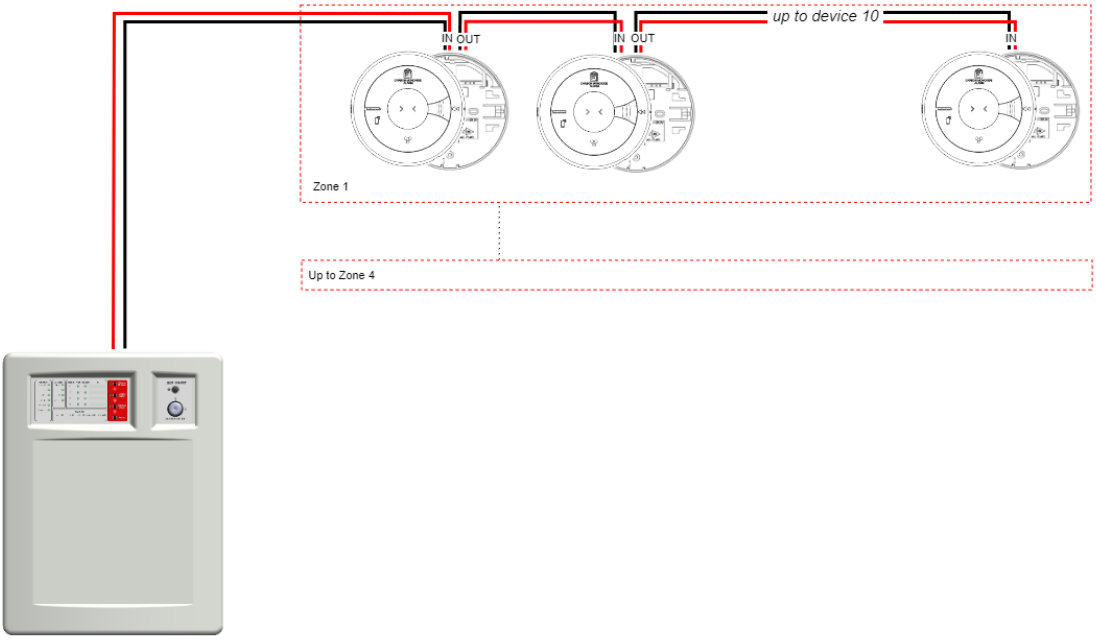
Figure 17: FA40 Zone wiring area

If the Zone wiring is recessed in the wall, cut a hole in the rear of the cabinet and bring the wiring into the FA40 cabinet as highlighted in the red circle above.

If the Zone wiring is wired along the surface of the wall, cut a hole on the top side of the FA40 cabinet and route the cable down through the highlighted red area above.

Note: Ensure the ACF output is terminated with a 47kΩ EOL resistor for supervision.

3.1.4.3 ELV Wiring



FA40 system is wired up in a daisy chain topology, Out of FA40's Zone 1 Into the first FA000 base and out of the first FA000 and into the second FA000 base and so on, sequentially through each FA000 base up to the maximum per each zone of 10. The FA40 is provided with 4 zones so each zone is wired up in an equivalent manner.

Earth connections for each zone output on the FA40's main board is provided for cables with shielding. If cables with shielding are used. Tie off the shielding into the main board's zone terminals labelled "E".

For wiring instructions of the FA000 base, refer to §3.2.3 FA000 Wiring instructions below.

3.1.5 Adding Zone Descriptions

A template has been provided for clean and legible text to be added to each of the 4 zones, Please, see our website for a downloadable copy. Follow the instructions on the template.

Get a better picture

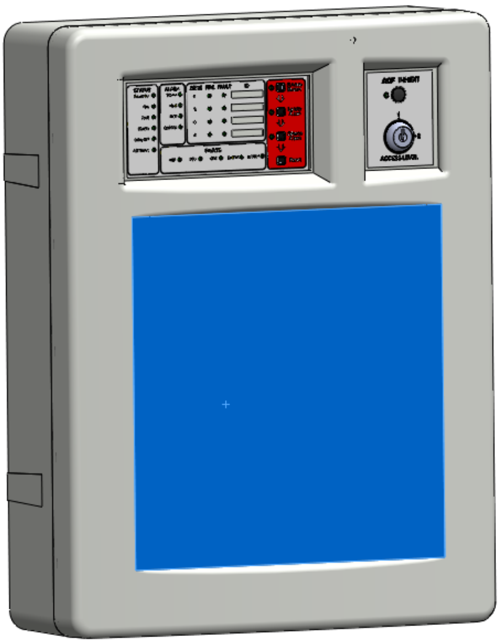
Figure 18: Insertion of the Zone description label

3.1.6 Zone block plan

Note: Refer to AS1670.6 for information on the requirements

The front cover of the FA40 includes a flat area designed for attaching the building's Zone Block Plan.

- **Dimensions:** 260 mm (Height) × 255 mm (Width)
- This area is intended for adhesives or double side taping of the plan.



Get a better picture

Figure 19: Zone block diagram area

3.2 FA000 Base Installation & Alarm Heads

The FA000 interface board comes with dedicated mounting base plate which is designed to use with all FA Alarms Devices.

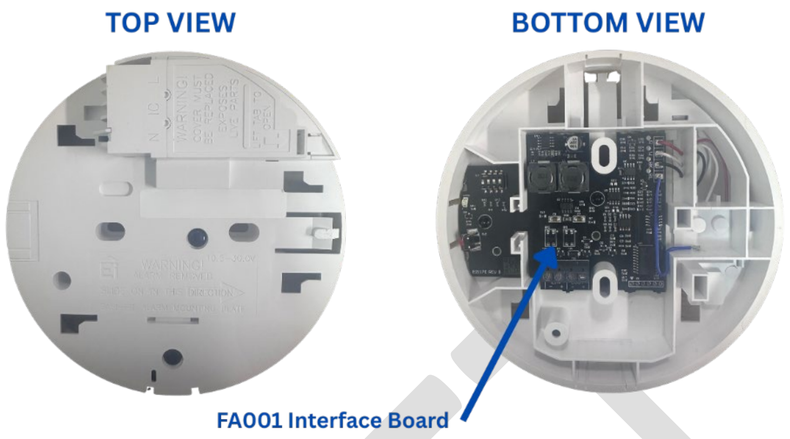


Figure 20 FA001 Interface Board with Mounting Base Plastic

3.2.1 Location

The locations for the any of the FA series alarms must comply with AS1670.6, the building code of Australian, State and territory legislation as applicable and instructions detailed in this manual.

3.2.1.1 Smoke and Heat alarms

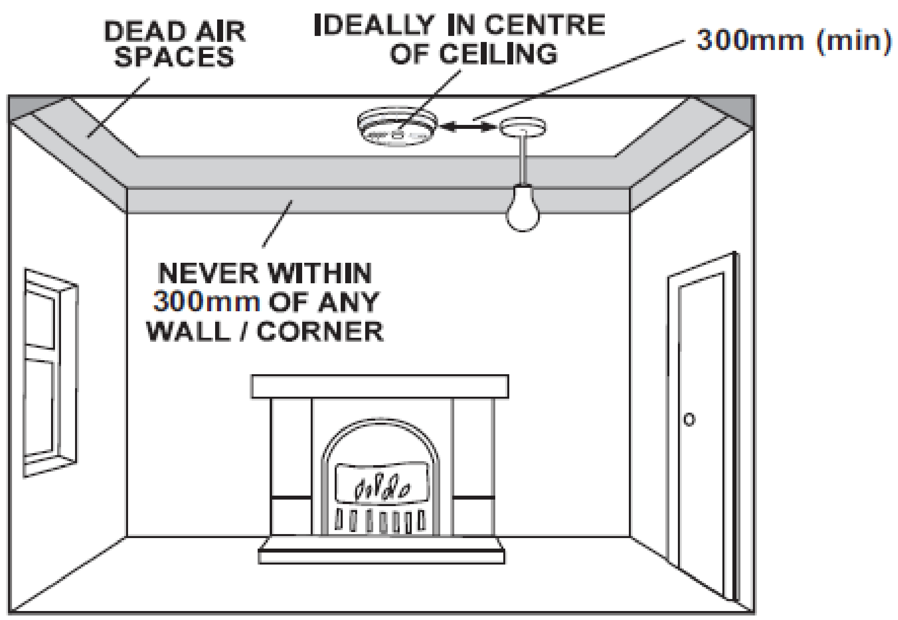
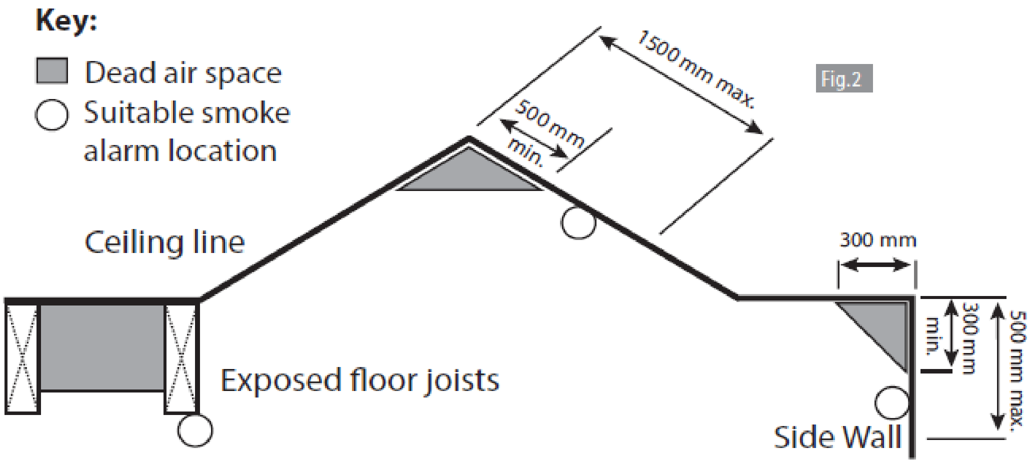


Figure 21: Smoke Alarm locations inside a room

Hot air rises and smoke spreads out, so a central ceiling position is the preferred location. The air is “dead” and does not move in the corners, Therefore Alarms must be mounted away from corners.



DEAD AIRSPACE AND PROPER MOUNTING OF SMOKE ALARMS ON SIDE WALLS

If Ceiling mounting is impractical, ONLY the FA016 Photoelectric Smoke Alarm may be mounted on a wall, provided that:

a) The top of the detection element is between 150mm and 300mm below the ceiling
b) The bottom of the detection element is above the level of any door openings

orientation

3.2.1.2 CO alarms

For carbon monoxide alarms, again a central ceiling position is preferred. The CO alarm should be mounted a horizontal distance of between 1m and 3m from the potential CO source. If there is a partition in the room, the CO alarm should be found on the same side of the partition as the potential source.

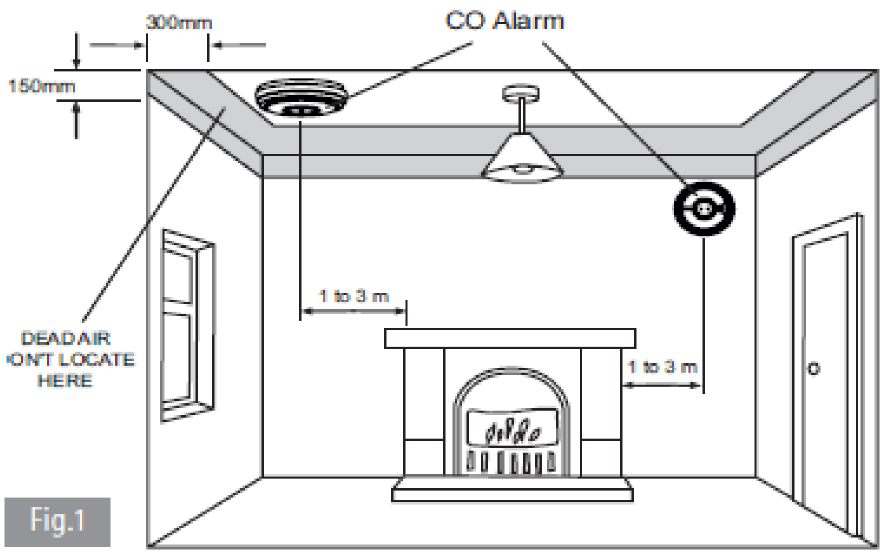


Figure 22: CO alarm locations inside a room.

3.2.1.3 Locations to avoid refer AS1670.6 clause 3.2.3.7

These locations can interfere with alarm performance or cause false alarms:

- Bathrooms, shower rooms, or damp/humid areas (due to steam or condensation)
- Very high or awkward areas (hard to access for testing or maintenance)
- Directly above sinks, cookers
- Near heaters, air conditioning vents, doors, windows, extractor fans, or wall vents (due to draughts or airflow changes)
- Where temperature may drop below -10℃ or rise above 40℃
- In enclosed spaces (e.g. cupboards)
- Where the alarm may be obstructed (e.g. by curtains or furniture)
- In dusty or dirty areas (can block sensors or screens)
- Near paint, thinners, solvent fumes, or air fresheners
- Near dimmer-controlled lights or wiring (at least 1m away)
- Near fluorescent light fittings (at least 1.5m away; wiring at least 1m away)
- Open air spaces such as under crofts
- Damp or humid areas
- Surfaces with temperature differences (e.g. attic hatches)

Specifically for Smoke & Heat alarms, areas to avoid are:

- Bathrooms, showers rooms or other rooms where the Alarm may be triggered by steam, condensation.
- Do not locate in insect infested areas. Small insects getting into the optical smoke sensor can cause intermittent false alarms. Insects and contamination on the heat sensor can increase its response time.
- Very dusty or dirty areas as dust build-up on the optical smoke sensor can impair performance. It can block the insect screen mesh and prevent smoke from entering the sensor. Dust build up can also increase the response time of the heat sensor.

Specifically for CO alarms, areas to avoid are:

- In a bathroom or other areas where the Alarm may be exposed to water splashes, dripping or condensation (e.g. above an electric kettle).
- Outside the building.

3.2.2 Mounting

Mount the FA000 base in a suitable location as described above in §3.2.1 Location.

Fit the FA000:

- At least 300mm away from walls
- At least 300mm from any light fitting or decorative object which might obstruct smoke/ heat entering the alarm.
- If a CO alarm will be attached, between 1m and 3m from the source of potential CO.

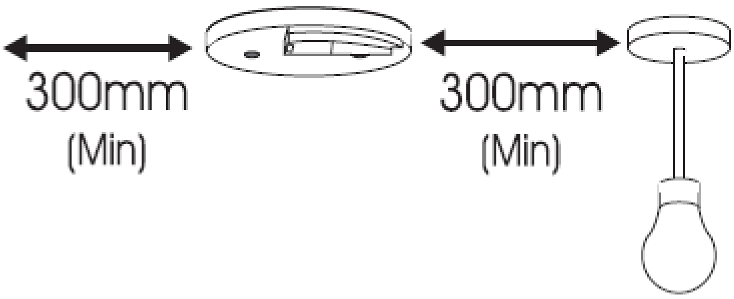
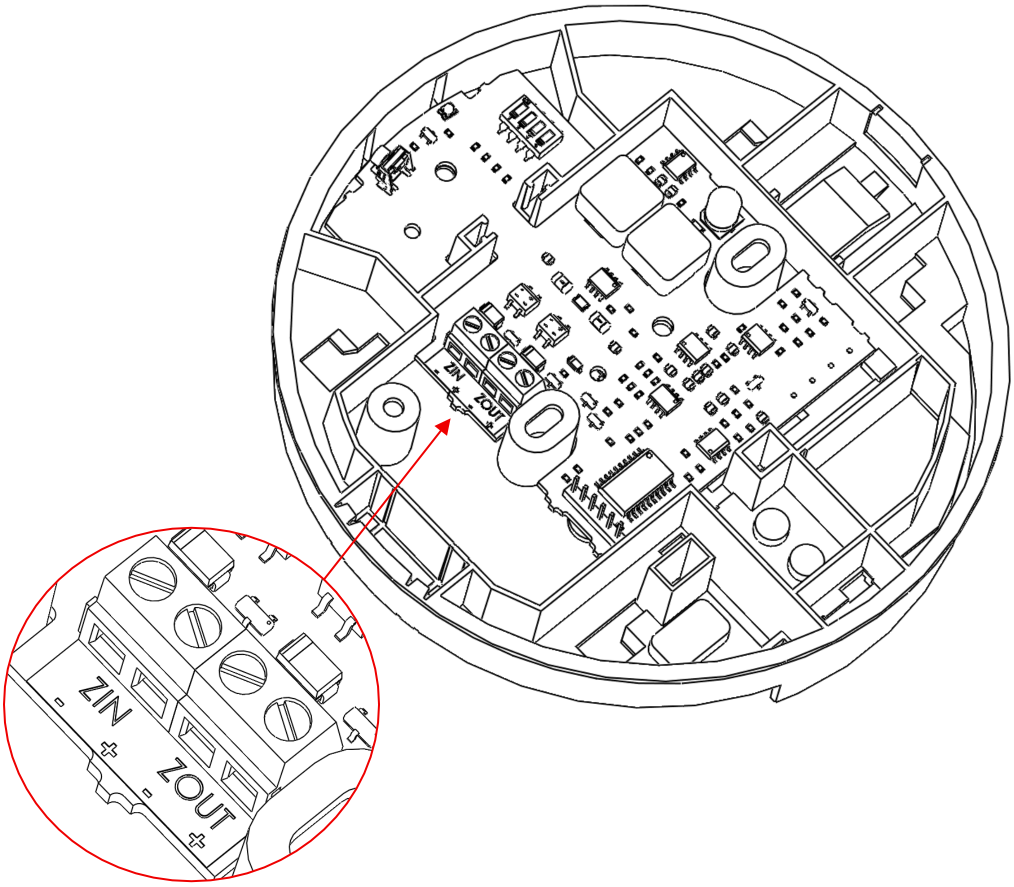


Figure 23: Minium mounting distance from other objects

3.2.3 FA000 Wiring instructions

Once a suitable location has been found you can continue with wiring up the FA001 Base.

Note: Before connecting the interface card to the zone, ensure the panel is fully switched off and the panel batteries are disconnected.



Zin = Input connection from the previous FA000 base or from one of the FA-RCIE zone outputs. (Ensure polarity is correct).

Zout = Output connection to the next FA alarm device.

The FA000 base uses DIP switches to identify the alarm type connected (FA014, FA016 or FA024) to the FA40 RCIE. Switch 4 must be set to ON when the FA000 is the last device on a zone circuit (end-of-line position).

Table 1 Dip Switch Settings of FA), refer to §2.2.2 Table 1 Dip Switch Settings of FA000 Base.

With the last alarm to be installed on the zone. **Zout** can be left unconnected.

3.2.3.1 Cable Properties/Selection

A fire alarm installation is a safety installation, and it is important that the cables used within the installation comply with AS 1670.6. Fire alarm cables should, when possible, be installed away from other cables to avoid disturbances from these (Refer AS/CA S009 Installation requirements for customer cabling (wiring rules).

Note: Maximum cable length(total) from the FA40 RCIE to the last FA000 base, shall not exceed 100meters.

Brooks recommends the use of 1.5mm^2 twisted pair cables with properties:

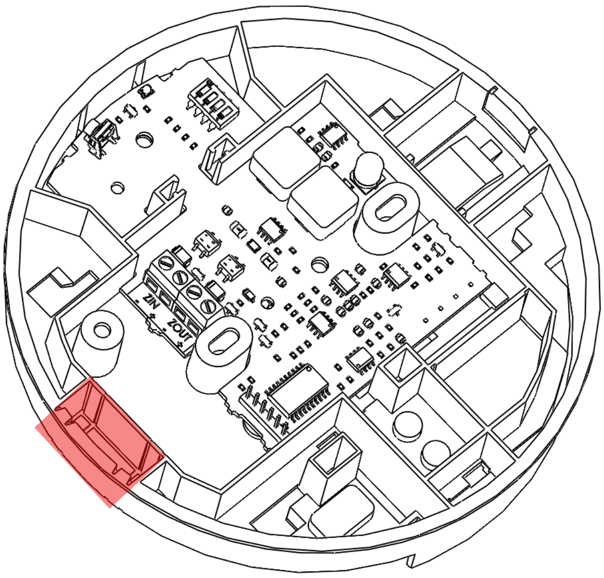
- Conductor resistance 12.5 Ω/km
- Pair capacitance 88nF/km
- 1.5mm^2 twisted pair (BROOKS BAC0898)

3.2.3.2 Wiring from within the ceiling or wall

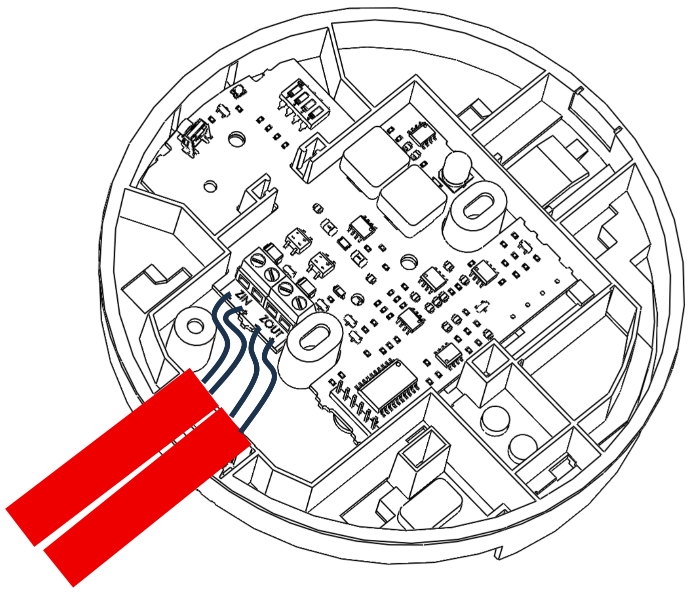
If the wires are recessed within the wall, cut a small hole within the wall and bring the wires in through the opening flap of foam on the rear of the FA000.

3.2.3.3 Wiring along the surface of the ceiling or wall (Surface ducting)

If the wires are being brought along the surface of the wall. The FA000 has a removable section as shown in the figure below, in red:

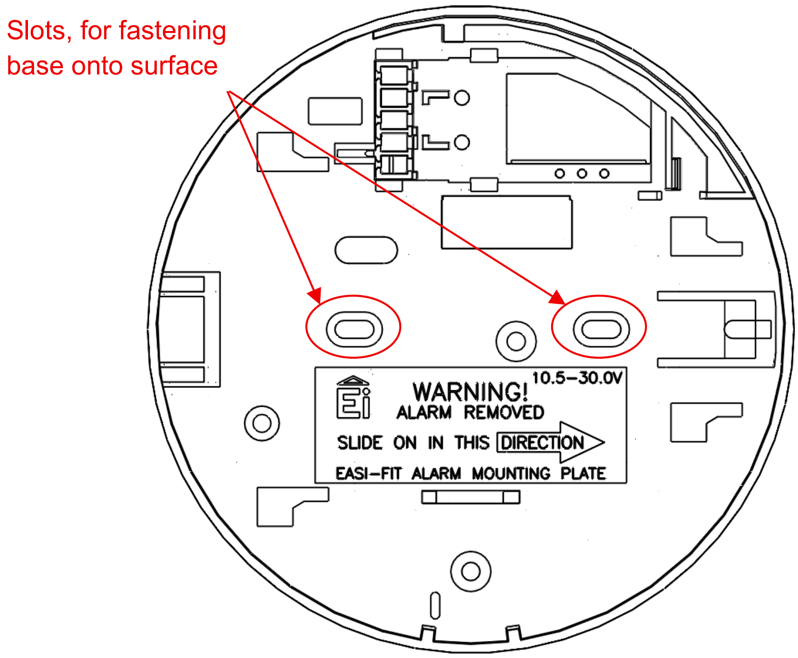


With the section removed cables can be routed in from the side:



3.2.3.4 Mounting FA000

Two slots have been provided on the FA000 base to accommodate up to M4 screws for attaching the FA001 base to a wall or ceiling:

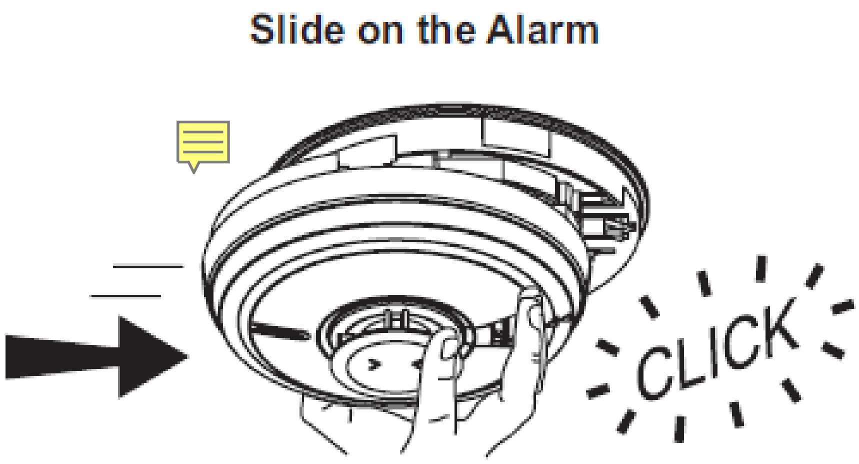


Is this correct

3.2.4 Connecting FA Alarms to the FA Base

Note: Before connecting the FA Alarm to the base, ensure the dip switches have been correctly configured to suit the type of alarm to be installed. Refer to §2.2.2 Head Configuration, for an explanation.

Once the FA000 Base has been installed, and wired up into the system, slide the alarm onto the base until you hear a click.



When the FA40 system is powered on you can confirm the head is operational by the illumination of its green indicator as well as pressing the test/hush button on the FA alarm itself.

3.2.5 Removing FA Alarms from the FA Base

Note: Disconnect power from the FA40 panel before removing FA alarms:

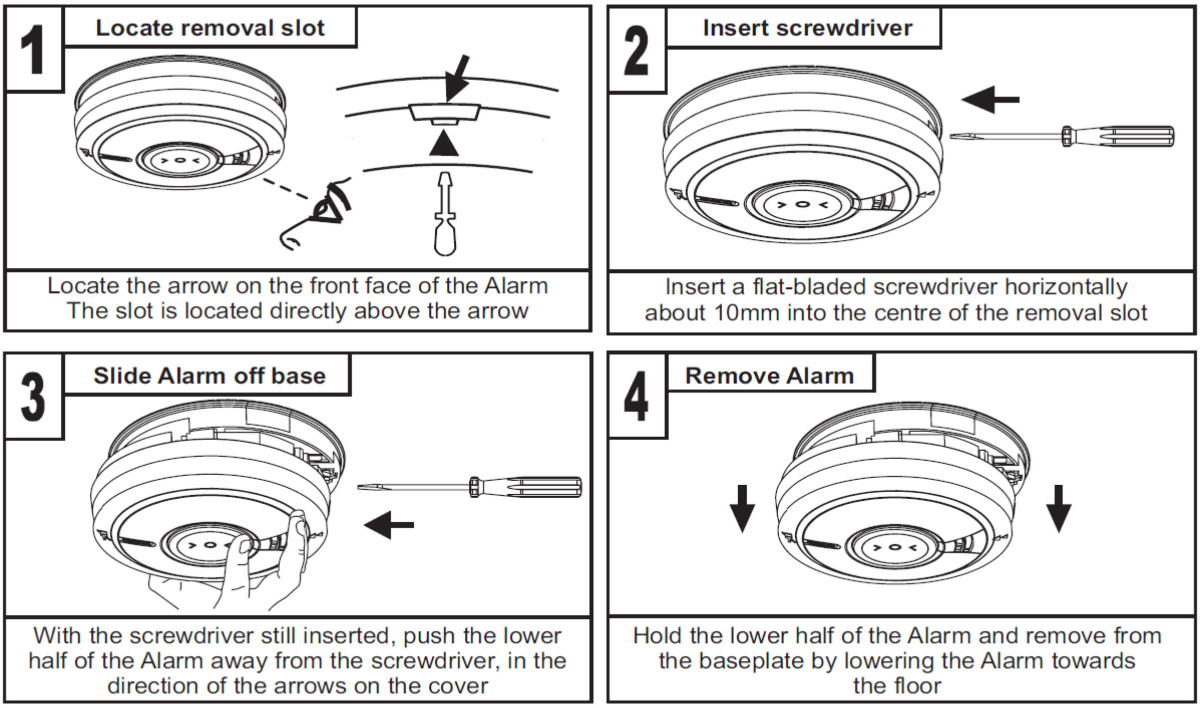


Figure 24: FA Alarms removal procedure

4 FA40 OPERATION

4.1 ALARM TYPE

In the event of a fire, the alarm may be triggered by smoke detectors, heat detectors, manual call points, sprinkler activation or universal module inputs. Each alarm type is clearly displayed on the FA40 RCIE display.

When a fire alarm is activated within a zone, the corresponding zone indicator and alarm type will be shown. Where the FA40 is connected to a residential sprinkler system the sprinkler input must be on its own zone.This feature of the FA40 display helps occupants quickly identify the nature, location, and urgency of the alarm, supporting an appropriate evacuation response.

Alarm priorities are classified as follows:

- **Priority 1 (P1):**
  Includes heat detectors, manual call points, and sprinkler alarms. Activation of any P1 alarm will immediately trigger the associated alarm outputs.
- **Priority 2 (P2):**
  Includes smoke detectors. Activation of a P2 alarm will trigger only the relevant alarm outputs.

The FA40 RCIE allows for configurable delays in activating outputs to external services. If this delay feature is enabled via firmware settings, the Delay O/P indicator will illuminate during any fire alarm activation.

4.2 FA40 Controls

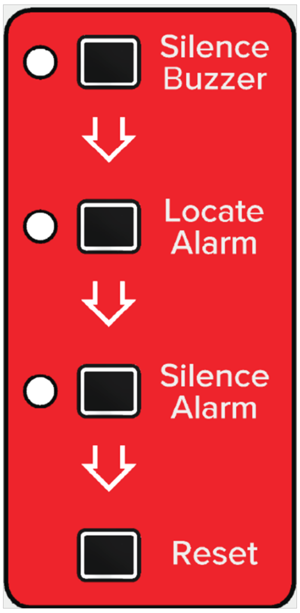


Figure 25: FA40 Alarm Condition Controls

The Fire alarm condition response is defined by the controls within the red area of the FA40, These controls only become active when the FA40 is in the fire alarm condition. The controls are interlocked, the FA40 must first be placed into access level 2 using the 003 fire services key. Once in access level 2 the controls must be pressed in sequence. This process standardizes the required response to a fire alarm event. The silence buzzer control must be pressed first, followed by "Locate alarm ". Once "Locate alarm" has been selected "silence alarms" becomes active.

§4.2.1 - §4.2.4 below, explain the functions of each control in more detail.

4.2.1 SILENCE BUZZER

The buzzer in the FA40 RCIE will sound for any fire alarms, or any faults that occur within the system. Press the Silence Buzzer control to silence the buzzer. When the control is pressed, the buzzer will be muted, and the Silence Buzzer indicator state will change from flashing to steady.

In case of a new alarm condition or new fault condition, Both the Buzzer and Silence Buzzer indicator will automatically resume sounding and flashing again.

After the buzzer has been silenced during fault conditions, the buzzer and the silence buzzer indicator will return to normal automatically when these faults are corrected/ serviced.

4.2.2 LOCATE ALARM

The Locate Alarm function becomes available while the FA40 is in an alarm condition. Depending on zone configurations (see §2.3.2.4), alarms will sound accordingly.

During an alarm, after pressing the Silence Buzzer button, the Locate Alarm indicator will begin flashing. This indicates the system is ready for you to activate the Locate Alarm control.

Pressing the Locate Alarm control helps identify the source of the alarm by silencing all other alarms except those that triggered the active alarm condition. Once pressed, the Locate Alarm indicator will change from flashing to steady ON.

Note: Once the source alarm(s) is identified, it is necessary to carry out proper investigation before Silence all the alarms.

4.2.3 SILENCE ALARM TOGGLE???

The Silence Alarm control is used to silence all alarms. When pressed, all alarms will be silenced. The source alarm(s) device and RCIE will enter into 10 minutes silence period by showing steady ON Silence Alarm LED at RCIE.

The general fire indicator, Alarm type indicator and the respective Zone fire indicator will remain flash through this silence period. If no additional alarms are detected and the 10-minute period expires, the system will automatically return to normal operation.

4.2.4 ALARM RESET

If Zone Latching option is configured §2.3.2.4, Manual reset is required to clear the FA40 from the alarm condition, press the Reset button once. This action clears the alarm condition at FA40 RCIE and returns to normal operation. If any alarm devices remain in an alarm condition after a reset, the corresponding zone will re-register an alarm condition, as well as the system will re-enter an alarm condition.

Note: The RESET control at FA40 RCIE does not cancel 10-minute period of previously silenced FA alarms.

4.2.4.1 FA40 UI Indicator test

When the reset button is pressed, all LEDs on the display will illuminate, and the internal buzzer will sound for approximately 1 second. This test can be performed at any time while access level 2 is granted.

4.2.5 ACF INHIBIT

The ACF Inhibit only becomes available when access level 2 is gained. When pressed, the ACF output will not function. Refer to §5.1.5 for an explanation on the function test.

After inhibitingthe ACF output, you can restore this function by pressing the ACF inhibit button again.

Note: Always re-store the ACF output after maintenance to ensure proper system operation.

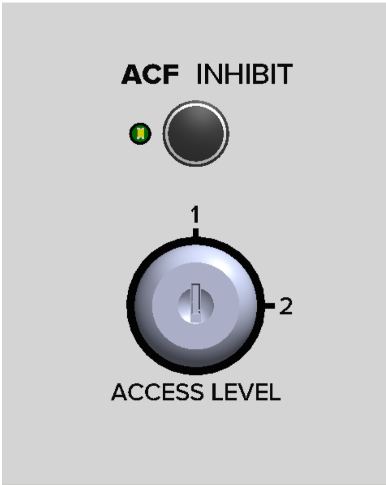


Figure 26: Access level and ACF Inhibit Control

4.2.6 ACCESS LEVEL

FA40 RCIE has 4 user levels as defined per AS 7240.2 Annex H

User Level	User Level name/type	Required action/equipment	Access to
1	None	None	View indications and Silence Buzzer
2	Service/Emergency personnel	003 Key Required	FA40 Controls
3	Trained and authorised service personal	As per 2 + Unscrew cover of the FA40 and remove.	Internal components of FA40
4	Systems Engineer	USB micro–B and Programmer	Reconfiguring Firmware

The 003 key is required to enable to gain access level 2 onwards

Table 16: System Controls vs Access level

Controls	Function	Access Level Required
SILENCE BUZZER	Stop RCIE internal buzzer	Level 1 (Basic)
LOCATE ALARM	Identify alarm source	Level 2 (Full)
SILENCE ALARM	Silence all FA Alarms	Level 2 (Full)
RESET	Clear all alarms and reset devices	Level 2 (Full)
KEY SWITCH	Toggle access level 1 & 2	Physical 003 key
ACF INHIBIT	To inhibit Ancillary Control Output	Level 2 (Full)

4.3 FAULTS

In case of a fault condition, the following will happen in the RCIE:

- The internal buzzer will sound
- The general fault output will be activated
- The general fault indicator will flash
- The respective fault indicator will flash

The buzzer can be silenced during fault conditions. But any new faults occurrences will resound the buzzer after being silenced.

Below follows a list of all faults and its description.

Table 17 List of all faults and its descriptions of FA40 RCIE

PSU fault
This fault represents Mains incoming is disconnected, Charger voltage low/high, Backup batteries are disconnected, Backup batteries voltage low/high & batteries internal resistance high

System fault
This fault represents an error in system modules such as communication between the main control module and other modules, FA40 RCIE cover is removed without authorised user access.

CPU fault
This fault represents CPU failure at main control module/ display module and power supply supervision module.

Earth fault
This fault represents Earth fault is detected in the control unit. Check all cables (for damage, etc.) connected to the FA40 RCIE.

Ancillary Control Facilities fault
This fault represents the ancillary control O/P circuit supervision fault at main control module. (such as open circuit/ short circuit and missing End-of-line device).

Zone faults
This fault represents the respective zone circuit supervision fault. (such as zone fuses blown, open circuit/ short circuit/ FA alarm head removed and missing End-of-line device). Zone faults are monitored individually.

5 FUNCTIONAL TESTING

5.1 GENERAL

Before commencing testing your FireAlert Smoke Alarm System, it is important to ensure that the equipment interfaced to the system has been isolated using the suitable isolate facility either in the panel or on the equipment itself. It is also important to notify occupants and the monitoring centre if the system is being monitored.

5.1.1 Pre-Testing

A visual inspection should be performed of the system to ensure no physical damage or loose wires or components inside the enclosure.

- [ ] Cabinet visual check
- [ ] All boards firmly mounted
- [ ] All Configuration DIP Switches correctly set
- [ ] FA Alarms wiring correctly terminated to main boards zone circuits
- [ ] All $230V_{AC}$ mains cables correctly terminated
- [ ] All ribbon Cables firmly secured
- [ ] EOL configuration are correctly set on all of the last devices in a zone
- [ ] Manuals and instructions supplied

- [ ] Ensure Key switch in the access level 1 position
- [ ] Turn ON the mains isolating switch
- [ ] Power on LED illuminates
- [ ] Connect batteries
- [ ] turn the Key switch into access level 2 position
- [ ] Ensure all LEDs are ‘OFF’ except Power on LED
- [ ] Ensure no Smoke / Heat Alarm is sounding
- [ ] Check charger output voltage 28.5V DC

5.1.2 Zone Alarm Test:

Check that the green power indicator is 'ON' on all FA Alarms within the zone. (If it is off, check zone circuit, fuses, wiring and RCIE etc.). Ensure the FA40 RCIE in normal mode and only "Power On" (Green) LED is on.

Press the test button of any FA Alarms within the specific zone for up to 10 seconds and ensure that the Alarm sounds and releases. Pressing the test button simulates the effect of smoke and/or heat and FA40 RCIE goes into alarm mode.

- General Fire LED will flash.
- The respective Zone Fire LED will flash.
- The alarms type such as Smoke/Heat/MCP or Sprinkler LED will flash based on the device activated/tested.
- All the FA Alarms connected to RCIE zones will sound (if common alarm Dip Switch setting for respective zone is selected at the main control board)
- Priority 1 (P1) Alarm - voltage free contact changes based on Alarm type (Heat/ MCP & Sprinkler)
- Priority 2 (P2) Alarm - voltage free contact changes based on Alarm type (Smoke)
- Ancillary Control Function Output - supervised 24VDC will be activated. The status of Alarm Output will be indicated by ACF Active LED illuminated at the front of FA40 RCIE.
- Built-in RCIE buzzer will sound
- Release test button and RCIE and all other FA Alarms resume back to normal.

Repeat **Zone Alarm Test** for rest of the zones.

5.1.3 Zone Fault Test:

Zone Fault Test can be performed by doing any of the following.

- Remove a FA Alarm head from the base
- Create open circuit across the zone
- Remove zone line fuse at the main control board.

The FA40 RCIE will response as follows:

- General Fault LED will flash
- The respective Zone Fault LED will flash
- Built-in RCIE buzzer will sound
- General Fault – voltage free contact changes over

Press Silence Buzzer button at RCIE, the buzzer stops sounding and Silence Buzzer LED will be steady on. Reinstating FA Alarm head or zone circuit or zone line fuse will bring the RCIE back to normal mode.

Repeat **Zone Fault Test** for rest of the zones.

Note: Failing to configure EOL Dip Switch setting at the last device of the zone will also appear as Zone Fault.

5.1.4 Power Supply Test:

The RCIE constantly monitors the main power source, standby battery/charger voltage and initiates a PSU fault if the voltage of the charger or standby batteries are abnormal.

Switch off the mains 230VAC input to FA40 RCIE,

- PSU Fault LED will flash
- General Fault LED will flash

- Built-in RCIE buzzer will sound with Silence Buzzer LED flashing
- General Fault – voltage free contact changes over

Press Silence Buzzer button at RCIE, the buzzer stops sounding and Silence Buzzer LED will be steady. Turn ON the mains 230VAC input and the RCIE will be back to normal mode.

Disconnect the back-up batteries termination to RCIE,

- PSU Fault LED will flash
- General Fault LED will flash
- Built-in RCIE buzzer will sound with Silence Buzzer LED flashing
- General Fault – voltage free contact changes over

Press Silence Buzzer button at FA40 RCIE, the buzzer stops sounding and Silence Buzzer LED will be steady. Reconnect the back-up batteries termination and the RCIE will be back to normal mode.

5.1.5 ACF Inhibit Function Test:

FA40 RCIE has only one inhibit function. Access level 2 is required. This feature is essential for system testing and maintenance operations.

Turn 003 Key to Access Level 2 position. Press ACF Inhibit button at FA40 RCIE.

- General Disable LED will illuminate.
- The ACF Inhibit LED will illuminate.
- ACF Output- supervised 24VDC will be isolated from any FA Alarms activation of FA40 RCIE Zones.

Conduct Zone Alarm Test at any one of the zones and check to ensure the ACF Output is not activated.

Press again ACF Inhibit button at FA40 RCIE to normalize. The system will be back to normal.

5.1.6 Fire Mode Test:

Using Smoke CAN, select an FA smoke alarm and spray an amount of “canned smoke” into the FA smoke alarm

- The tested FA smoke alarm will enter the alarm condition, the alarm LED will flash and the integral piezo will sound.

At FA40 RCIE,

- General Fire LED will flash.
- The respective Zone Fire LED will flash at.
- The alarms type such as Smoke/ Heat/MCP or Sprinkler LED will flash based on the device activated/tested at the field.
- All the FA Alarms connected to RCIE will sound (if Common Dip Switch setting for tested zone is selected at the main control board)
- Priority 1 (P1) Alarm - voltage free contact changes based on Alarm type (Heat/ MCP & Sprinkler)
- Priority 2 (P2) Alarm - voltage free contact changes over based on Alarm type (Smoke)
- Ancillary Control Function Output – supervised 24VDC will be activated. The status of output will be indicated by ACF Active LED illuminated at the front of FA40 RCIE.
- Built-in RCIE buzzer will sound with Silence Buzzer Indicator flash

Turn 003 key into access level 2, press Silence Buzzer to mute the RCIE buzzer.

- Silence buzzer indicator will be steady ON followed by Locate Alarm indicator flashes.

Press Locate Alarm button at RCIE,

- All other FA Alarms stop sounding except the alarm(s) devices in the alarm condition and Locate Alarm LED will be steady ON followed by Silence Alarm indicator flashes.

In case of real time operation, after the source alarm(s) is located, investigation on the premises is necessary. If there is a fire, immediately evacuate the premises and call the fire brigade.

If false alarms occur,

Press Silence Alarm button at RCIE,

- All FA Alarms stop sounding
- The source alarm(s) device and RCIE will enter into 10 minutes silence period by showing steady ON Silence Alarm LED at RCIE.
- The general fire indicator, Alarm type indicator and the respective Zone fire indicator will remain flash through this silence period.

If latching option is **NOT SELECTED** for respective zone,

The system will automatically go back to normal if no more Alarms are detected at zones and 10 minutes silence period is over.

If latching option is **SELECTED** for respective zone,

After alarms have been silent, press Reset button to reset the FA40 RCIE to return to normal mode.

Note: The RESET control at FA40 RCIE does not cancel 10-minute period of previously silenced FA alarms.

6 TROUBLE SHOOTING

6.1 FA Alarms

The FA alarms can communicate its status and history through various LED flashes and chirps/beeps. However, a more comprehensive report of all such events is available through AudioLINK, download via your App store.

6.1.1.1 FA014, FA016, FA024 Indicator Summary

Table 18: FA014, FA016 & FA024 Indicator & Sound patterns

Normal Mode					
Mode	**Action**	**Green LED (Power)**	**Yellow LED (Fault)**	**Red LED (alarm)**	**Sound**
Power up	Slide onto mounting plate	x 1	x 1	x 1	-
Standby	-	x 1	-	-	-
Testing	Press and hold test button	*	-	-	
In alarm mode					
Detecting fire	-		-		
Activated via interconnect	-		-	-	
Pressing silence Button on Alarm detecting fire	-		-		X 10mins

* With the test button held the green LED will flicker/pulse every second

= LED on solid = LED Flashing

Table 19: Memory Mode indicator and Sound patterns

Status	Action	Red LED (alarm)	Sound
0-24h	–	 x2 every 48 sec	–
>24h +	Press and hold test button	 x 2 every 8 sec	
To erase the memory	Keep test button pressed for >20s		Sounds until test button is released

Table 20: Fault Mode and Memory Indicator.

What you hear / see				What it means	What to do
Green LED (power)	Yellow LED (fault)	Red LED (alarm)	Chirps		
x 1 every 48 sec	-	-	-	Lost power from FA001	Reconnect Power, Check FA001 base for fault indication
-	x 1 every 48 sec	-		No Power, running off battery backup	Reconnect power
	x 1 every 48 sec	-		Low battery backup	Replace Alarm
	x 2 every 48 sec	-	x2	Sensor fault	Replace Alarm
	x 3 every 48 sec	-	x3	End of Life	Replace Alarm
	x 4 every 48 sec	-	x4	Max Dust compensation has been reached	Clean alarm §7.1
	Flashes as per fault type	-	-	Fault chirps have been silenced LED Flashing indicates fault type	If required chirping can be silenced again by pressing silence button
	-	When pressing Test button	-	There has been an alarm in your absence	Check Alarm memory section

6.1.1.2 FA028 Indicator summary

The FA028 device differs slightly from the other alarms, as it includes additional LED display indicators for both Fire and CO. However, the indicators for Normal, Alarm and Memory modes described for FA014, FA016 & FA024 in §6.1.1.1 still apply to FA028.

Table 21 Alarm Indicator Summary

Event Type	Red LED	LED icon Fire or CO	Alarm
Fire	every 5 sec	FIRE Flashing	
CO Gas level ≥ 50ppm	x 2 every 4 sec	CO Flashing	Within 60 – 90 minutes
CO Gas Level ≥ 100ppm	x 3 every 4 sec	CO Flashing	Within 10 – 40 minutes
CO Gas level ≥ 300ppm	x 4 every 4 sec	CO Flashing	Within 3 mins
Alarm triggered by FA40 system	-	-	

6.1.2 Low Battery Backup Fault

If the battery backup supply is depleted, the sounder will give one short chirp with one yellow LED fault indicator flash every 48 seconds. In this case check that the green LED power indicator is on continuously. If it is off, or flashing every 48 seconds, the Alarm is not receiving 16Vdc power from the FA001 base and is being powered by the battery backup. The chirp every 48 seconds indicates that the battery is depleted. The battery is not replaceable. Check the FA001 base, fuses, circuit breakers and wiring to determine the cause of the interruption to the mains power. If in doubt, contact a qualified electrician. Once power is reinstated, the chirps should cease within 2 hours as the battery charges up. If the chirping persists for over 2 hours with the green light on, there may be some other problem with the Alarm. The Alarm must be returned for repair or replacement.

6.1.3 Sensor Fault

The Alarm regularly checks the photoelectric smoke sensor and/or thermistor heat sensor for correct operation. If the Alarm has found a fault with the sensor, it will give 2 short chirps with 2 yellow LED flashes every 48 seconds. In this case, the Alarm must be returned for repair or replacement.

6.1.4 End of Life

Once the Alarm passes its 10th year of installation, it will give 3 short chirps with 3 yellow LED flashes every 48 seconds to indicate it has reached its end of useful life. The entire Alarm must be replaced (Also check the replace by date on the label on the side of the Alarm). Disconnect the main power first and replace the Alarm – see, Removing the Alarm' section.

6.1.5 Max Dust compensation

The Alarm monitors the dust contamination build-up in the optical smoke chamber and then compensates for it, reducing the possibility of nuisance alarms. If however, the Alarm gives 4 short chirps with 4 yellow LED flashes when the test button is pressed, it indicates that the Alarm has reached the maximum dust compensation. When this occurs, the Alarm will continue to operate as normal, but there is an increased risk of nuisance alarms caused by dust contamination. If contamination has occurred quickly (e.g. due to dust from carpets being replaced) and the Alarms are sounding, the dust compensation may take some hours to operate. In this situation, remove the Alarm from the ceiling, leave it disconnected for 5 minutes, then reinstall the unit (the air must be clean i.e., dust and smoke free). The dust compensation will now operate quickly, within 60 seconds.

Refer to the maintenance section §7.1.

6.1.6 Temporarily Silencing the Fault chirps

If the test / hush button is pressed on an Alarm that is giving fault chirps and yellow LED fault indicator flashes, the Alarm will be silenced (Fault Hush mode) for a period of 12 hours. However, the Alarm will sound / function as normal within that period should it detect Fire (except if the fault detected is a sensor fault). The yellow LED fault indicator will continue to flash as before to indicate the fault is still present. This is a useful feature should the fault occur at night as it keeps the disturbance at a time when people in the building are trying to sleep to a minimum. The fault chirps would return 12 hours later, which perhaps may be a more suitable time to address the fault issue with the Alarm. In case of low backup battery voltage and end of life fault chirps, this can be repeated as required. A sensor fault condition can only be hushed once.

6.2 FA40

6.2.1 No power to the system

Check 230V Mains power is one and the Circuit breaker is switched on

Check the green mains indicator light on the Mean well MDR-100-24 PSU is active.

Check the output of the PSSC

6.2.2 System running on battery backup

Check series inline fuses between batteries

Perform a capacity test on the batteries

6.2.3 Zone not responding

6.2.4 UI display not Functioning

6.2.5 Battery not charging

Check Batteries are connected

Check PSSC for Fault indicator

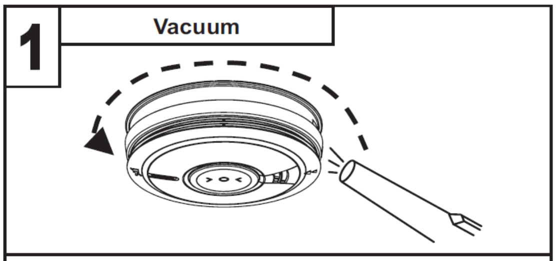
Check Inline Fuse

6.2.6 False Alarms or intermittent Triggering

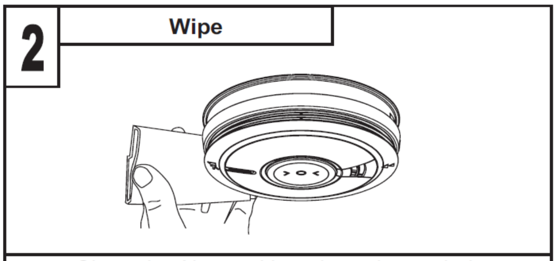
7 MAINTENANCE

7.1 Cleaning alarms

Clean alarms regularly. In dusty areas it may be necessary to clean the Alarm more frequently:



Vacuum around the side vents to clean



Clean the Alarm with a clean damp cloth and dry thoroughly

Use the narrow nozzle attachment of your vacuum cleaner to remove dust, insects and cobwebs from the sides and cover slots where the airflow enters. Clean the outside cover by occasionally wiping with a clean damp cloth than dry thoroughly with a lint free cloth. Do not sure any cleaning agents, bleaches, detergents or polishes, including those in aerosol cans.

7.2 Battery Maintenance

The batteries – 2 x 12V 9Ah SLA batteries are placed inside the FA40's plastic enclosure §3.1

The FA40 charges and monitors the batteries and continuously monitor its condition, a fault will be generated when the batteries are disconnected or outside the specified limits.

The ambient temperature affects the battery's capacity. Self-discharge and life span. The temperature should preferably not be higher than normal room temperature (approximately 20-22℃) For highest safety, the batteries used in a fire alarm system should not be more than four years old.

Note: Risk of explosion if batteries replaced by the incorrect type. Dispose used batteries according to the produce's instructions and national regulations.

Skilled personnel are required to replace batteries.

8 BLOCK WIRING DIAGRAM

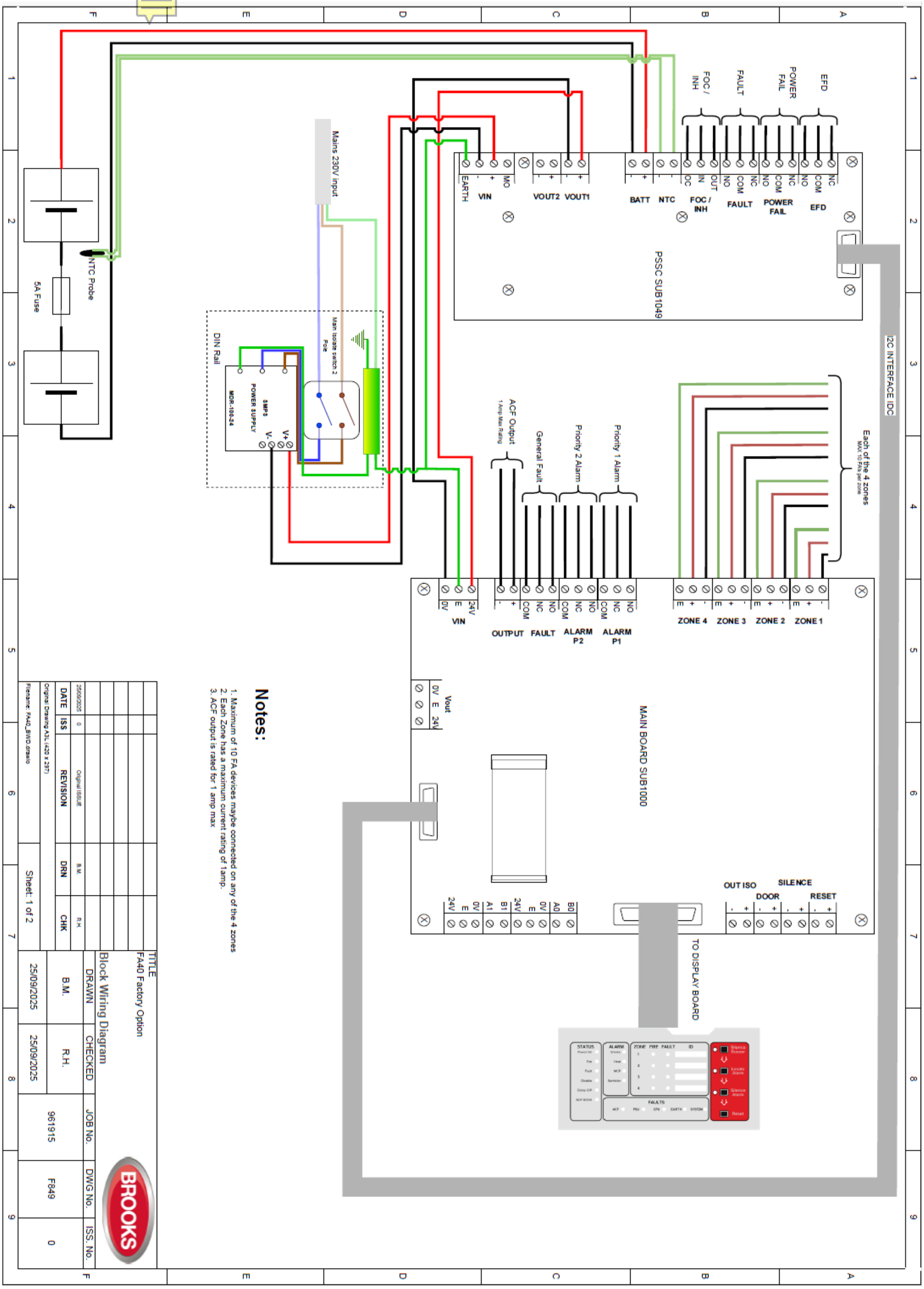


Figure 27 FA40 Standard Block Wiring Diagram

9 GUARANTEE

If FA40 control panel and any of it’s system components have any defects due to faulty workmanship or material, it is to be returned to Brooks freight paid. BROOKS will, at its sole discretion, repair or replace 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 because of incorrect installation, accident, negligence, misuse, unauthorised dismantling or contamination howsoever caused, careless handling or where repairs have been made or attempted by others.

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 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 FIREALART FA40.

BROOKS guarantees FireAlert FA40 units for a period of 15 months from the date of purchasing the equipment or 12 months from the date of operation.

10 REVISION HISTORY

Issue	Date	Description	Written By	Checked By
0.1	7-Oct-2025	Initial Draft	N.S/ B.M	R.H
0.2	x-Oct-2025			

11 Glossary Index (Alphabetical)

ACF - Ancillary Control Function – output used to trigger external devices during alarms.

AS1603.3 - Australian Standard for heat alarms.

AS1670.6 - Australian Standard for system design, installation and commissioning of smoke alarm system

AS3786 - Australian Standard for smoke alarms.

DIP switch - A manual electric switch used to configure device settings.

EN50291 - European Standard for carbon monoxide alarms.

EOL resistor - End-of-Line resistor used to supervise wiring integrity in alarm circuits.

FA001 - Base interface unit for connecting FA series alarms to the RCIE.

FA014 - Heat alarm using a Class A1 thermistor sensor, suitable for areas with smoke or fumes.

FA016 - Photoelectric smoke alarm designed to detect smouldering fires.

FA024 - multi-sensor alarm combining smoke and heat detection.

FA028 - Combination alarm with heat and carbon monoxide sensors.

Manchester encoding - A method of encoding data for reliable communication over power lines.

Photoelectric - the phenomenon where light (photons) causes electrons to be emitted from a material. This effect is the basis for many types of sensors and detectors, especially in fire safety systems

RCIE - Residential Control and Indicating Equipment – the central control panel for fire alarm systems.

Thermistor - a type of temperature-sensitive resistor whose resistance changes significantly with temperature

UART - a hardware communication protocol used for serial communication between devices.

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