



Installation Commissioning & Operation

FireFinder TM

SP Series



AS4428

Fire Alarm Control Panel

Programmed with ConfigManager Version 6 Software

*" Our aim is to provide ' **Consistently Excellent Service** ' in the eyes of our customers "*

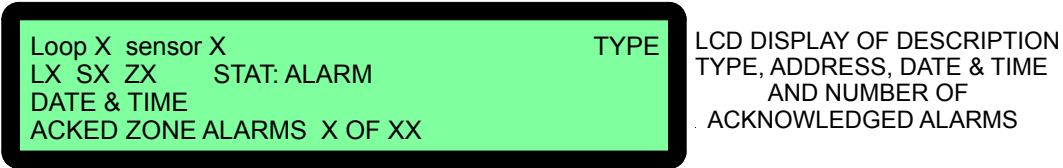
1. INDICATION (INCOMING FIRE ALARM CONDITION)



2. ACKNOWLEDGE ALARM



3. REPEAT THE ABOVE STEPS TO ACKNOWLEDGE ALL ALARMS



4. ISOLATE BELL



5. RESET ALARMS



6. ACKNOWLEDGE RESET



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1 Non Disclosure Agreement

This contract has been entered into by the person or company user of this document (hereafter called the Trader) and AMPAC Technologies (hereafter called AMPAC) of 97 Walters Drive, Osborne Park Western Australia 6017. Under terms and conditions as specified hereunder.

Whereas AMPAC and the Trader for their mutual benefit and pursuant to a working relationship which may be established, anticipate that AMPAC will disclose in the form of this document, information of a secret, or confidential or proprietary nature (hereinafter collectively referred to as Proprietary Information).

Whereas AMPAC desires to ensure that the confidentiality of any Proprietary Information is maintained in accordance with the terms of this Agreement;

NOW, THEREFORE, in consideration of the foregoing premises, and the mutual covenants contained herein, the Trader hereby agrees as follows:

1. The Trader shall hold in trust and confidence, and not disclose to any person outside its organisation, any Proprietary information which is disclosed to the Trader by AMPAC under this Agreement. Proprietary Information disclosed under this Agreement may be used by the Trader only for the purpose of carrying out work on or with AMPAC supplied equipment and may not be used for any other purpose whatsoever.
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3. The undertakings and obligations of the Trader under this Agreement shall not apply to any Proprietary Information which :
 1. Is disclosed in a printed publication available to the public, is described in patent anywhere in the world, or is otherwise in the public domain at the time of disclosure;
 2. Is generally disclosed to third parties by AMPAC without restriction on such third parties;
 3. Is shown by the Trader to have been in its possession prior to the receipt thereof from AMPAC;
 4. Is approved for release by written authorisation of AMPAC; or
 5. Is not designated by AMPAC in writing or by appropriate stamp or legend to be of a secret, confidential or proprietary nature.
4. This Agreement will be binding upon and inure to the benefit of the parties hereto, and their respective successors and assigns.
5. This Agreement, and all rights and obligations hereunder, shall expire on the 10th anniversary of the date of issue of this document.

These terms are accepted by the Trader on receipt and retention of this document.

2 About This Manual

2.1 Introduction

This manual contains all the information required to install, commission and operate the **FireFinder™ SP** series Fire Alarm Control Panel (FACP) fitted with Version 6 software and is only available to and for the use of personnel engaged in its installation, commissioning and operation.

2.2 General Requirements

The **FireFinder™ SP** series FACP has been designed and manufactured from high quality commercial components so as to comply with major world standards. To ensure these standards are not compromised in any way installation staff and operators should;

1. be qualified and trained for the task they undertake;
2. be familiar with the contents of this manual prior to the installation, commissioning or operation of a **FireFinder™** control system;
3. observe anti-static pre-cautions at all times; and
4. be aware that if a problem is encountered or there is any doubt with respect to the operational parameters of the installation the supplier should be contacted.

2.3 References

FireFinder™ Technical Manual

ConfigManager (V6)

FireFinder™ Detector Manual

Australian Standards:

AS1670 - Automatic Fire Detection and Alarm Systems, system design, installation, and commissioning, Part 1 & Part 4

AS1851 - Maintenance of Fire Protection Systems and equipment - Fire Detection and Alarm Systems.

AS4428 - Fire Detection, Warning, Control and Intercom Systems – Control and Indicating Equipment. Part 1 and Part 4

2.4 Symbols



Important operational information



Note: Configuration considerations



Observe antistatic precautions



Mains supply earth



DANGER mains supply present

3 **System Overview**

The **FireFinder™ SP** series is an Intelligent Analogue / Addressable and / or Conventional Fire Alarm Control Panel capable of supporting:

- Apollo Discovery and XP95 Intelligent Detectors, Multisensor, Photoelectric, Ionisation, Thermal (heat) and CO detectors.
- Addressable Initiating Devices: Modules that monitor any conventional normally open contact such as supervisory switches and flow switches.
- Conventional two wire zone detector circuits
- Multiple input/outputs
- High Level Interfaces
- Graphical Interfaces
- Remote LCD Repeaters
- Remote LED mimics
- Peer to Peer networking
- Master Slave (Main - Sub) networking
- Main panel plus Data Gathering Panels networking

and; is built to comply with the following standards:

- Australian Standard: AS 4428.1
- New Zealand Standard: NZ4512
- European Standard: EN54
- Malaysian Standard: MS1404
- Singapore Standard: CP10

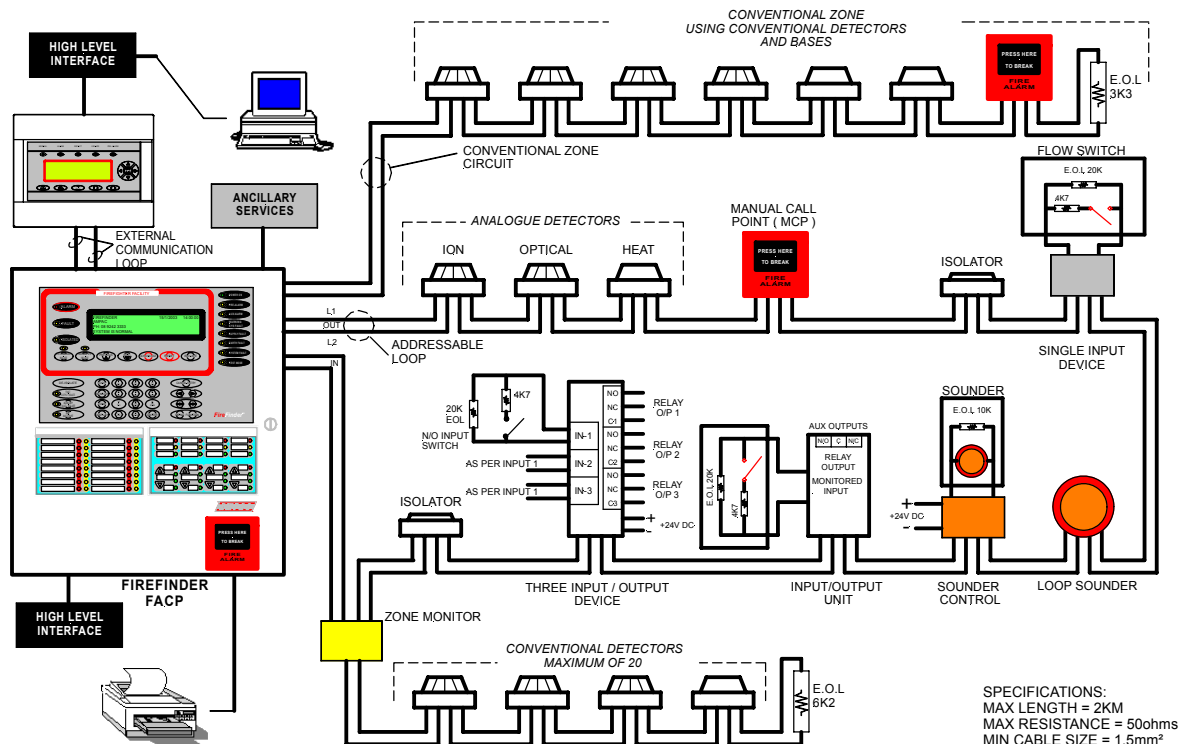


Figure 1: Typical Application

FACP Configuration Examples

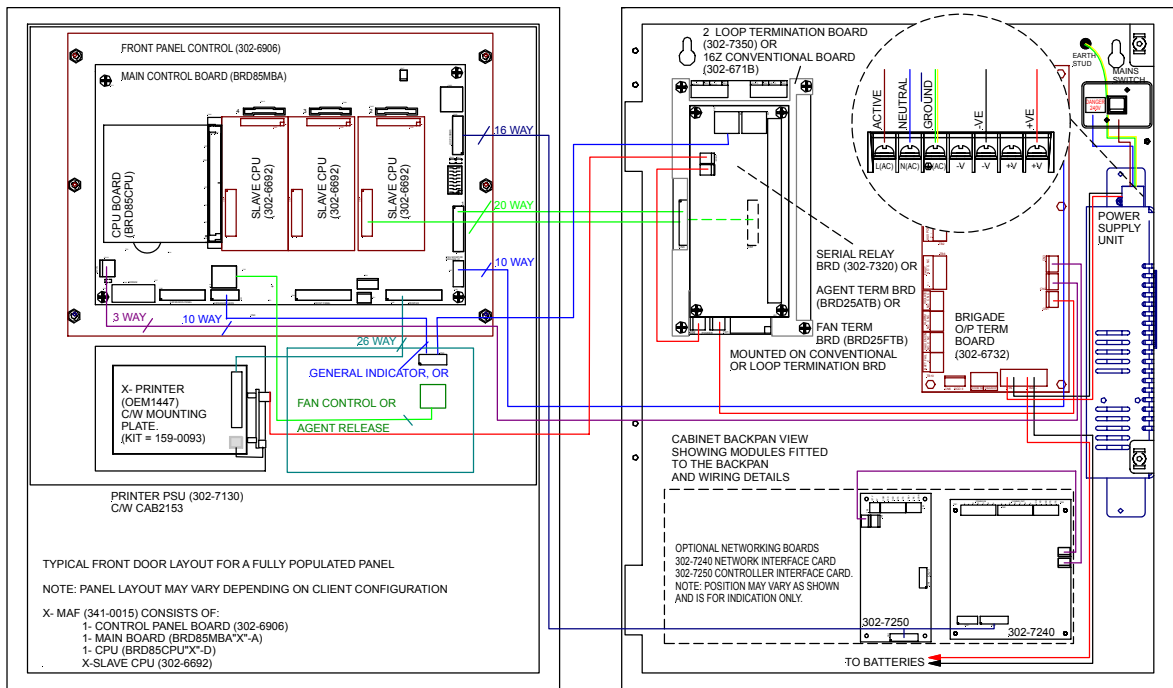


Figure 2: Typical Example of an SP1X Layout

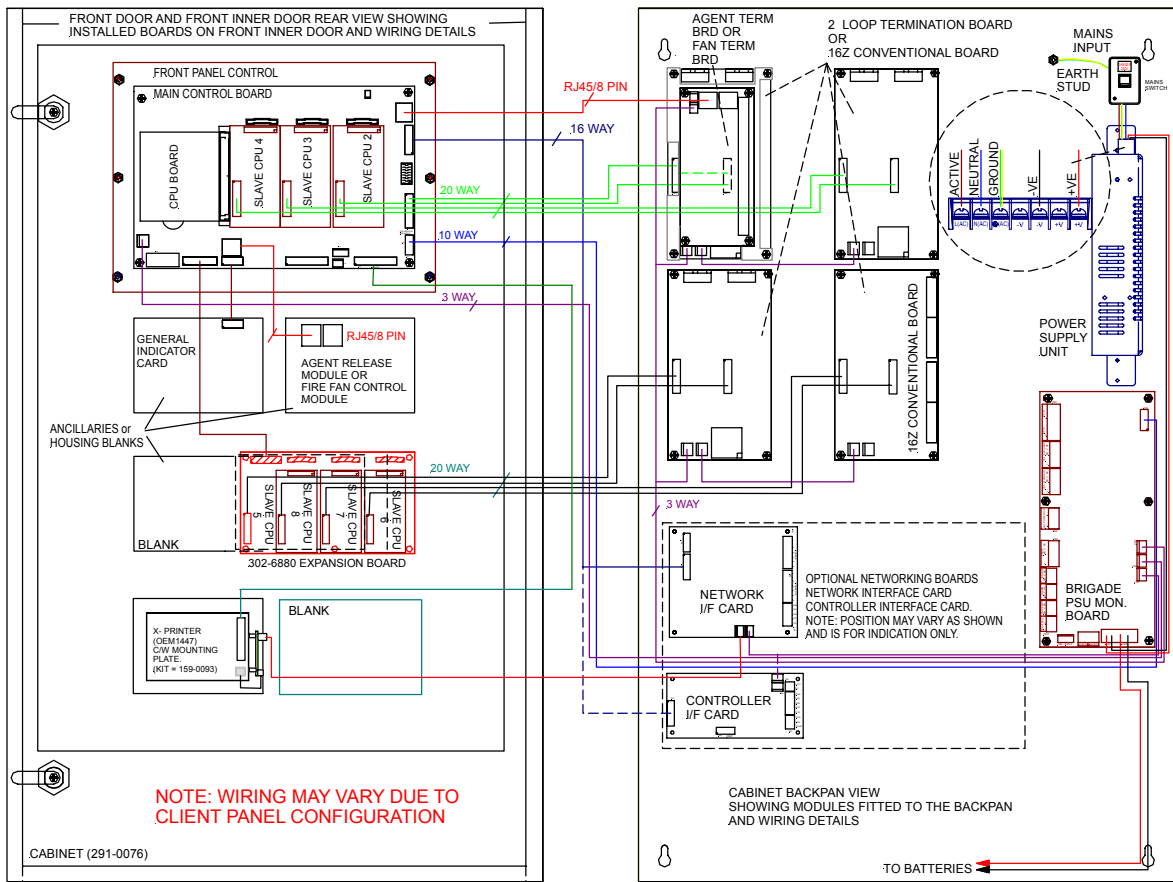


Figure 3: Typical Example of an SP8X Layout

4 FireFinder™ Description

The following description does not relate to specific cabinets as the size of each cabinet will vary with the amount of hardware fitted.

The heart of the **FireFinder™** consists of two boards collectively known as the **Controller**. These boards are the Main Board (BRD85MBA) and the CPU board (BRD85CPU). Combining these two boards with a front panel (302-690) forms the basis for a **FireFinder™** FACP. A single **FireFinder™** **Controller** without an expansion board has the capacity to interface to four (4) **FireFinder™** Slave CPU's modules. Each of these Slave CPU's can interface to 16 Zone Conventional Termination Boards, Loop Termination Boards or Input/Output Boards as well as communicate with the Brigade / PSU Monitor Board (302-673).

The Main Board (BRD85MBA) has the Slave CPU Board for the first Loop Termination Board and the provision for mounting of up to three additional **FireFinder™** Slave CPU's. The **FireFinder™** Slave CPU's all have the same software installed and the manner in which they operate is automatically determined by the type of termination or interface board onto which they connect.

If the system is to be expanded to have more than four Slave CPU's an Expansion Board (302-688) is required. This board contains **FireFinder™** Slave CPU No. 5 and expansion sockets for three more. This configuration allows for a maximum number of 8 Slave CPU's that any one **Controller** can accommodate.

If a system is required to be expanded beyond eight Slave CPU's then either local networking using up to a total of four controllers (max 32 Slave CPU's) within the one cabinet may be fitted or external networking must be used.

The **FireFinder™** has an internal ASPI (**A**mpac **S**erial **P**eripheral **I**nterface) serial bus. This serial bus provides interfacing to the Brigade /PSU Monitor Board and if required up to eight (8) Sounder Board/s (302-7420/1).

FireFinder™ has a second serial interface that connects to ancillary boards that can be designed into a system to control / monitor field plant / equipment and agent release .

Where the system design exceeds the capability of one **FireFinder™** then other **FireFinder™** panels can be networked together to provide an expanded system containing multiple boards in a variety of applications.

Some of these applications include:

- A Master / Slave (Main Sub) FACP arrangement (MFACP / SFACP)
- A Peer to Peer System
- Use of Data Gathering Panels (DGP's)
- LCD Repeater Panels (LCDR)
- **SmartGraphics**

A Network **FireFinder™** System supports a combination or all these options on a single network. Each panel on the network is regarded as a "node". The NETWORK BUS can be accessed using either a Network Interface Card (NIC 302-724) and/or Controller Interface Card (CIC 302-725). Modules that are supported on the network are Remote LED Mimic Board (302-715), Remote Liquid Crystal Display Repeater (302-720, 302-721), remote **FireFinder™** main panels and other **FireFinder™** remote data gathering panels. The network configuration determines whether a NIC or a CIC or a combination of both is required.

Master / Sub FACP : Where there are one or more FACP's configured as local panels then each report the status of their associated zones/devices to a MFACP. There is no control between local panels as the MFACP is structured to have full control of the entire system.

Peer to Peer : Each FACP is regarded as a Master FACP and therefore a user can take control of the entire fire system from any FACP.

Data Gathering Panel : The use of this type of panel may be installed where there is a need to have field terminations only at one location and all control is performed by an FACP that is remotely located.

LCD Repeater Panel : The LCDR's are network compatible and provide the user with the ability to monitor the status of designated areas or an entire site as well as execute specific interrogation tasks.

SmartGraphics: Is an active graphics system connected to the **FireFinder™**.

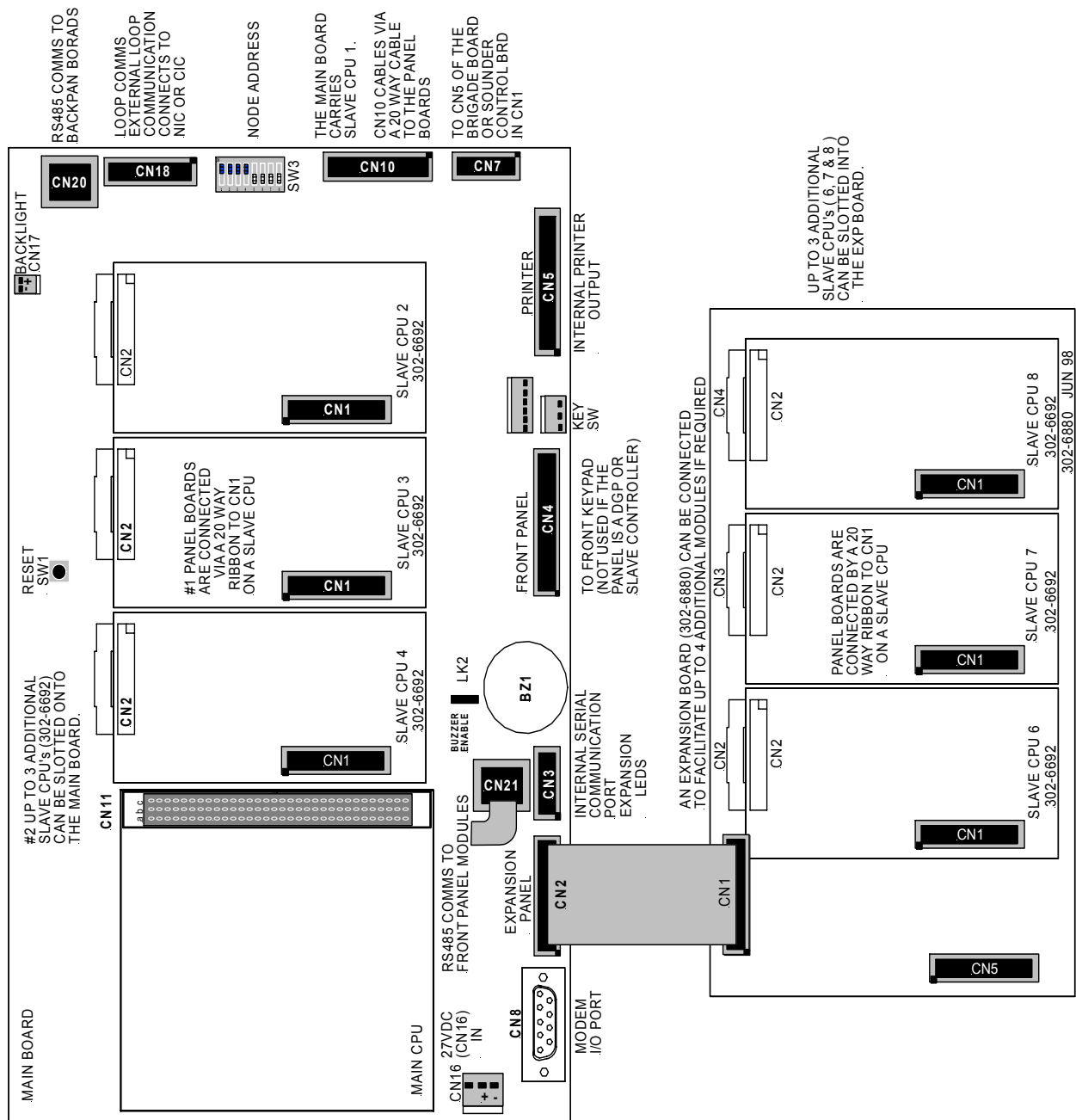


Figure 4: Single Controller Board with Expansion Board

5 Placing The Basic System Into Operation

5.1 Unpacking

Carefully unpack the **FireFinder™**.

The package should include:

- **FireFinder™** Fire Alarm Control Panel
- An Operators manual
- 003 keys

5.2 Anti-Static Precautions



To prevent damage to components, modules and boards, anti-static precautions **MUST** be observed while performing any task within the FACP. The same applies to those situated in the field

5.3 Working On The System

Prior to unplugging any connector, connecting or disconnecting any wiring, removing or replacing any module or board ensure that both the Mains and Batteries have been isolated to prevent damage to panel components.

5.4 The Cabinet

Features:

- The cabinet is available in three different styles. Each style has the capability of being either surface or flush mounted. With flush mounting though a surround is required.
- Normally painted Arch White Ripple. Other colors are available on request.
- The inner and outer door hinges are mounted on the left-hand side of the cabinet which allow the doors open to an angle of 100°. Locking is normally keyless though keyed entry is available on request.
- Knockouts are positioned at the top and rear of the cabinet to simplify cable entry.

5.5 Mounting The Cabinet



Note: It is recommended the cabinet should be installed in a clean, dry, vibration-free area.

Open the front door. Use the keyhole mounting holes in the top corners and in the lower middle of the unit to mount it on the wall. Cables to connect the system to its external actuating devices are brought in through the knockouts on the top or bottom of the cabinet.

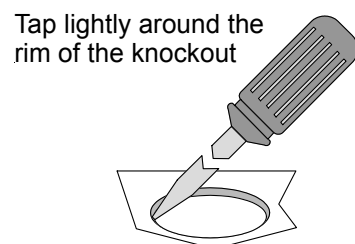
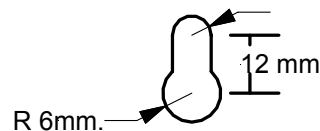
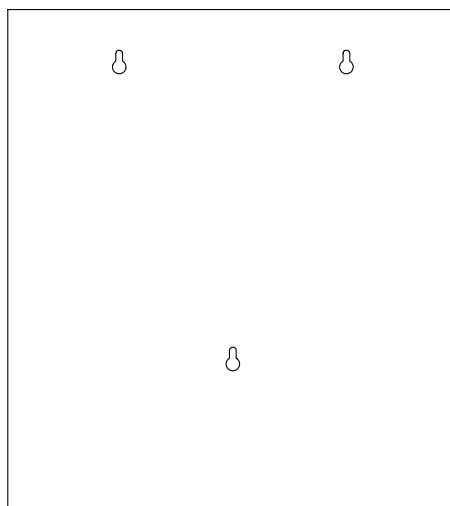


Figure 5: Example SP1X Back Pan Mounting Hole & Removing Knockouts

5.6 Operational Parameters

Temperature:	-5°C to + 55°C
Humidity:	25% to 75%
IP Rating	IP51
Maximum Number of Devices per Loop:	126
Maximum Number of Devices per Conventional Zone:	40
Cable Loop Characteristics:	2 core. 1.5 to 2.5mm ²
Power Supply Output Voltage:	27V (Set to 27.2V)
Power Supply Output Current:	2Amp, 5.6Amp or 18Amp
Power Supply Input:	85 - 240V AC
Panel Current Draw:	450 mA (min)
Battery Type and Capacity:	2 x 12V sealed lead-acid batteries (capacity is determined by the installation configuration and supplementary documentation Power Supply and Battery Calculation).
Minimum Operating Voltage:	19.2 V

5.7 Cabling Recommendations

Conventional Zones

Cabled in red Twin Plastic Sheath (TPS) or fire rated Radox or approved equivalent.

Analogue Loop

Two core cable. The minimum cable size is 0.75mm², the maximum loop resistance is 50 ohms and the maximum loop distance is 2km.

RS 422 Loop

Two twisted pair screened (4 core) cable originating from FACP extending through the protected areas and returning to the FACP.

Cable Specifications

Capacitance of 100 picofarads per metre or less

Resistance of 100 milliohms per metre or less

Impedance of loop typical 100 to 120 ohms

Maximum distances between modules 1.2km providing cable meets above specifications.

Recommended cable type

Belden 8132 or 9842 (non fire rated)

Radox FR Communication 0.75mm 1 pair (fire rated) x 2

LCD Repeater

Two by two twisted pair shielded cable (4 core) plus 2 core power, or local supply. Maximum distance between LCD mimic panel and FACP. is 1.2km.



Note: If the LCD operates in a redundant path mode the total cores including power is 10. The preferred cabling method in this case is 1 X 2 pair twisted shielded cable (4 core) and 1 X two pair twisted shielded cable (4 core) plus 2 core power

LED Mimic (RS485)

Two core twisted shielded cable (No return loop) plus 2 core power or local supply. Maximum distance between each LED repeater card and FACP. is 1.2km.

Recommended Cable Type

Hartland HC2335

Belden 9841

Radox FR Communication

Fire Alarm Bell Connection
Two core 1.5mm² PVC sheathed MIMS (**M**ineral Insulated **M**etal **S**heathed) to the bell location.

Brigade Connection Via Telecom
Two core 1.5mm² PVC sheathed MIMS from the FACP to the Telecom MDF.

RJ45 Multi-drop Serial Port

5.8 Power Supplies and AC Mains Installation

AC Mains will be connected to either a 2 Amp, 5 Amp or 18Amp 27 volt supply. These supplies will be either mounted in the upper or lower right hand corner of the cabinet with the Brigade Board mounted above or below. The wiring should enter the cabinet through the nearest knockout entry hole on that side. See the following diagrams for the actual wiring and fusing details for each supply.

Common Power Supply Features & Specifications

- High efficiency, low working temp.

➤ Universal AC input/ full range

➤ Short circuit/ over load

➤ Built in EMI Filter and PFC Circuit

➤ Over voltage protection
- High efficiency; low ripple noise

➤ Soft start with limiting AC surge current

➤ 100% full load burn-in test

➤ Remote control on/off (option)

➤ Over temp. protection (option)
- Input Voltage: 85 to 264 VAC

➤ Input Freq 47 to 63Hz.

➤ PFC 0.95~230VAC
- Tolerance at 27V +/- 1%

➤ Load Regulation +/- 0.5%

➤ Line Regulation +/- 0.5%

Power Supply Specifications

Type No	Output	Tolerance	R & N	Efficiency
S-60-27	27V @ 2.2A	± 1%	150mV	79%
SP-150-27	27V @ 5.6A	± 1%	150mV	84%
SP-500-27	27VDC @ 18A	± 1%	200mV	86%

Connecting the Mains Power to the Power Supply

Terminate the mains power to the 240 VAC switch terminal block as shown below.

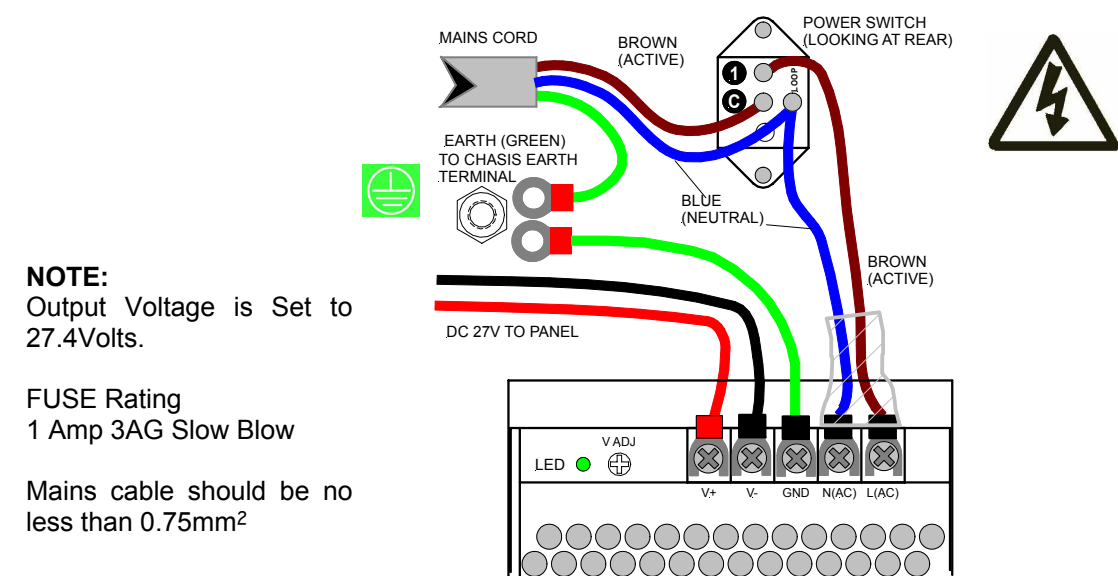


Figure 6: Mains Power Connection to the 2 Amp Power Supply

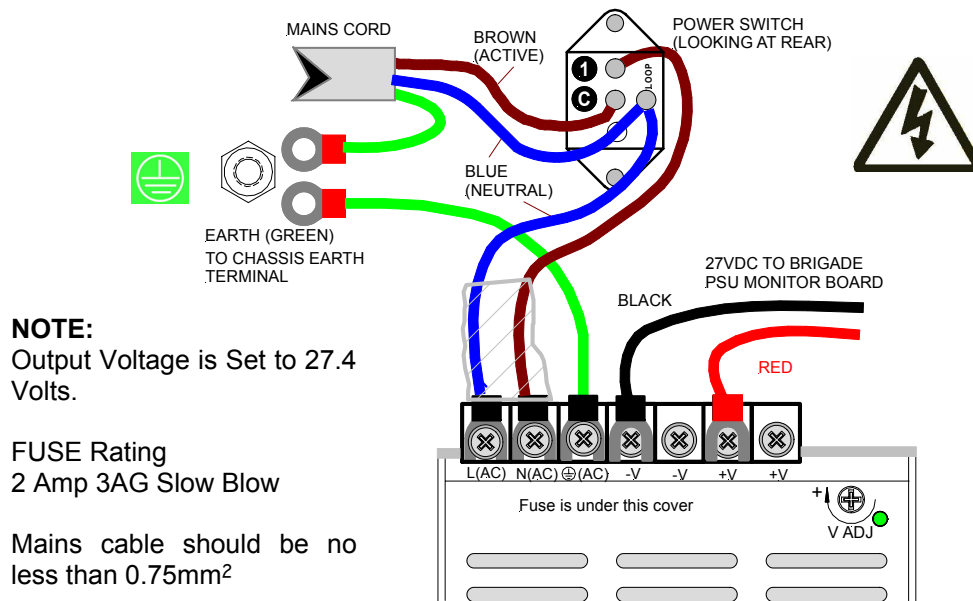


Figure 7: Mains Power Connection to the 5 Amp Power Supply

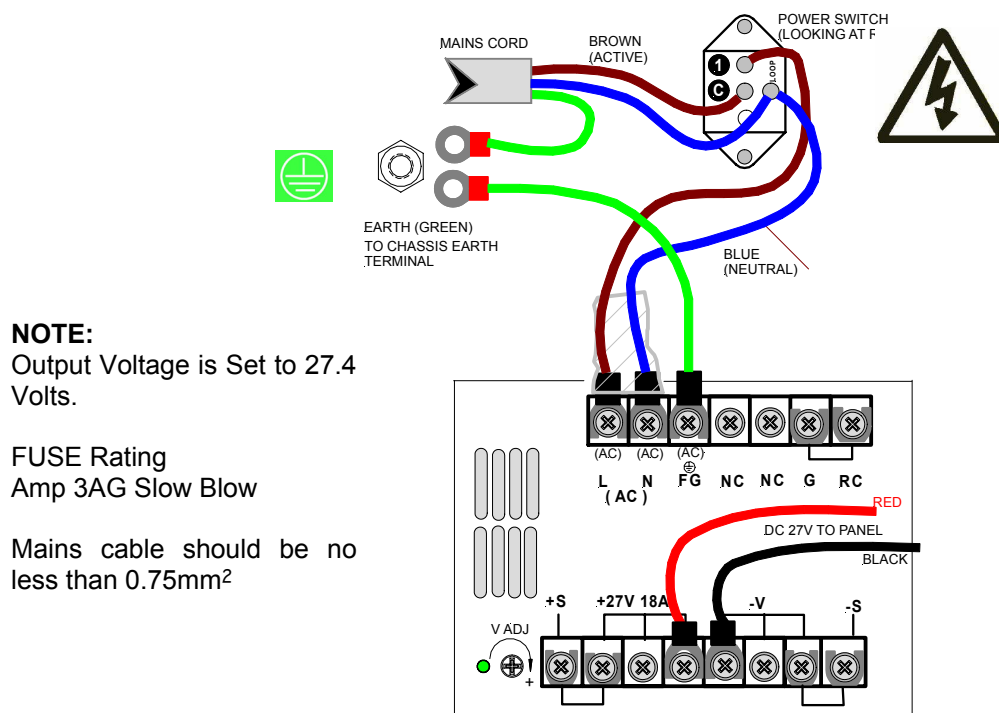


Figure 8: Mains Power Connection to the 18 Amp Power Supply

5.9 Current Limiter, Fuse Board

The Current Limiter, Fuse Board provides protection for the boards, cards and other 27VDC distribution within the FACP when the 18Amp power supply is used. The four LED's associated with the board indicate that 27VDC is available at each of the outputs CN1 – 5.

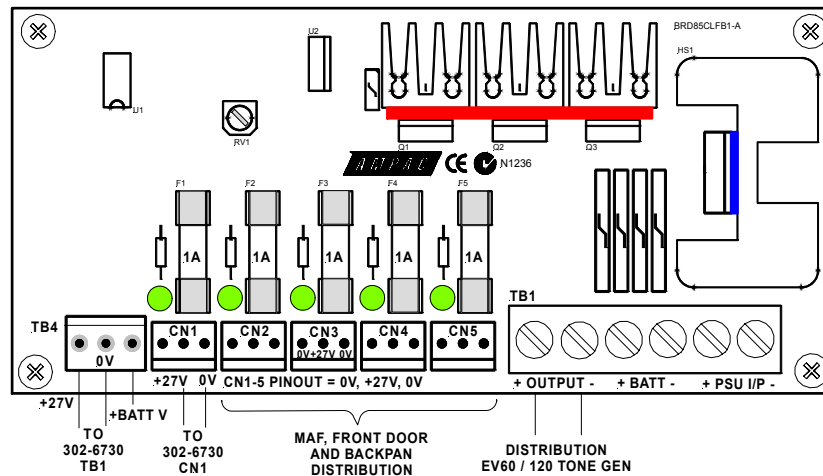


Figure 9: Current Limiter Fuse Board

Connecting the Mains Earth

1. All earth cabling shall be terminated to the panel Chassis Earth Terminal in a star configuration.
2. The earth cable closest to the cabinet body shall have an M4 SPW beneath the lug then an M4 SPW and M4 nut.
3. Each additional earth cable shall be terminated with an M4 SPW and M4 nut.
4. An additional M4 nut and M4 SPW are fitted to the Chassis Earth Terminal for installers to connect their Mains Earth.

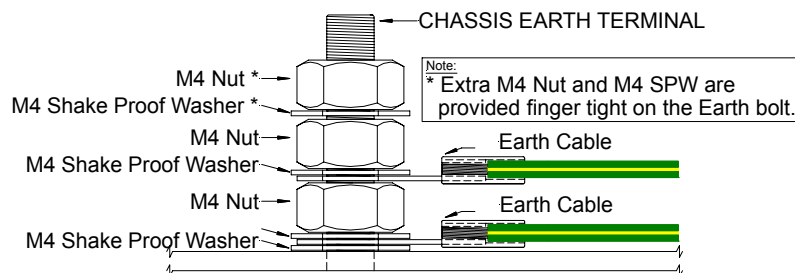


Figure 10: Panel Earthing

5.10 Brigade / PSU Monitor Board 302 - 6730

The Brigade / PSU Monitor Board monitors and controls the power supply, battery charging, monitored / un-monitored inputs, outputs and the 7 relay outputs.

Providing the Power supply has adequate capacity monitored Bell/Sounder O/P's are capable of driving 2 X 2Amp circuits. Each circuit, terminated in a bell/sounder or not, requires a 10K EOL resistor to give a system normal indication. If either circuit is open or shorted, the panel buzzer will sound and a Sounder Fault will be indicated on the Panel. Monitoring is achieved using a small reverse polarity current. For this reason it is necessary to ensure that all alarm devices are fitted with a series diode (1N4004 recommended) and correct polarity is observed for both the output and the sounders they are connected to.

Relay outputs marked NO, C and NC are voltage free relay contacts. Outputs marked +ve and -ve are fitted with resistors (10k) to allow the circuit to be monitored. If these outputs are un-used they must be terminated at the terminal block or turned off in **ConfigManger**.

For all outputs combined, total output current is 2A (if 2.5A power supply is being used).

Once all the field devices are installed and the wiring has been correctly terminated the **FireFinder™** is ready to turn on. Turn the Mains power on, and connect the batteries observing correct polarity. The green power on LED should be illuminated.

OUTPUT RATINGS

TB	Function	Type of Output	Fuse	Relay
3	Bell 1	2 Amp Fused	F2	RL 1
	Bell 2	2 Amp Fused	F3	RL 1
4	Plant (Aux) Monitored	1 Amp Fused	F4	
	Plant (Aux) Non-Monitored	1 Amp Voltage Free Contacts		RL2
5	Warn Sys (Evac) Monitored	1 Amp Fused	F5	
	Warn Sys (Evac) Un-Monitored	1 Amp Voltage Free Contacts		RL3
6	Fault Monitored	1 Amp Fused	F6	
	Fault Non-Monitored	1 Amp Voltage Free Contacts		RL 4
7	Isolate	1 Amp Voltage Free Contacts	RL6	
8	Alarm	1 Amp Voltage Free Contacts		RL 5
9	Valve Monitor	1 Amp Voltage Free Contacts		RL 8
10	Batt Fail (Relay Normally Energised)	1 Amp Voltage Free Contacts		RL 7
1	Battery Output	Thermistor Protected		
2	Aux Power Output 1	1 Amp Fused Not Monitored	F7	
	Aux Power Output 1 – EV40 use	3 Amp Fused Not Monitored	F7	
	Aux Power Output 2	1 Amp Fused Not Monitored	F8	

Fuse Information

1. All fuses are of the Glass M205 style.
2. F1 is 6.3A
3. Voltage Free contacts are rated at 1A @ 30V

Back EMF Protection

- i** *Inductive loads fitted to the Brigade PSU Monitor Board MUST be fitted with “Flyback” diodes at the load for back EMF protection.*

Transient Protection

- i** *Recognised transient line protection methodologies at the FACP and the load must also be considered when connecting any control devices to the outputs be they in close or remote proximity to the FACP.*

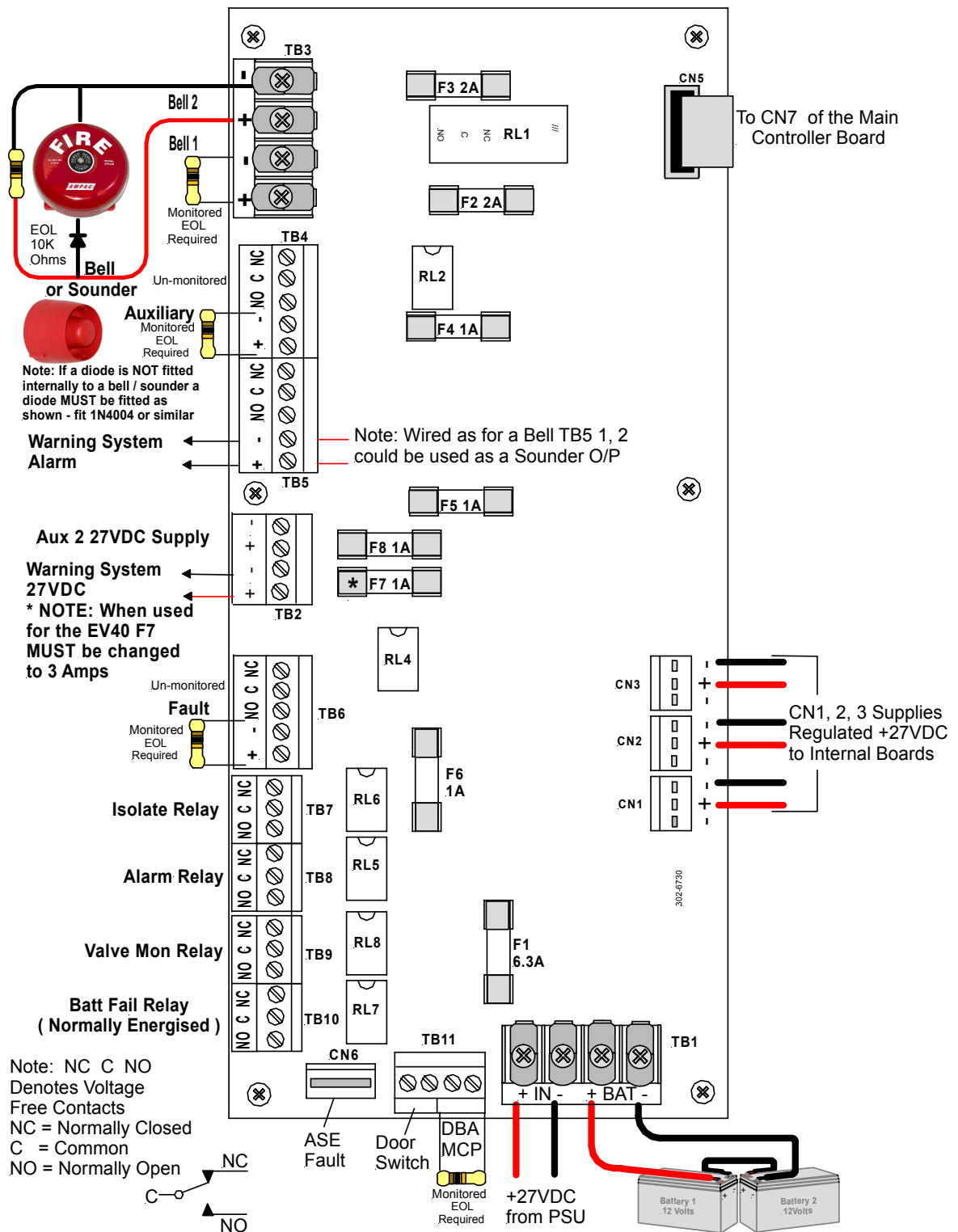


Figure 11: Brigade / PSU Monitor Board Layout

Note: When connecting to the Brigade PSU Monitor board transient and “Flyback” (Back EMF) protection methodologies Must be applied.

5.11 Brigade / PSU Monitor Board & Battery Connections

A **FireFinder™** can be supplied with two (2) 12 volt batteries. The batteries should be placed into the bottom right hand side of the cabinet. A red and black lead coming from TB1 on the Brigade Board will be clearly seen in the same area, this lead is to be connected to the batteries red to positive and black to negative once the system is operating on Mains supply.

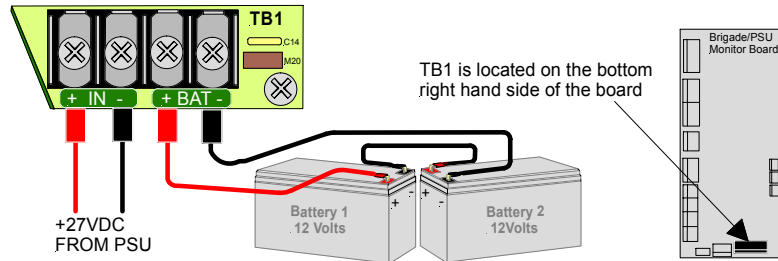


Figure 12: Battery Connection To The Brigade Board

5.12 Brigade / PSU Monitor Board Auxiliary 27 Volt Power

Two (2) 1 Amp outputs are available from TB2 terminals 1+ (plus) and 2- (minus) or 3+ and 4- on the Brigade Board. It is important to note these outputs are not monitored.

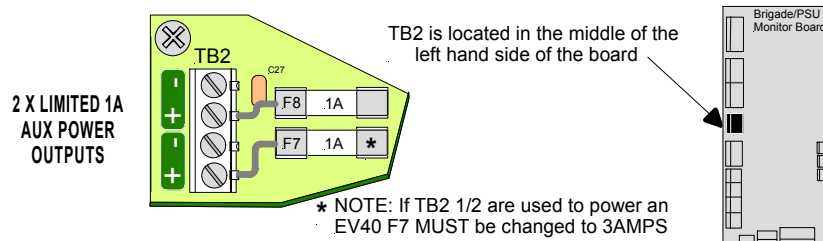


Figure 13: Auxiliary 27v Power Output

5.13 Brigade / PSU Monitor Board DBA / MCP & Door Switch Connections

If used the DBA / MCP & Door Switch Connections are shown below.

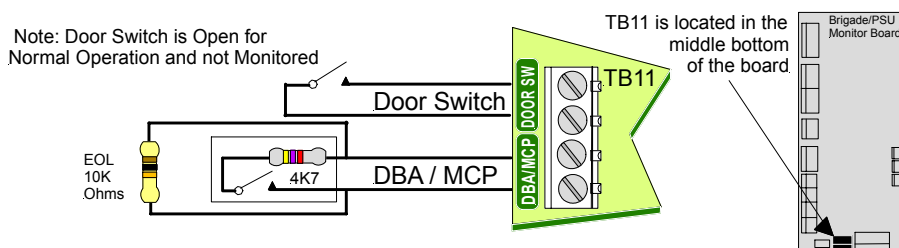


Figure 14: DBA /MCP and Door Switch Wiring

5.14 Brigade PSU Monitor Board ASE Fault Brigade Box Connection

If an ASE Brigade Box is included in a system CN6 is used to convey a fault in the box to the FACP.

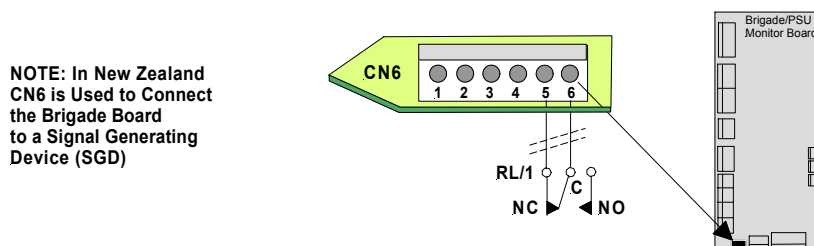


Figure 15: ASE Fault Switching

5.15 Connecting a Bell / Sounder to the Brigade / PSU Monitor Board

Sounders are connected to the Brigade / PSU Monitor Board as shown below. If more sounders are required, the Sounder / Bell Control Board (302-7420) must be used.

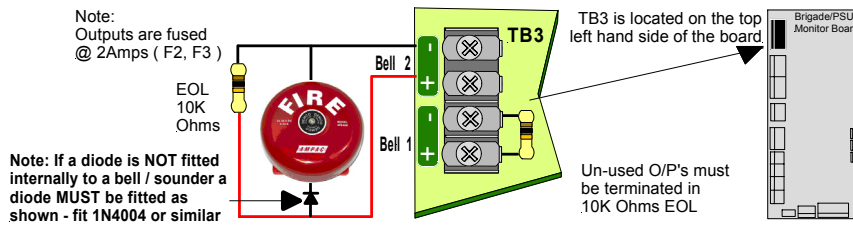


Figure 16: Sounder / Bell Wiring (Diagram 1)

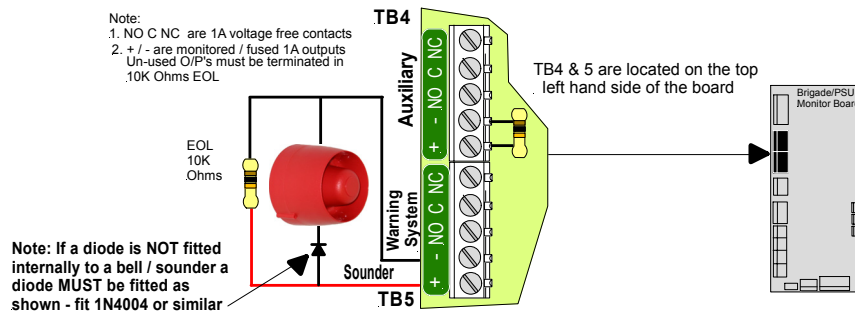


Figure 17: Use of Warning System Control for Sounder / Bell Wiring (Diagram 2)

5.16 Warning System Connections

Warning systems such as the EV20 and EV40 are connected to the Brigade / PSU Monitor Board as shown below.

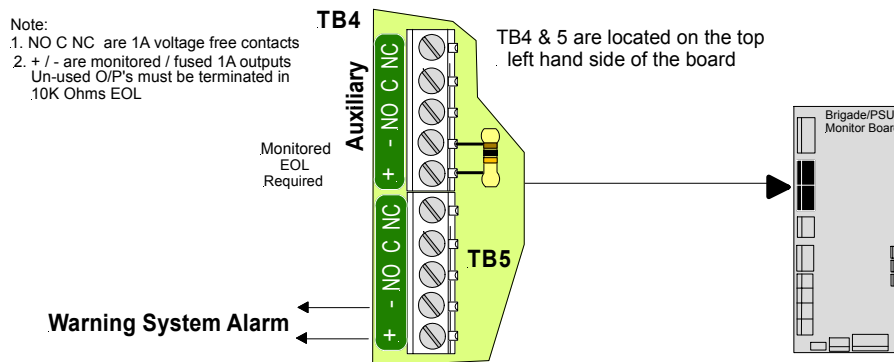


Figure 18: EV20 / EV40 Warning System Cabling (Alternate to Sounder / Bell Wiring)

5.17 Brigade / PSU Monitor Board Relay Output Connections

The relay contacts are connected as shown below.

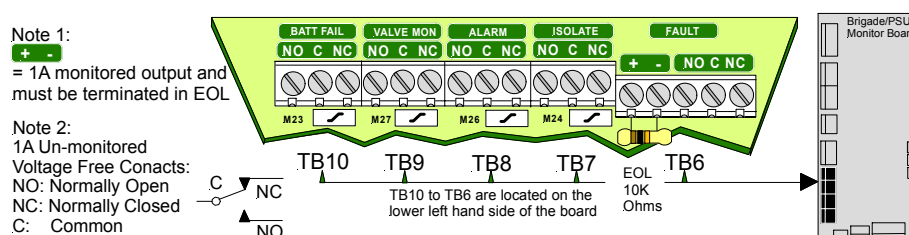


Figure 19: Relay Outputs

5.18 Main Board BRD85MBA

The Main Board is the " heart " of the FACP and carries the devices for interconnecting to all the other Boards, a buzzer for auditory indication, the backlight power supply for the LCD and CPU Reset.

The Main CPU is mounted on this board and connected to it by CN11. The main connection board then provides interfacing to

- > Up to 4 Slave CPU's
- > A printer
- > A Modem/Graphics Output
- > An Expansion Panel
- > An Internal serial bus
- > An External communication bus.

CN8 provides a serial data (RS232) port for interfacing to the outside world eg modems. This facility is implemented via U15.

U21 provides the real time clock for the panel.

U19 provides non volatile memory in the form of an EEPROM.

The board also provides a data bus for the BRD85CPU processor.

RV1 – LCD contrast adjust

Supply and Current = 27VDc @ 120mA

Connections

CONNECTOR	CONNECTS TO
CN1	Keyswitch Input
CN2	Expansion Panel
CN3	Serial Communication Port
CN4	Front Keypad
CN5	Printer
CN6	Misc
CN7	Brigade Output
CN8	Modem
CN9	External Buzzer Output
CN10	Slave CPU output 1
CN11	Main CPU
CN12	LCD Expansion Lead
CN13	Slave CPU connection
CN14	Slave CPU connection
CN15	Slave CPU connection
CN16	27VDC in
CN17	To LCD Backlight supply
CN18	External Loop Communication
CN19	LCD Characters
CN20	RS485 Communications Port 1
CN21	RS485 Communications Port 2

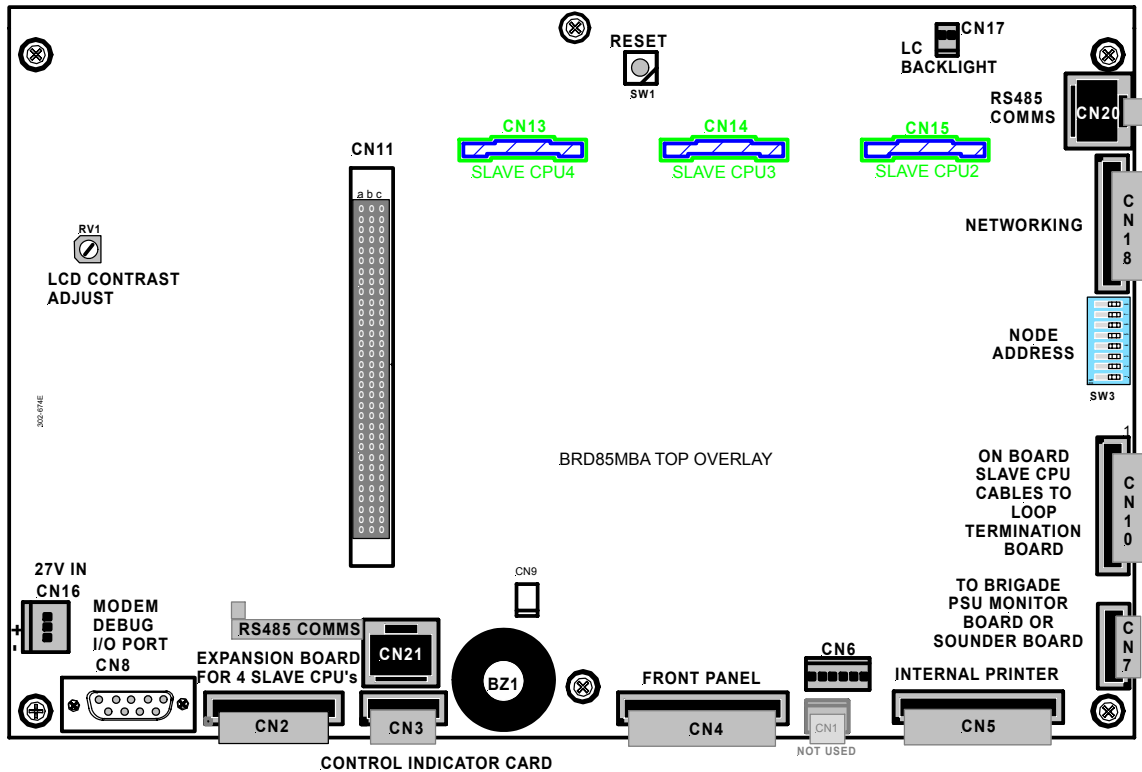


Figure 20: Main Board Layout with no Main CPU or Slave CPU's

5.19 Front Panel Board 302 -690

The Front Panel Board provides the buttons used to control the FACP as well as all LED indications. All LED's are surface mounted and the buttons are embedded within the board. The LCD is viewed / protected by a clear perspex screen.

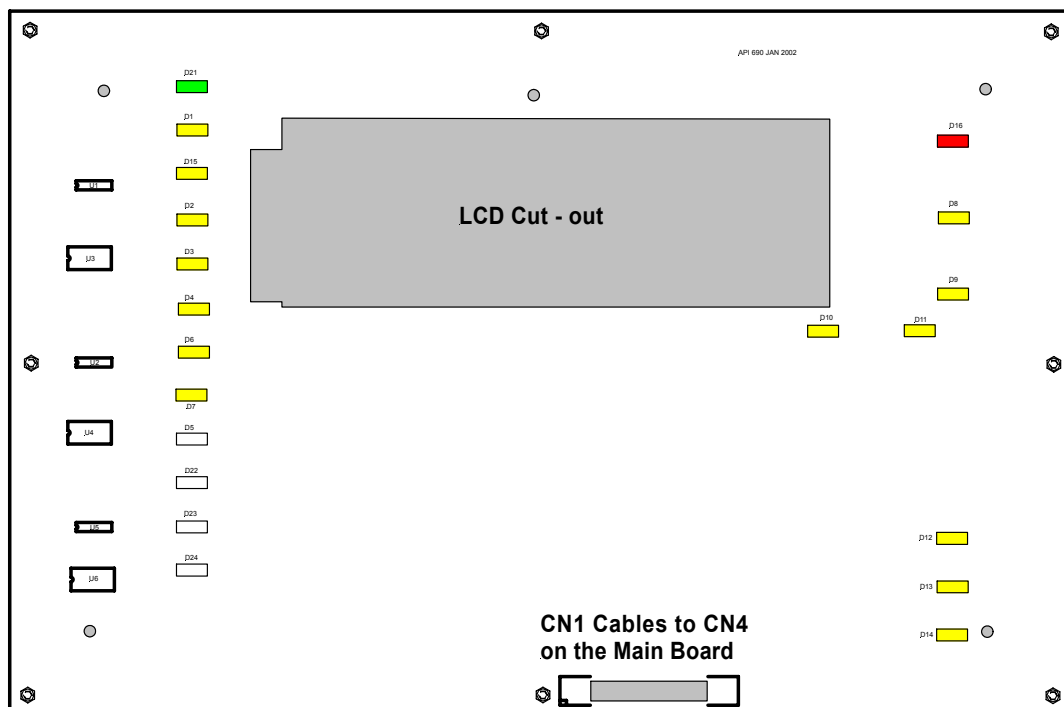


Figure 21: Front Panel Board

5.20 Main CPU BRD85CPU

The Main CPU holds the main central processing unit for the FACP.

- BRD85CPU is a 4-layer surface mount board
 - The processor (U1) is a Motorola MC68302, running at 20MHz.
 - The external data bus is 16 bits wide.
 - The board has 256 Kbytes (128K x 16) of EPROM (U2,U3).
 - 2Mbytes (1M x 16) of FLASH (U6,U9).
 - 2Mbytes (2M x 16) of static RAM (U4,U5,U16,U17).
 - U8 is a programmable logic device which implements control signal timing and decoding.
 - External address, data and control lines are buffered by U10, U11, U13, U14 and U15.
 - U7 is a watchdog control and will reset the processor if there as an error in software execution.
 - Two sockets (U2 and U3) are provided for 27C010 EPROMS.
- U2 provides the even bytes. (D0 toD7) and U3 the odd bytes (D8 to D15)

Connections

CONNECTOR
CN2

CONNECTS TO
The Main Board BRDMBA CN11

Board Overlay

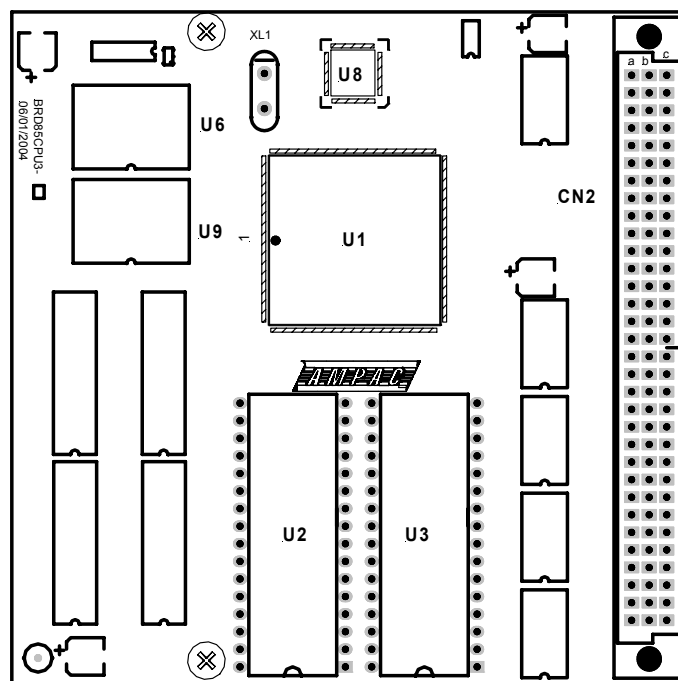


Figure 22: The Main CPU Board PCB Layout

5.21 Slave CPU 302-669

The Slave CPU (Central Processing Unit) provides the interfacing signals and I/O's required to allow the FACP to connect / communicate to a variety of termination boards.

A single chip micro controller U1 controls all operations of the FACP Slave CPU. This device contains the control program within Read Only Memory (ROM).

Communication to the main system is via an eight bit bi-directional bus (CN1). Integrated circuits U5, U3 and U7 provide buffering and data latches that allow data flow between the Main and Slave CPU's. The buffers hold one output byte and two input bytes.

CN1 provides the interconnection to the Termination Board. Within CN1 are ten analogue input lines, two input/output lines, two current loop outputs (RS422) and one current loop input (RS422).

All analogue inputs are de-coupled then fed to an eight-bit analogue to digital converter (ADC) U4. The data from the ADC is sent via a serial peripheral interface to the micro controller U8.

The current loop inputs and outputs are used to provide various signals according to the board connected. The signals provided can be serial peripheral interface clock and data signals or full duplex asynchronous data and a timing output. U6 provides the signal multiplexing and buffering required to switch between different functions.

Automatic Termination Board Sensing

A unique feature of the Slave CPU is its ability to automatically sense the type of board it is connected to without the user having to configure the board to suit. Board sensing is done by measuring the voltage on analogue input ten (CN1-10), denoted *Type Voltage*. Each termination board provides a unique predefined voltage. After the Slave CPU has determined the board type the Slave CPU will set the appropriate operating conditions, signal the Main CPU of the installed type and wait for the Main CPU to inform the Slave to begin executing the program.

Connections

Connector	Connects to
CN1	302-670, 302-671 and 302-672
CN2	Main Connection Board (BRD85MBA)

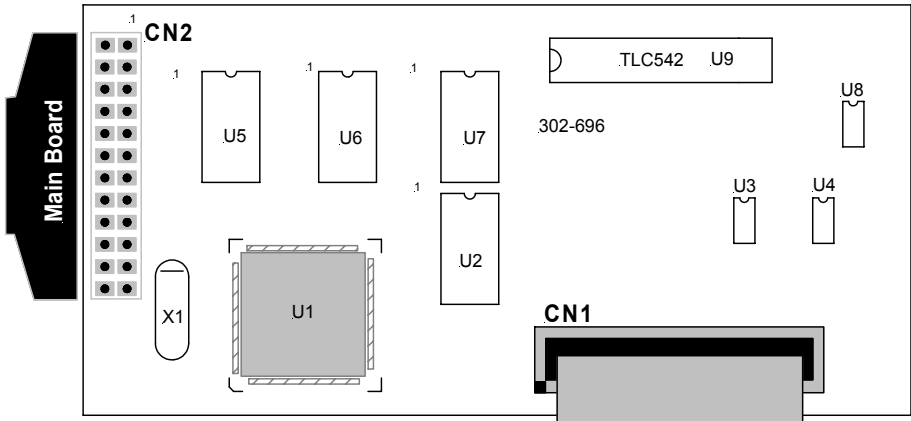


Figure 23: Slave CPU Board

5.22 RS232 Modem / Programming / Debug Interfacing

The modem I/O port is a DB9 connector (CN8 situated on the lower left hand corner of the Main Board BRD85MBA) that is normally used for programming of the FACP via the serial port of a PC or Laptop. The Controller also has the required hand shaking to support connection to a Modem, thus allowing the FACP to be programmed from a remote site that has an established telephone connection. This allows the system software to be upgraded by simply transmitting a file via the serial port of the PC or Modem external to the FACP. Diagnostic facilities are also available via the same connection.

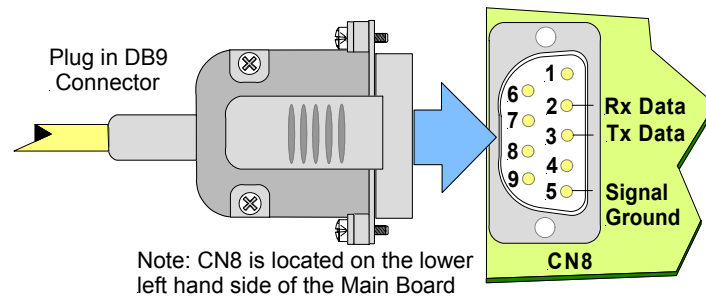


Figure 24: DB9 Connector CN8 as Mounted on the Main Board

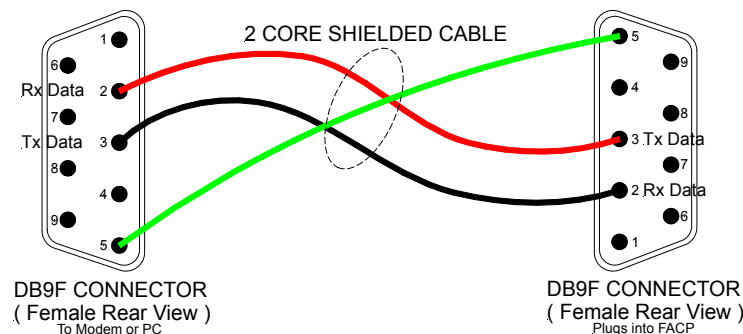


Figure 25: Modem / Programming / Debug Cabling

5.23 Ancillary Services

The FACP has been designed such that detectors and/or call points, in addition to giving an alarm and calling the fire brigade, will close or open circuits of ancillary services by means of relays or similar devices.

Examples of these services are:

- (a) actuation of fixed fire-extinguishing systems;
- (b) closing of windows, smoke and fire doors,
- (c) control of ventilating systems;
- (d) covering of tanks containing flammable liquids and controlling their valves to isolate the contents from direct contact with the fire, etc.

To facilitate safe maintenance of these services an option is available that allows for the isolation and visual indication of the disablement of ancillary services that does not affect the normal operation of the fire alarm system.

To ensure power to the fire alarm system is not prejudiced in any way, power for the ancillary services must be included in the calculation of the power supply and battery capacity.

5.24 Conventional Zone Board 302 - 6710

Under the control of a Slave CPU the 302-6710 Conventional Zone Board provides the interface between it and the external conventional devices.

16 Conventional zones can be connected to TB4 to TB1. All un-used zone connections MUST be terminated in an EOL resistor of $3K3\Omega$ as shown below.

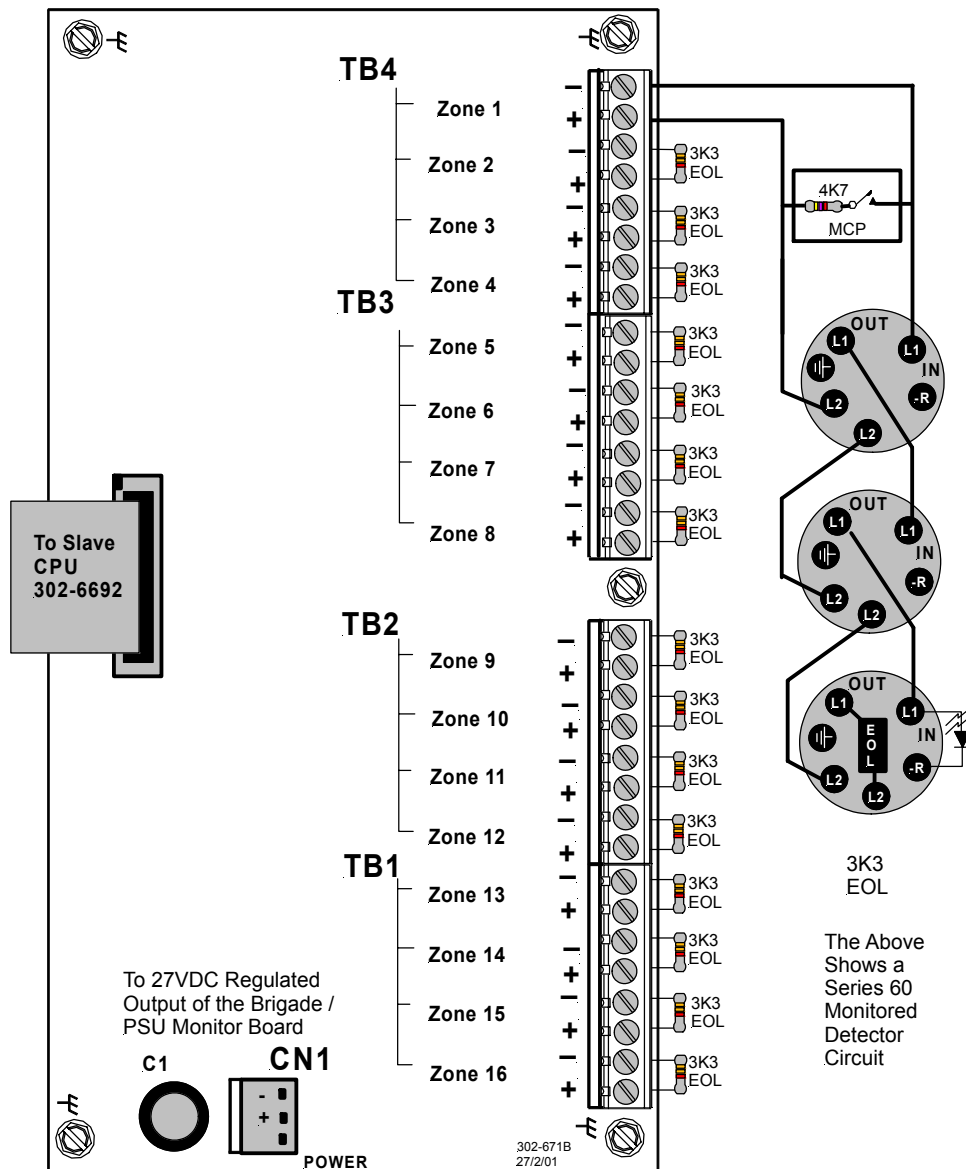


Figure 26: Conventional Board Layout

Alarm Zone Facilities (AZF) Parameters

Maximum Line Voltage: The maximum line voltage is limited to the system voltage. With a nominal battery voltage of 27V, system voltage and therefore open circuit voltage would be approximately 26.4V.

5.25 Addressable Loop Termination Board 302 - 7350

The Addressable Loop Termination Board acts as the interface between the external addressable devices and the control and monitoring functions of the **FireFinder™**. Each board provides terminations for two loops. One slave CPU is required per loop. The 2 Addressable loops are connected to TB1 and TB2.

Note: Apollo devices L2 is +ve (positive), L1 is -ve (negative)

Connect the XP-95 / DISCOVERY loop to the panel as shown below.

AMPAC strongly recommend that the **LoopManager** test set is used to check that the Apollo loop has been correctly installed and commissioned before connecting it to the **FireFinder™**.

Loop Parameters

- 126 Apollo Devices
- 250mA Current Max
- S/C protection circuitry activates at approximately 300mA

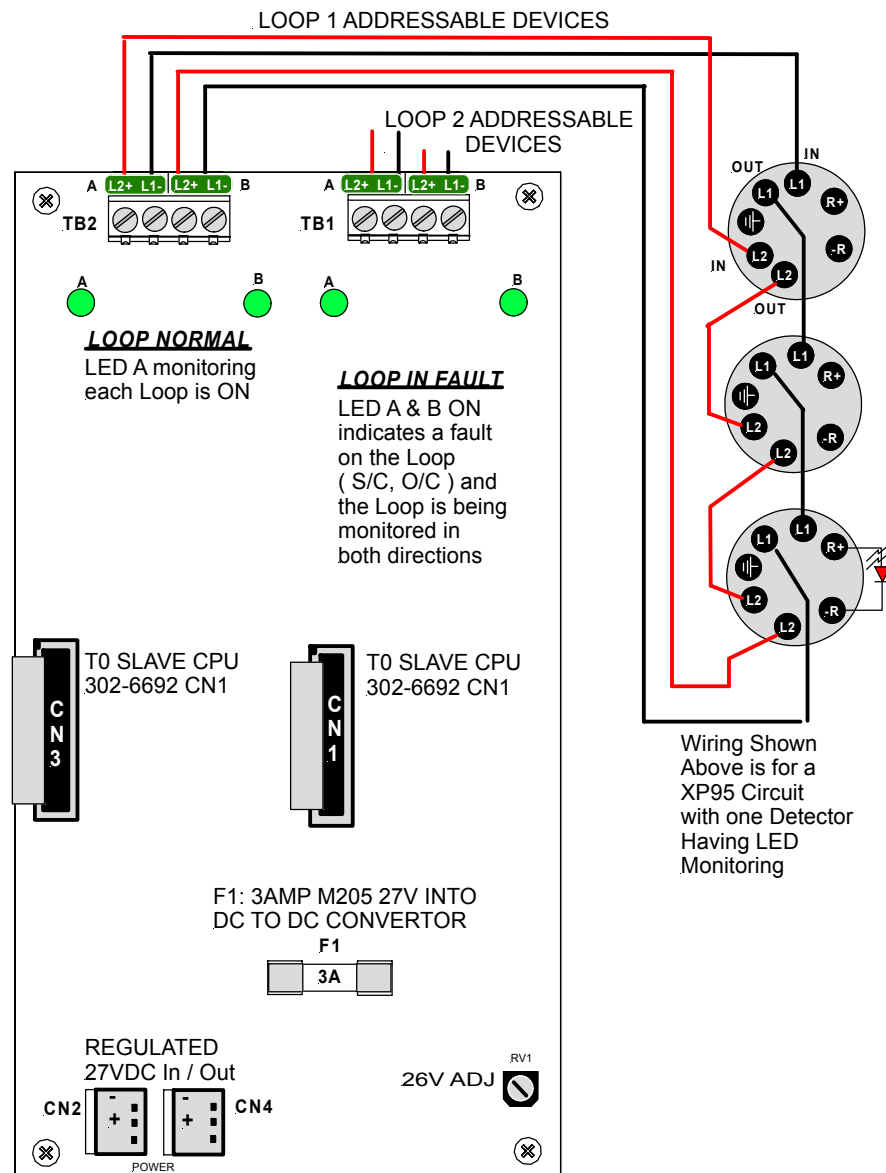


Figure 27: Loop Termination Board

6 ***Expanding the FACP with Compatible FireFinder™ Boards***

 Numbers in *Italic* are *Panel Add On Order Codes*

Module / Function.....	Order Codes	Max Number Off
• 16/16 Input / Output Board	(302-6720) (<i>SP1X: 159-0113, SP8X: 159-0051, SP16X: 159-0009</i>)	8 per Slave CPU
• 8 Way Relay Board	(302-6760) (<i>SP1X: 159-0013, SP8X: 159-0013, SPX16X: 159-0015</i>)	16 per Slave CPU
• 16 Way Input Board	(302-6770) (<i>SP1X: 159-114, SP8X: 159-0010, SP16X: 159-0011</i>)	8 per Slave CPU
• Serial Relay Board	(302-7320) (<i>SP1X: 159-0079, SP8X: 159-0072, SP16X: 159-0072</i>)	16 per Controller
• Fire Fan Module / Fire Fan Termination Board.....	(159-0103 H/W) (<i>SP1X: 159-0103, SP8X:159-0104, SP16X: 159-0119</i>)	15 per Controller
• Fire Fan Module (Loop Driven)	(159-0105)	
• General Indicator Card [32 Zone Alarm]	(85BRDGIBB) (<i>SP1X: 159-0106</i>) (<i>SP8X: 159-0089, SP16X: 159-0120</i>)	* 16 * <i>Configuration dependant</i>
• General Indicator Card [16/16 Zone Alarm / Fault]	(85BRDGIBB) (<i>SP1X: 159-0107</i>) (<i>SP8X: 159-0108, SP16X: 159-0121</i>)	* 16 * <i>Configuration dependant</i>
• General Indicator Card (Amber LED's)	SP1X: 159-0123, SP8X &16: 159-0124	
• Printer	(TPUP-AT) (<i>SP1X: 159-0084, SP8X: 159-0110</i>)	1 per Controller
• Sounder/Bell Controller Board 8 X 1A per Circuit.....	(302-7420) (<i>SP1X, SP8X: 159-0071</i>)	8 per Controller
• Sounder/Bell Controller Board 4Volt free, 4x1Amp	(302-7421) (<i>SP1X, SP8X: 150-0069</i>)	8 per Controller
• Agent Release Module / Agent Termination Board	(BRD25ARB-A) (<i>SP1X:159-0099, SP8X: 159-0100, SP16X: 159-0117</i>)	8 per Controller
• Local Control Station (IP40).....	(BRD25ARB-B) (N/A)	4 per Termination Board
• Expansion Board	(302-6880) (<i>SP8X: 159-0112, SP16X: 159-0022</i>)	1 per Controller
• Expansion Controller.....	(<i>SP16X: 159-0077</i>) (<i>Rack: 159-0067</i>)	3 per Node
• Occupant Warning System – EV20	Factory fit	
• Occupant Warning System – EV40 / 60 / 120	Factory fit	
• Occupant Warning System – EV3000	Factory fit	
• Brigade Devices	Factory fit	

Compatible Networking Devices

• Network Interface Card	(302-7240) (<i>SP1: 159-0053, SP8X: 159-116, SP16X: 159-0053</i>)	1 per Controller
• Controller Interface Card	(302-7250) (<i>SP1X: 159-0054, SP8X: 159-0115, SP16X: 159-0054</i>)	1 per Controller
• LCD Repeater (Supplied Complete)	(302-7200) (<i>159-0044</i>)	Note # 2

 **Note # 1** : This comprises 4 on the Main Controller and 4 on the Expansion Board.

 **Note # 2** : Depends on the configuration and the number of Panels in the System.

6.1 16/16 Input / Output Board 302 - 6720

The Input / Output Board is connected to the slave CPU via CN1 and acts as the interface between the Slave CPU, 8 Way Relay Board and the 16 Way Opto Input Board.

Dependant on the panel configuration a maximum of 8 Input / Output boards can be daisy chained together.

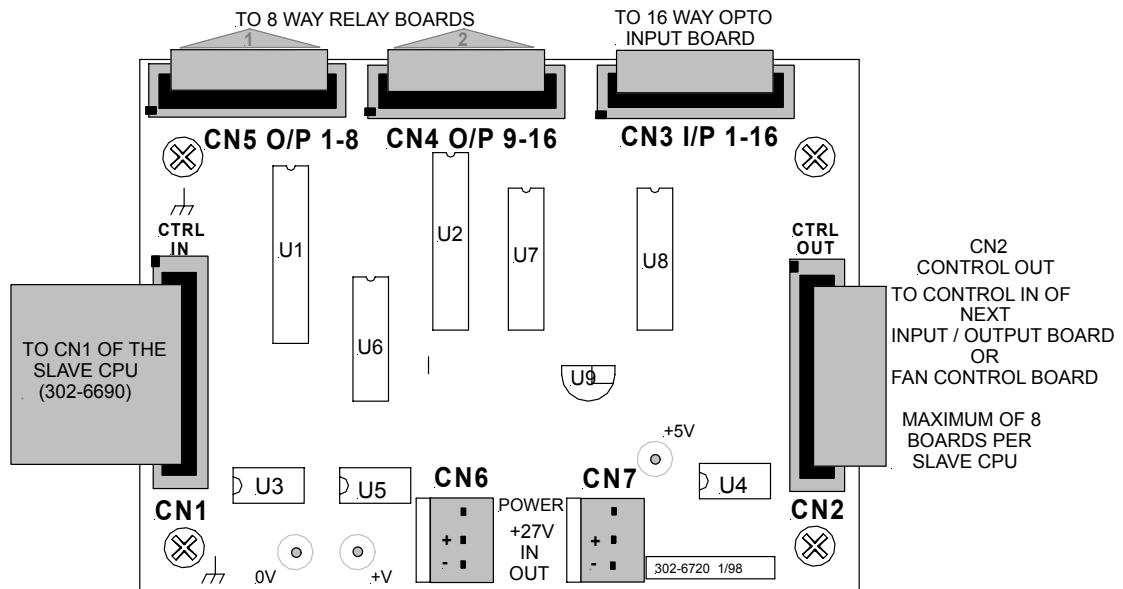


Figure 28: 16 / 16 Input / Output Board

6.2 8 Way Relay Board 302 – 6760 / 1

Relay Outputs: Each 8 Way Relay Board 302-6760 is fitted with either eight 1A, RL1 to 8, (302-6760) or 5A, RL9 to 16, (302-6761) relays with voltage free contacts which can be used for control (eg. releasing doors) or monitoring (eg. driving indicators, door open / closed) purposes.

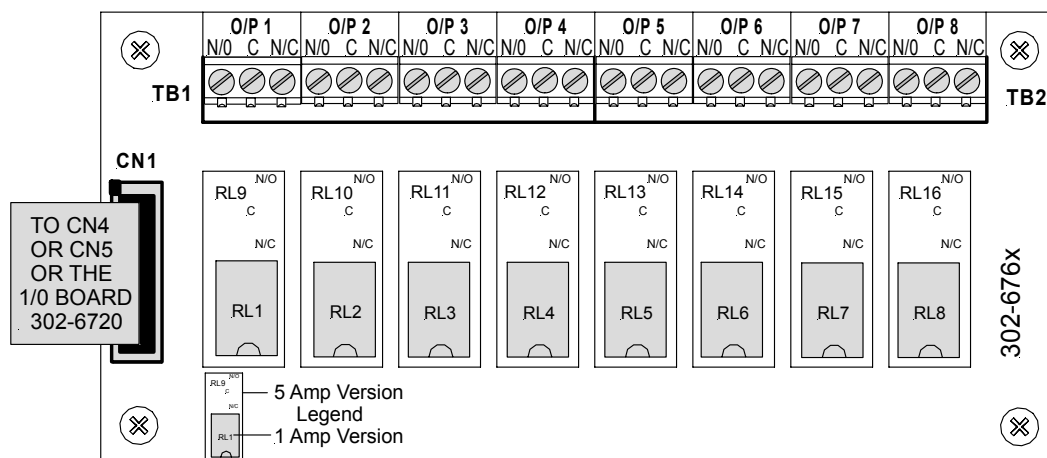


Figure 29: 8 Way Relay Board With 1A Relays Fitted (302-6760)

6.3 16 Way Input Board 302 - 6770

Opto-Inputs: Up to 16 inputs can be connected to the 16 Way Input Board. These inputs are required to be voltage free contacts as shown below.

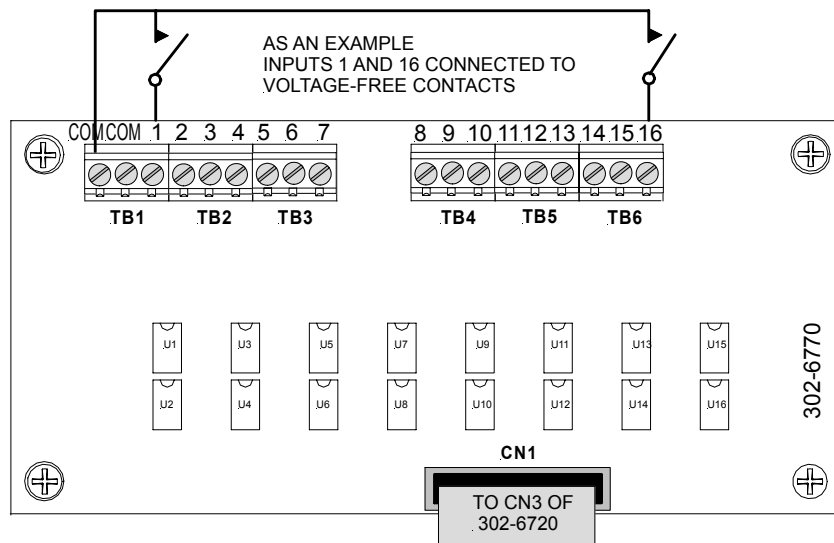


Figure 30: 16 Way Input Board (302-6770)

6.4 Serial Relay Board 302 - 7320

Relay Outputs: Each Serial Relay Board 302-7320 communicates with the Main Controller via the Serial Bus and is fitted with eight 1A relays with voltage free contacts. A maximum of 16 boards can be daisy chained together per Controller.

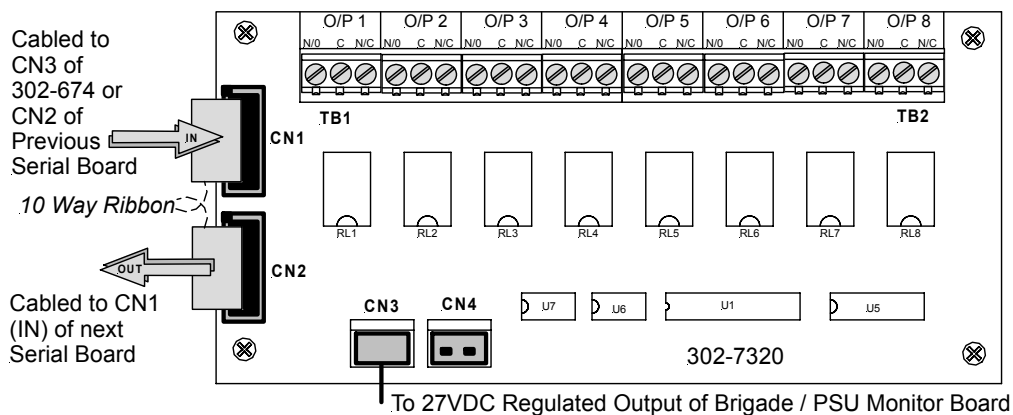


Figure 31: Serial Relay Board (302-7320)

6.5 Fire Fan Module BRD25FCB

The Fire Fan Module has four (4) separate fan controls each having an On, Auto and Off function switch and a set of three (3) monitoring LED's. The LED's indicate the status of the equipment eg. Run, Fault or Stop. The two (2) arrow head keys are used to step up and / or down through the three (3) conditions. A slip in label can also be inserted into the hinged cover for identification purposes.

A loop driven version is also available (159-0105)



Note#: As per AS 1668.1 1991, Clause 14.17.4 lettering on any of the slip in labels must be at least 5mm in height.

Quiescent Current: 13.5mA

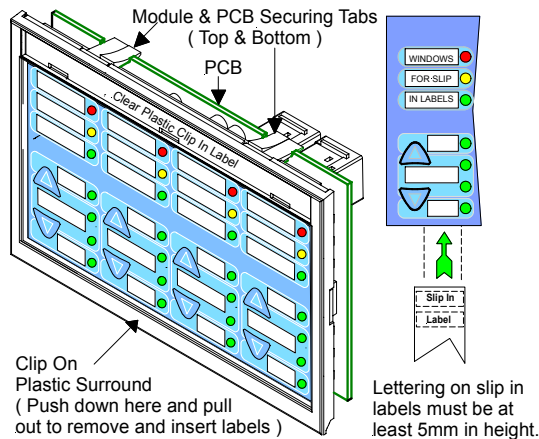


Figure 32: Fire Fan Module Front Panel

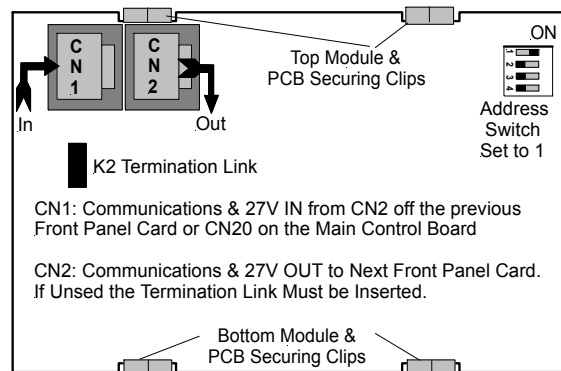


Figure 33: Fire Fan Module PCB Layout

6.6 Fan Termination Board BRD25FTB

The Fan Termination Board interfaces between the Fire Fan Module and the plant/equipment it controls via the 24 volt 250mA Start, Stop, current limited, relay outputs and monitor inputs. Programmable monitoring of the field equipment is achieved using 0 volts as an input level to indicate run, fault and stop conditions of that equipment. Monitoring is programmed in the Function Menu for a 3, 4 or 5 Wire Start / Stop, Run, Fault, Stop & Common functions. The inputs are protected by way of resetable transorbs and resistive / capacitive networks.

Connectors

CN5 Is used for factory programming only and may not be available on all boards.

Terminal Blocks

TB2 – 5 Are used to connect the fan control and monitoring wiring to the board.

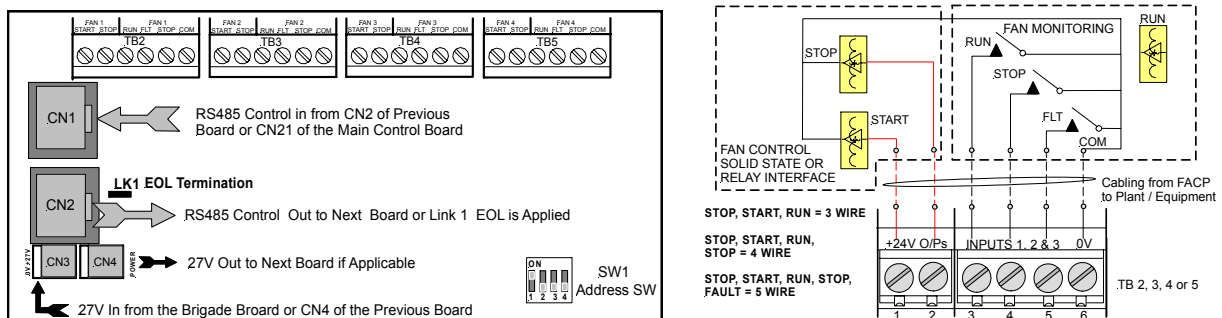


Figure 34: Fan Termination Board Layout and Typical I/O Wiring

6.7 Zone & General Indicator Card

The General Indicator Card (BRD85GIBB) comes in two versions each consisting of a front clip on surround, decal, mounting frame, PCB and is clipped into the front panel of the FACP to provide visual LED indication of; Zones in alarm x 32 [red], or Zones in alarm x 16 [red] / Zones in fault x 16 [yellow].

Each Indicator can identified by way of slip in labels.

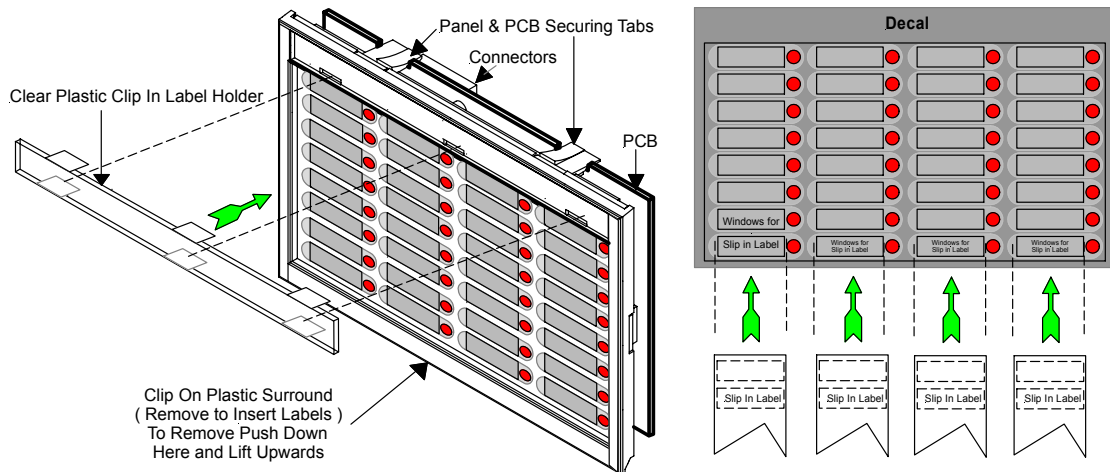


Figure 35: 32 Zone Alarm General Indicator Card

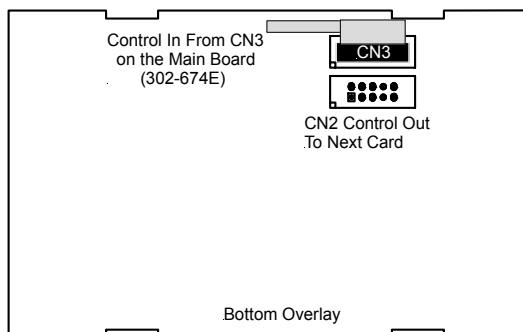


Figure 36: Bottom Overlay

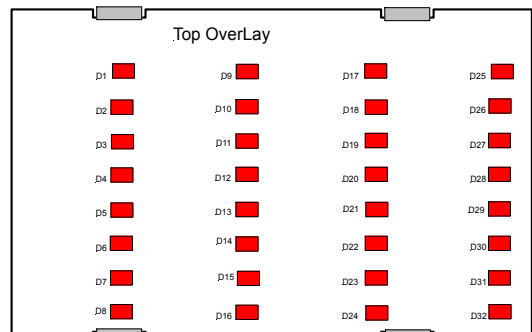


Figure 37: Top Overlay



Note #1: DO NOT USE excessive force to remove any component once it is clipped into position.



Note #2: If the indicator becomes illuminated it remains so until “Reset” is pressed.



Note #3: The indicators are tested by the Lamp Test control.

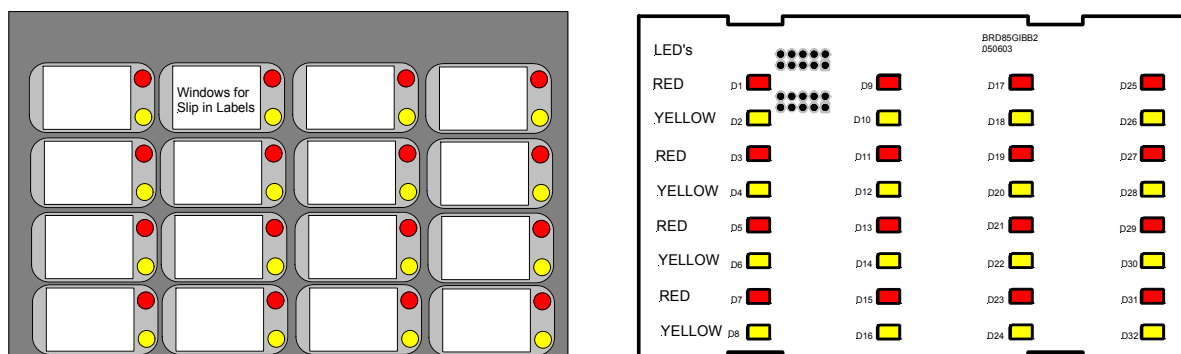


Figure 38: 16 Zone Alarm / Fault Card Decal & PCB Layout

6.8 8 Way Sounder Monitor Board 302 – 7420 / 1

The 8 way Sounder Monitor Board allow a larger number of bells and sounders to be connected to the FireFinder™ System.

The 302-742 is built in two versions:

1. 302-7420: All outputs are monitored and provide 1 Amp per circuit.
2. 302-7421: The first 4 circuits are Voltage free contacts, the second 4 are as per the 302-7420.

Wiring to the Monitored sounder outputs is as per the 302-6730.

The Sounder/ Bell monitor board connects to the serial peripheral interface (SPI) bus. This is the same bus that connects to the Brigade Output Board and a maximum of 8 boards can be daisy chained together.



Note: Output current is dependent on the capacity of the Power Supply

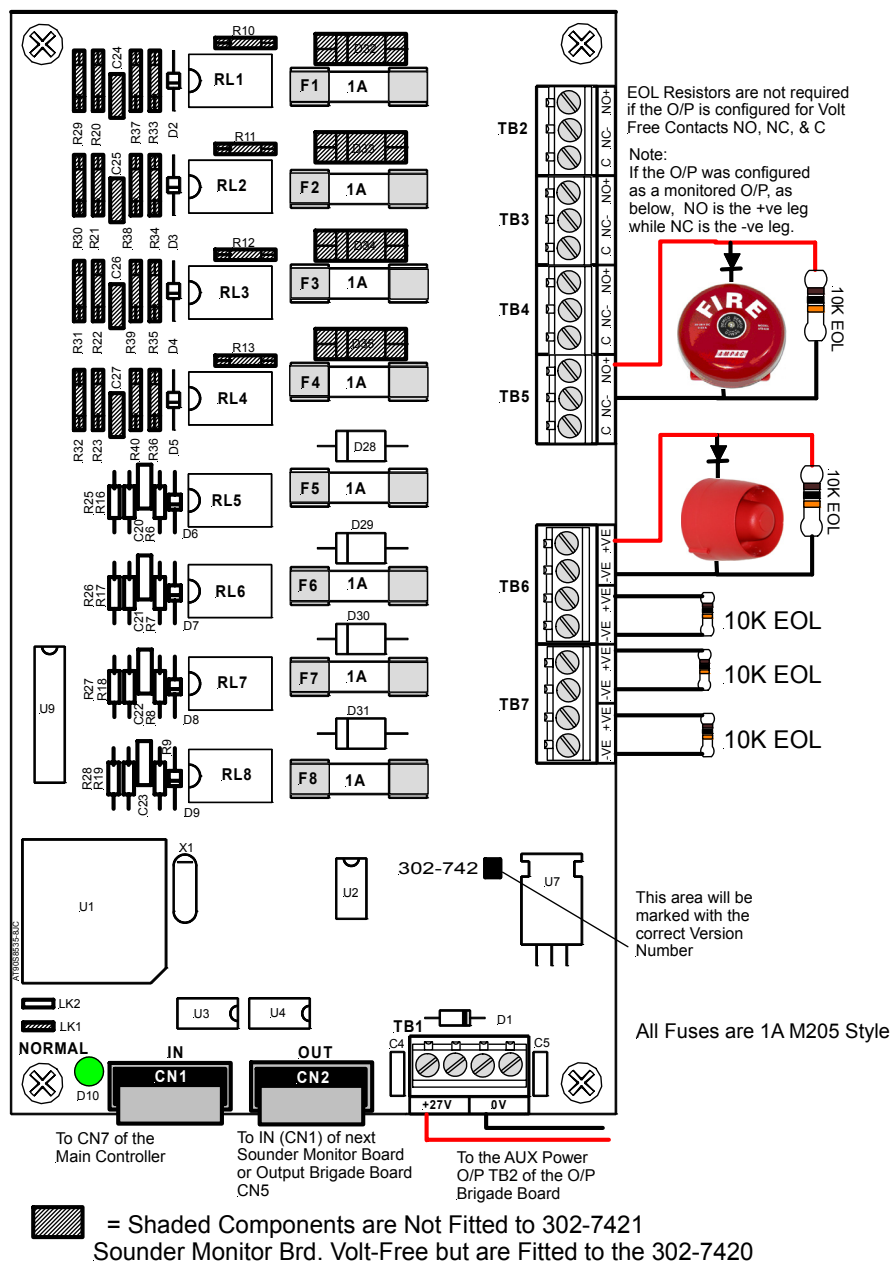


Figure 39: Sounder / Bell Controller Board 302-742x

6.9 Printer

Specifications

- ✓ Printing method: directed impact dot matrix
- ✓ Printing mechanism: 4/6 pin shuttle
- ✓ Interface: 8 bit parallel interface
- ✓ Interface port: 26 PIN flat plug

6.9.1 Indicators and Buttons

The front panel has an LED indicator and two buttons SEL (SELECT), LF (LINE FEED).

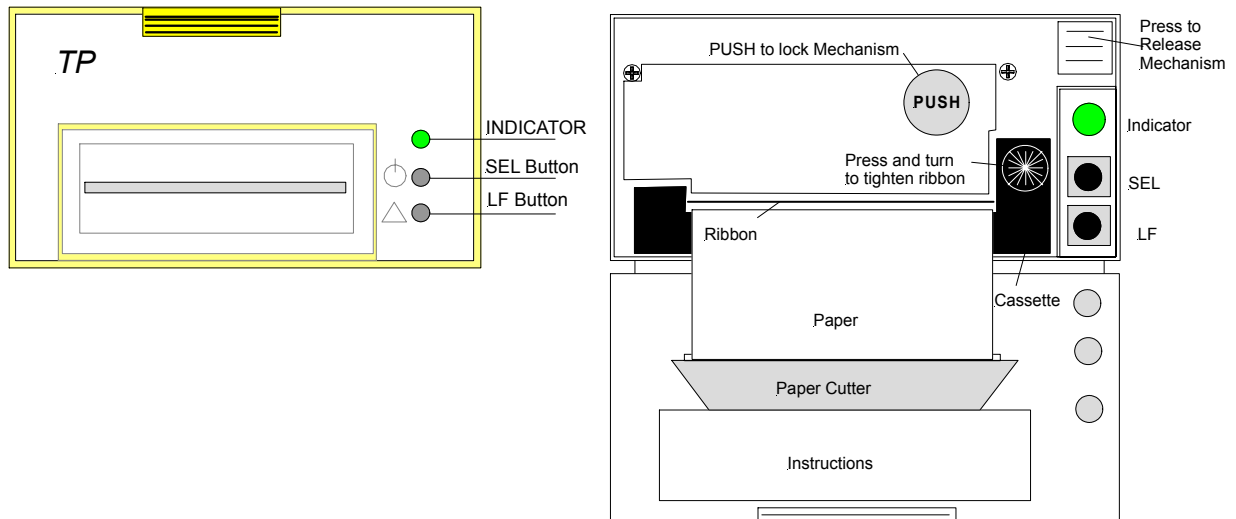


Figure 40: Printer Front Panel Layout (Front Cover Closed / Open)

1. Indicator

When the 3 colour LED indicator is illuminated;

- red it indicates the printer is offline with no paper;
- green it indicates the printer is On Line;
- yellow it indicates the printer is On Line with no paper; or if it is
- off indicates the printer is Off Line or printer is busy.

2. SEL Button

a) On Line / Off Line State

The printer enters the On Line state automatically when power is applied or on exiting from the Self-Test mode. (LED is green).

Press the SEL button, the LED is turned off and the printer goes Off Line.

Press the SEL button again, the LED turns on and the printer is On Line again.



Note : The printer will not receipt data when the printer is off line.

b) Pausing the Printer While It Is Printing.

Press the SEL button while the printer is printing, the printer will pause and enter the Off Line mode after it finishes printing the row it was currently printing. The printer will continue to print when the SEL button is pressed again.

c) Enter the HEX-DUMP mode

Remove power from the printer, press the SEL button, then reconnect the printer to the power supply. The printer will enter the HEX-DUMP mode. In this mode any programs sent from the host CPU will be printed out in Hexadecimal.

LF Button

While the printer is Off Line press the LF button, paper feed will be initiated press again to cancel.

4. Self-Test Mode

With power applied (green LED illuminated) push the SEL button. This will turn off the LED, press and hold in the LF button then press the SEL button again and the printer will enter the Self Test mode. Self-test will print out all the valid characters in the character sets.

5) Exit the Self-Test Mode:

- a) After printing out the complete Self-Test list the printer will exit the mode automatically; or
- b) Press the SEL button and the printer will immediately exit the Self-Test mode.

6.9.2 Maintenance

Installing The Ribbon Cassette

The printer has a factory loaded ink ribbon cassette.

Ribbon Replacement;

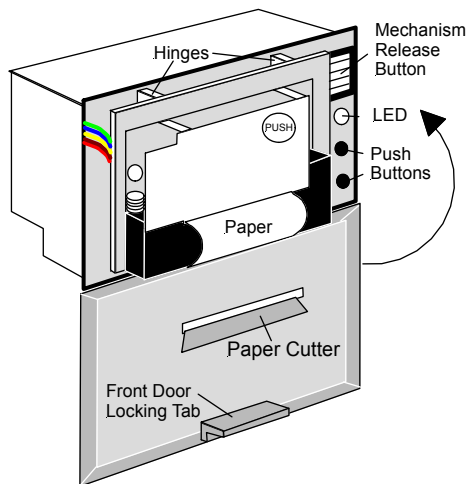


Figure 41: Front Panel

1. Remove the power from the printer.
2. Unlock the front cover by pushing down on the tab at the top of the front panel.
3. Push the mechanism release button in the top right corner to release the print head.
4. To remove the ribbon cassette gently pull out the left end then the right.

Replace the cassette by putting the right end of the new cassette slightly onto the drive axle then gentle pushing the left end into the clips.

The left end of the cassette can only be pressed in after the right end has been correctly seated onto the drive axle. If alignment is difficult it may be necessary to turn the knob on the cassette slightly. Now check that the ribbon is tight across the face of the cassette, that is on the inside of the cassette and across the paper. Turn the knob clockwise again if the ribbon is on the outside of the cassette.

Push back the mechanism head and lock it, close the cover of the printer and reconnect the power.

Loading the Paper Roll

1. Disconnect the power, unlock and open the front cover.
2. Push down on the mechanism release button in the top right corner to release the head.
3. Lift the mechanism as shown below.

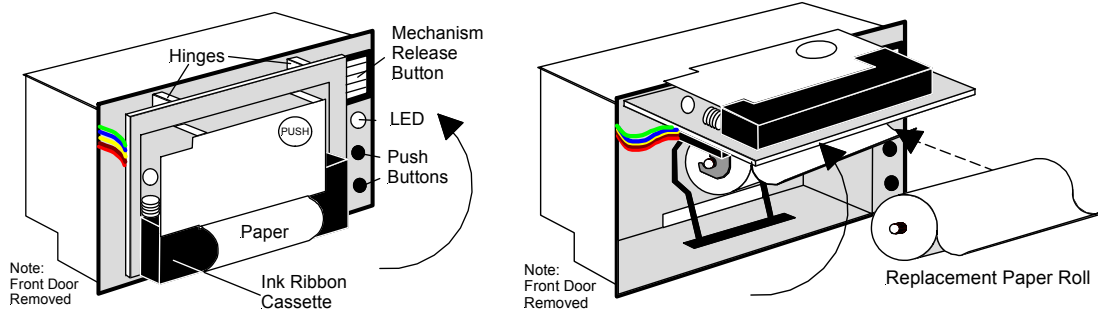


Figure 42: Head Mechanism Rotation and Paper Roll Removal / Insertion

4. Take out the empty paper roll and roller
5. Put the new paper roll onto the paper roller and replace as shown above.
6. Connect to the power supply.
7. Press the SEL button to take the printer Off Line, (LED is off).
8. Press the LF button, (paper feed).
9. Feed the edge of the paper into the mechanism and allow it to feed through.
10. Once it established the paper is feeding through the head mechanism correctly press the SEL button to stop the paper feed.
11. Return the printer head to its original position.
12. Pushing on the affixed label **PUSH** the head mechanism back into position.
13. Close the front cover.



Note #1: Press only on the **PUSH** label to return the head mechanism back into position.



Note #2 : The above instructions are graphically displayed on the inside of the front cover..

6.9.3 Printer Connections and Jumpering

Mounted on the back of the printer mechanism is the PCB that carries the;

1. connectors for interconnection to the Main Board,
2. jumper links required to set the programmed print modes; and
3. Printer 5 volt DC Power Supply.

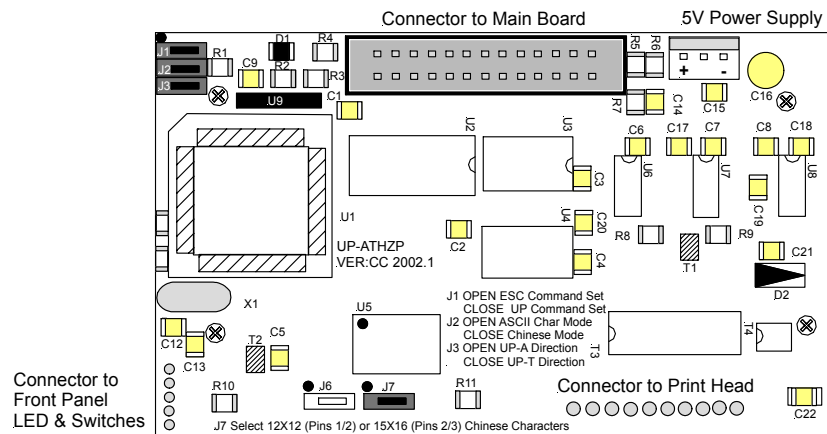


Figure 43: PCB Layout

Jumper Settings

Designator	Jumper State	Function
J1	NOT Inserted	Selects ESC Commands
	Inserted	Selects UP Commands
J2 Set as Default	NOT Inserted	Selects ASCII Character Printing Mode
	Inserted	Selects Chinese Character Printing Mode
J3	NOT Inserted	Select Printing by Contrary Direction
	Inserted	Select printing in the Normal Direction
J7 Set as Default	Insert the Shorting Clip Between Pins 1 and 2	Selects the 12 X 12 Font
	Insert the Shorting Clip Between Pin 2 and 3	Selects the 15 X 16 Font

6.9.4 Printer 5 Volt Power Supply (302-713)

27 volts DC is taken from Brigade / PSU Monitor Board and fed to CN 2 of the 5volt Printer Power Supply Board. It is this board that drops this voltage from 27volts to 5volts for use by the Printer.

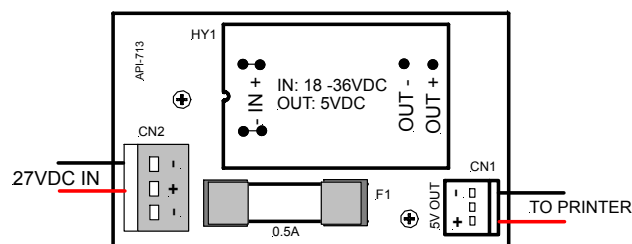


Figure 44: Printer Power Supply Board Layout

7 Expanding the System Through Networking

Expanding the system can be achieved in various ways and requires the use of boards specifically designed for communications purposes and boards that actually expand the system.

7.1 Communications: Controller Interface Card 302 - 725

The Controller Interface Card (CIC) provides 1 X RS232 O/P for High Level Interfaces, Graphics etc., 1 X half duplex RS485 O/P for external LED Mimics, High level Interfaces – EWIS- , Graphics etc and option to allow for multiple CIC interconnection.

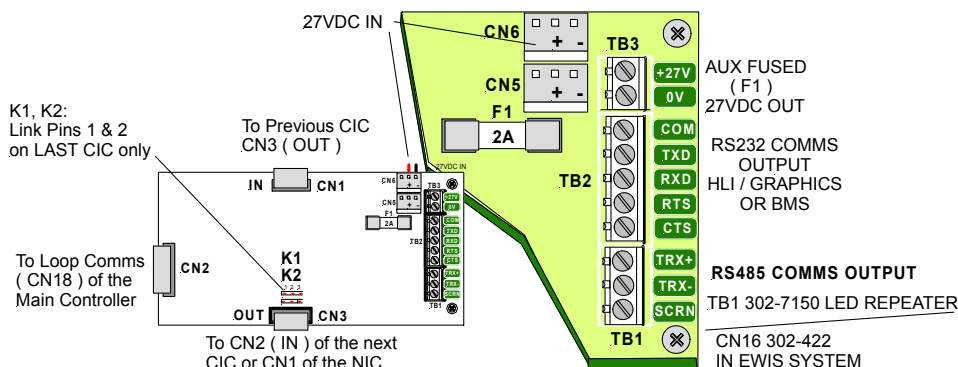


Figure 45: Controller Interface Card

7.2 Communications: Network Interface Card 302 - 724

The Network Interface Card provides two communication buses, RS232 and RS422, to allow the networking of multiple panels in different combinations, eg. from Data Gathering panels to Peer to Peer panels. Intercommunication can be via CN18 on the Main Controller (Loop Comms) or by way of a Controller Interface Card connector CN3 (Out). Fitted to the rear of the NIC is the CPU IO Controller (BRD85CPU) with NIC software to control the flow of communications in and out of the NIC.

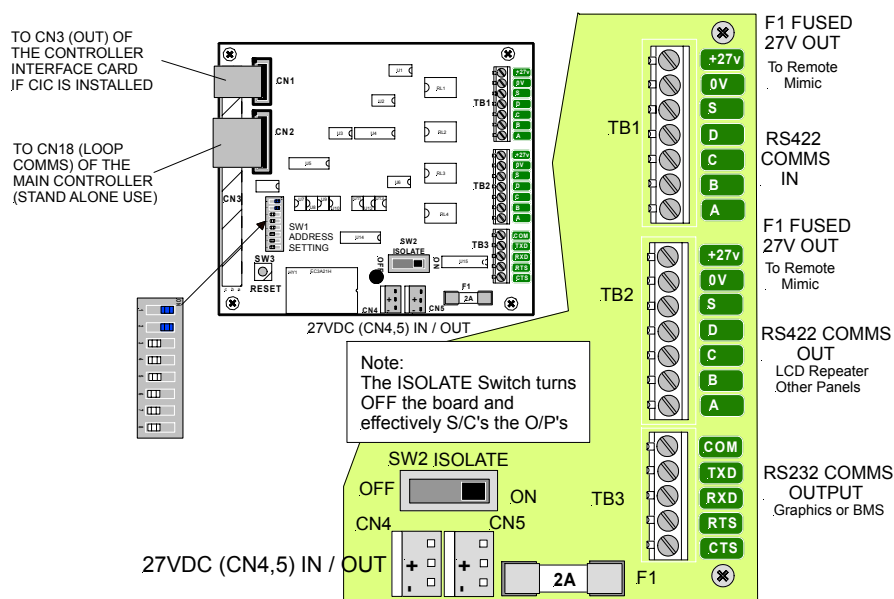


Figure 46: Network Interface Card

7.3 Expansion Board (302-688)

The Expansion Connection Board is used to increase the capacity of the controller from 4 Slave CPU's to 8. Connection from the Controller to the Expansion Board, which must be mounted within 200mm of the Controller, is made via a 20 way flat cable

Connections

Connector	Connects to
CN1	To Main Connection Board
CN2	Slave CPU 2
CN3	Slave CPU 3
CN4	Slave CPU 4
CN5	On board Slave CPU to 302-670. 302-671 and 302-672

Board Overlay

Slave CPU number 5 is an integral part of the Expansion Board, only Slave CPU's 6, 7 and 8 are plug ins.

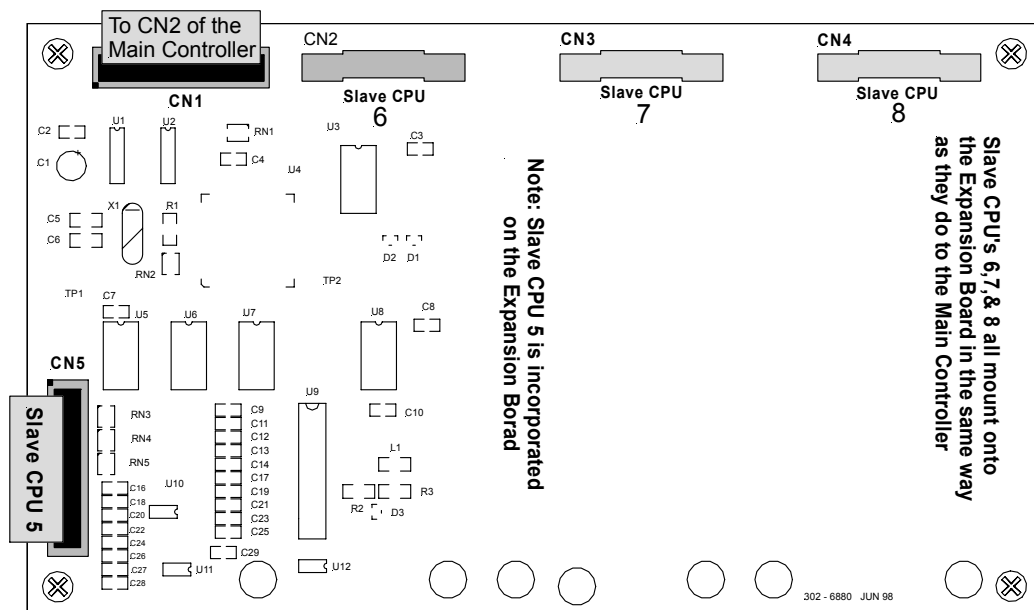


Figure 47: Expansion Board

7.4 Expansion Controller

An Expansion Controller (Fast Fit Kit Number 159-0077) can be described as a Main Controller without a Front Panel. A maximum of 3 can be introduced into any one Node, that is into any one FACP and require Controller Interface Cards (CIC) and Network Interface Cards in order to communicate with the Main Board / Controller.

Connecting Controllers together (Networking within the same cabinet) expands the system beyond 8 Slave CPU's, that is the Main Board plus an Expansion Board.

Networking in this way enables the connection of up to 4 Expansion Controllers within the same FACP cabinet. This requires the use of CIC's and NIC's but offers the added advantage that the RS422 communication bus is internal and all Controllers are physically and logically located at the same Node. It is now possible to Network up to 32 Slave CPU's in one cabinet with each Slave CPU connected to an Addressable Loop, 16 Conventional Zone Board or Digital I/O Board. With this configuration only one Controller has a Front Panel Board.

Once the system has been expanded to this degree it is obviously quite large and some form of indication at a point remote from the FACP may become necessary. This is achieved with the use of a Controller Interface Card (CIC) and a Remote LED Mimic or a CIC, a Network Interface Card (NIC) and a Remote LCD Repeater.

7.5 Networking

When FACP's are connected to each other they form a " NETWORK ". Individual FACP's in the Network are referred to as NODES. The Network as defined by the limitations of the installation can consist of a number of Nodes, the number of Nodes being dependant on the configuration of each Node. Typically an entire Network could consist of 60 Slave CPU's connected to loops, zones and or input / output devices spread over several nodes. The Network is Peer to Peer with the entire system configuration being stored at each Node. The system is then programmed so that information can be made invisible to particular Nodes or visible to all Nodes. Likewise system commands can be global or restricted to specific parts of the network.

The entire system can be programmed from Node 1 in the Network and is connected as a data loop which provides redundancy should there be a single cabling fault.

IMPORTANT

While it is important that proper documentation is kept and maintained for any installation it becomes even more important as a system develops into the larger types described above.

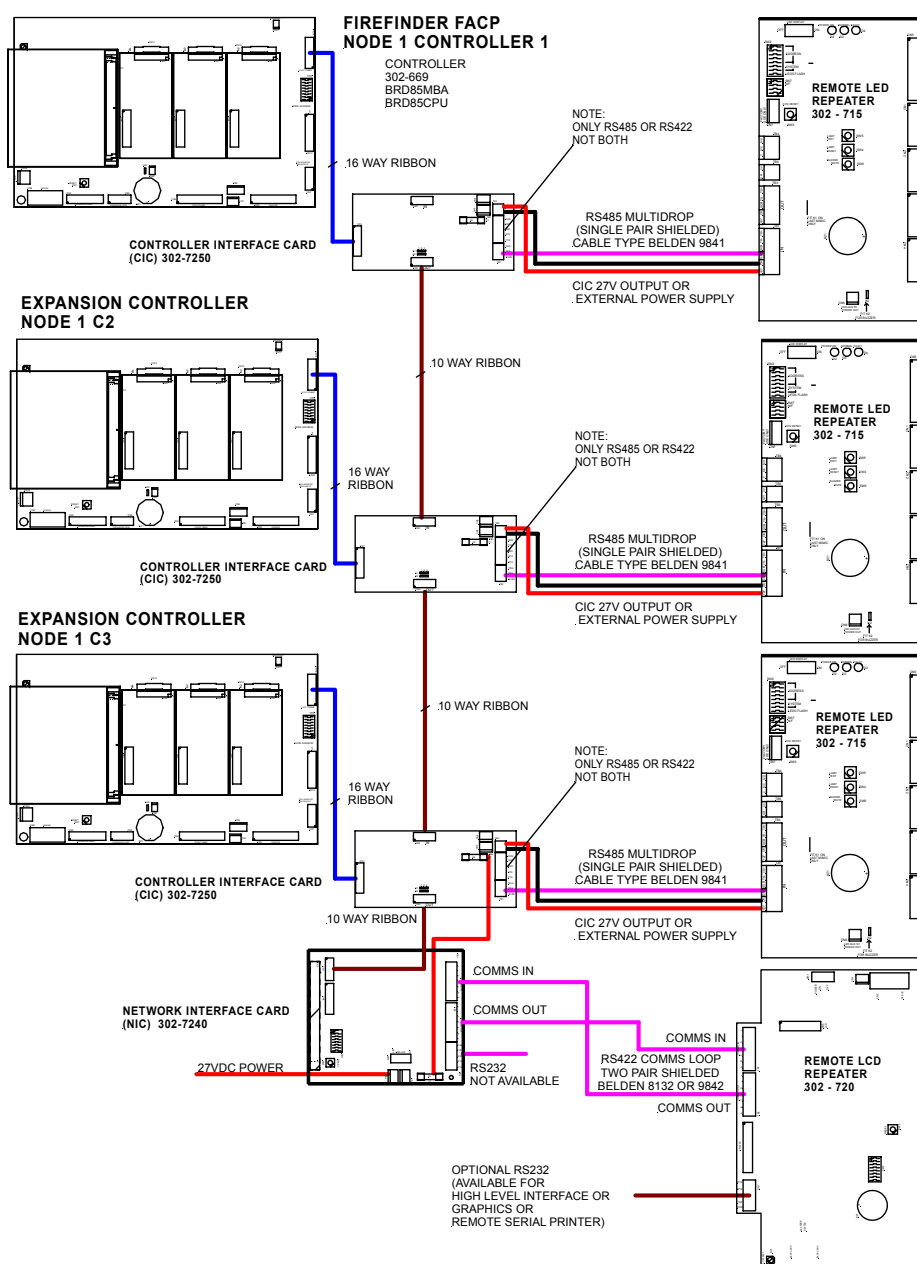


Figure 48: Example of 2 Expansion Controllers within an FACP

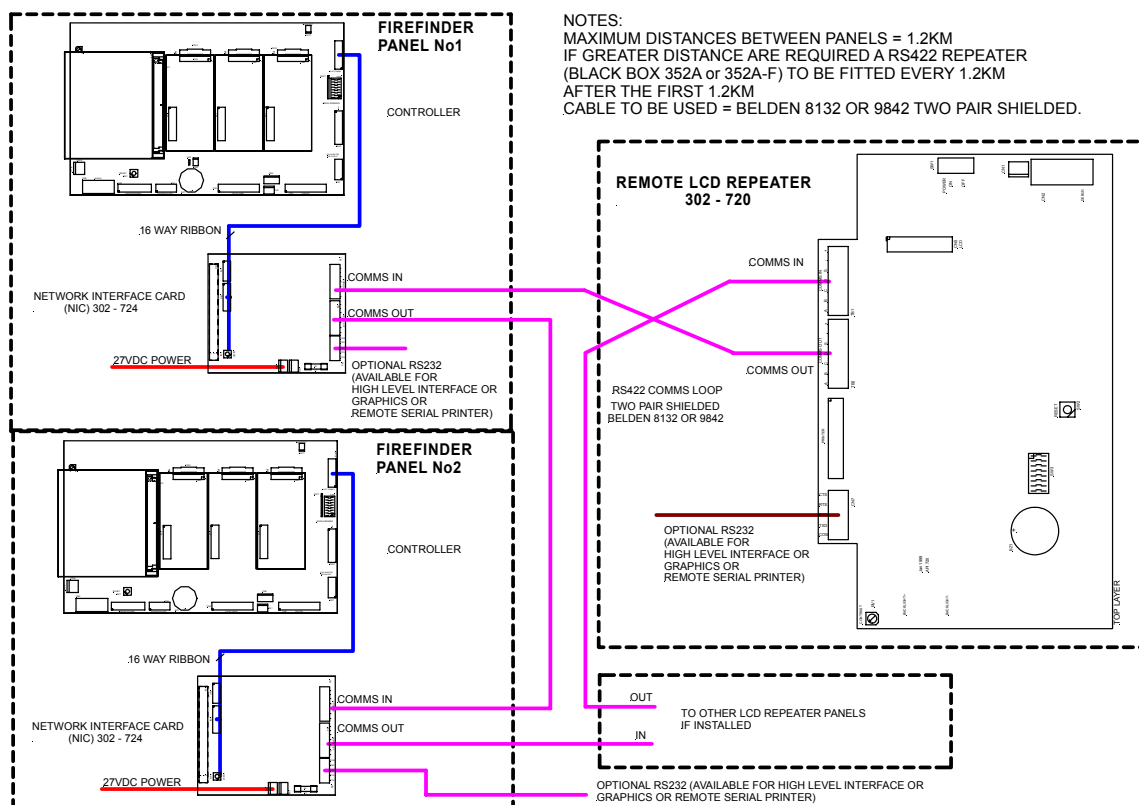


Figure 49: Example of Networking 2 Panels with LCD Repeaters

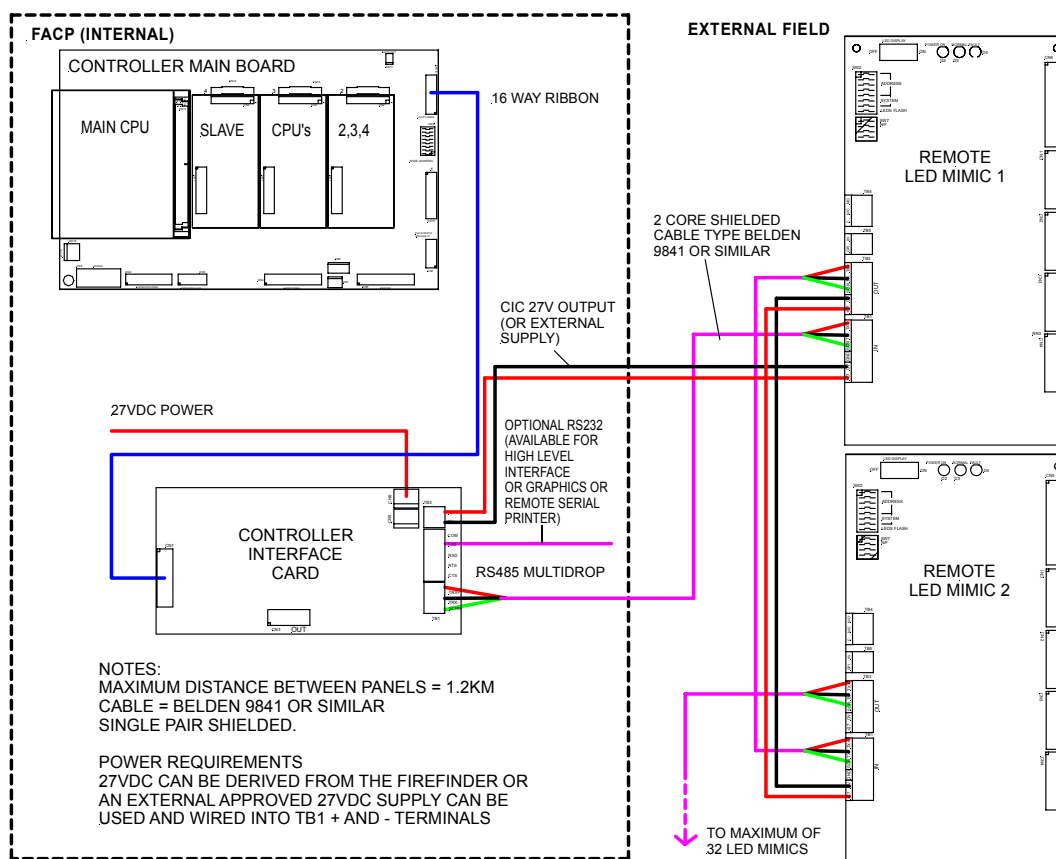


Figure 50: Example of Networking 1 Panel and 2 LED Mimics

7.6 Liquid Crystal Display Repeater Panel 302 - 7200

The LCDR mimics all displays as those shown at the main panel, provides controls to interrogate the system and would normally connect / communicate with the Network Interface Card using RS422 communication protocol. The controls function in the same way as those on the FACP.

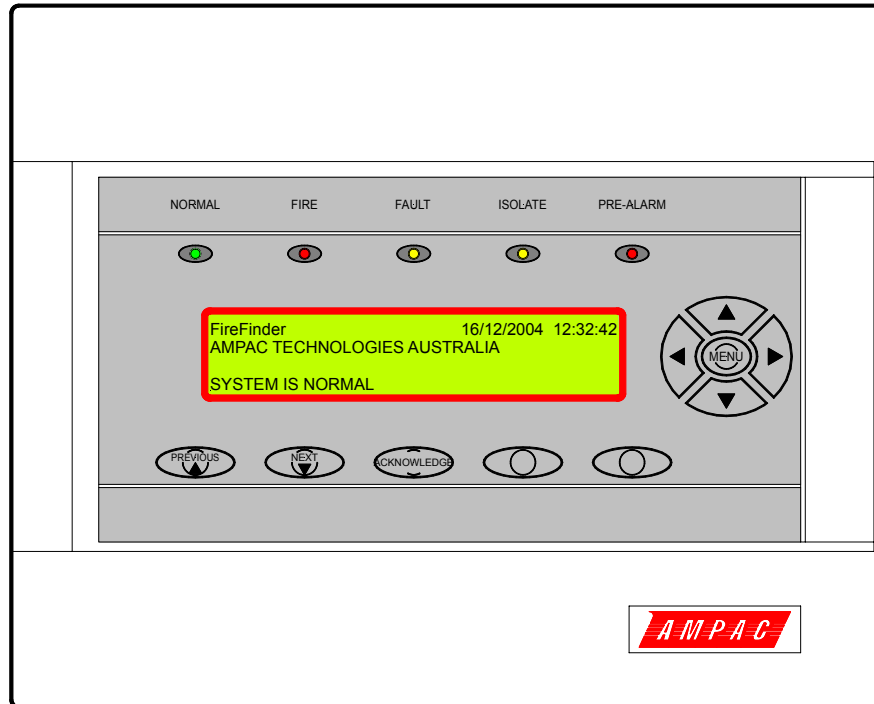


Figure 51: Liquid Crystal Display Repeater Front Panel

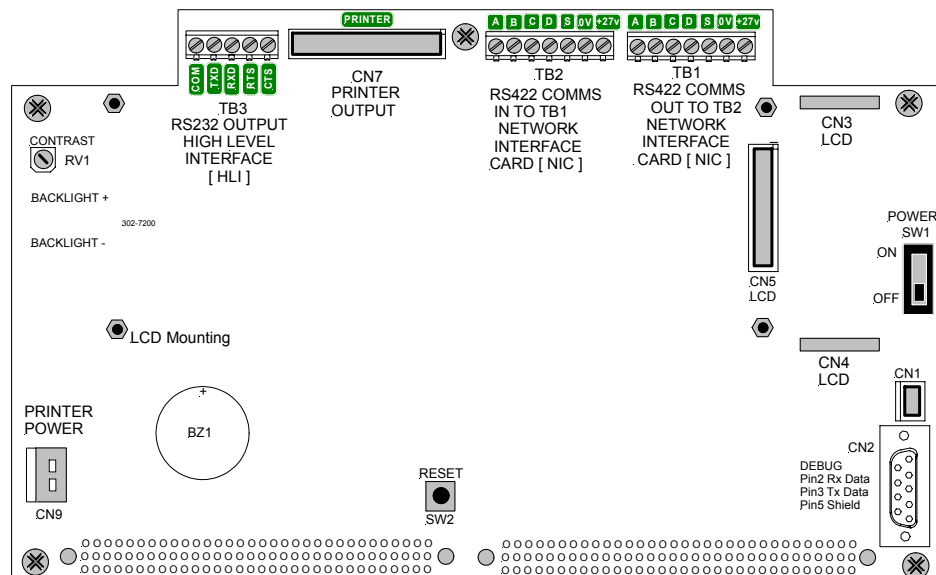


Figure 52: Liquid Crystal Display Repeater Panel Board Layout

To set the address of the LCDR plug a PC into the Debug port, go to “Boot Mode” (BT) then type in EP82, followed by a space and the Node address eg EP82 02. This address is hexadecimal format. The address is that displayed on the screen in ConfigManager, typically NX. To display an address that has already been set go to “Application Mode” and type in DA.

8 Agent Release Control

Agent Release control consists of a Agent Release Module, Termination Board and an optional Local Control Station.

8.1 Operation

Introduction

The Agent Release Module and Termination Board communicate with the FACP via the RS485 multi-drop bus.

The Local Control Station communicates only with the Termination Board via a separate RS485 bus. Up to 4 Local Control Stations can be connected to one termination board.

Agent discharge operates in two modes – automatic and manual. The manual mode is selected by pressing the Inhibit switch on any Local Control Station. To indicate the system is in manual the Inhibit LED will be illuminated. Pressing Inhibit again will toggle or return the mode to automatic and extinguish the Inhibit LED.

The “ Agent Released ” Pressure Switch (PSW) is wired to the PSW input on the Termination Board and is used to confirm that the agent has been released. The circuitry involved in this process can be configured to accept a normally open contact, normally closed contact, normally open mechanically operated (manual) or is ignored (not fitted) and is selected via FACP on-site programming. If the mechanical (manually operated) option is selected the module monitors the pressure switch input and provides notification the agent has been released manually, initiates an alarm and illuminates the “Agent Released “ indicator.

Manual Mode

When the system is in manual mode, then;

- The Local Control Station Inhibit indicator is lit at the FACP and all Local Control Station's.
 - The buzzer at all Local Control Stations will sound until the inhibit is released.
 - The System Inoperative output is turned on.
 - The Automatic discharge sequences are prevented from starting.
- If an automatic discharge sequence was underway and the inhibit switch is activated (switched to manual mode) the discharge sequence is aborted and the sequence is reset. This means the Stage 1 and Stage 2 outputs are switched off.

To manually discharge the agent the “ Lock Off Valve “ must be open and the Manual Release switch on the Local Control Station pressed. The manual discharge sequence is;

- Manual Activation indicator is lit on the FACP and Local Control Station.
- The FACP activates its brigade alarm output.
- Stage 1 outputs are switched to +24VDC. [FIRE ALARM sign illuminated, aural alarm sounds].
- Stage 2 outputs are switched to +24VDC. [FIRE ALARM, EVACUATE & DO NOT ENTER signs illuminated, aural alarm sounds].
- The optional pre-release start delay is activated (Selected via FACP on-site programming), time out and an ON Interlock signal will then operate the selected release circuitry.
- The Agent Discharge LED on the Agent Release Module and Local Control Station will illuminate when the Pressure Switch input on the Termination Board is activated.
- Activate gas-fired output.



Note: The Interlock Input can be defaulted to the on position by placing a 10KΩ EOL termination resistor across the terminals TB2. 7 / 8 of the Agent Release Module and Local Control Station.

Auto Mode

Automatic discharge is when one or two zones going into alarm initiate the agent discharge sequence.



Note: A “manual release” can still be initiated in “auto mode” but the LCS “Inhibit” control **WILL NOT** inhibit / abort the agent release sequence.

Single Zone Activation, the following discharge sequence is executed;

- Automatic Activation LED is illuminated on the Agent Release Module and Local Control Station.
- Stage 1 outputs are switched to +24VDC. [FIRE ALARM sign illuminated, aural alarm sounds].
- Stage 2 outputs are switched to +24VDC. [FIRE ALARM, EVACUATE & DO NOT ENTER signs illuminated, aural alarm sounds].
- Optional pre-release delay is started (Selected via FACP on-site programming).
- The delay times out and if the Interlock signal is ON, the selected circuit will activate.
- The Pressure Switch field input on the Termination Board is activated and the Agent Discharge LED on the Agent Release Module and Local Control Station will be illuminated.
- Activate gas-fired output.

Dual Zone Activation, if the first zone goes into alarm the following steps are initiated;

- The automatic activation LED on the Agent Release Module and Local Control Station will flash.
- Stage 1 outputs are switch to –24VDC. [FIRE ALARM sign illuminated, aural alarm sounds].

When the second zone goes into alarm, then the following steps occur;

- Automatic activation LED goes steady.
- Stage 1 outputs are switched to +24VDC. [FIRE ALARM & EVACUATE signs illuminated, aural alarm sounds].
- Stage 2 outputs are switched to +24VDC. [DO NOT ENTER sign illuminated].
- Optional pre-release delay commences (Selected via FACP on-site programming).
- The delay times out and if the Interlock signal is on the selected circuit will activate.
- The Pressure Switch field input on the Termination Board is activated and the Agent discharge LED on the Agent Release Module and Local Control Station will be illuminated.
- Activate gas-fired relay output.

Service Switch

The service switch is situated on the Agent Release Module when activated causes the following;

- Electrically isolates the activation circuitry from the agent release device.
- Operates the System Inoperative output.



Note: The service switch is **NOT** overridden by a manual discharge.

Lock-Off Valve

When the manual lock-off valve is operated;

- The agent is blocked from reaching the release valve.
- The lock-off valve inhibit indicator LED's on the Agent Release Module and Local Control Station are illuminated.
- The system inoperative output operates.

Fault Monitoring

Fault conditions are initiated by:

- The Pressure Switch monitoring circuit.
- The Low Pressure Switch monitoring circuit.
- The Lock-off Valve monitoring circuit.
- Activation circuitry.
- Stage 1 outputs. (Aural & visual discharge alarms).
- Stage 2 outputs. (Aural & visual discharge alarms).
- A Zone Fault.
- A Fault on the interlock input.
- A Fault with a LCS.



Note #1: The common fault indicator on the Agent Release Module and Local Control Station is illuminated for any Fault condition.

Note #2: For a pressure switch fault, low pressure switch fault, lock-off valve fault, stage 1 output fault, stage 2 output fault and interlock fault, the FACP will signal the brigade.

Note #3: When there is a fault in the activation circuit or in the trigger zones, in addition to the above, the system inoperative output is operated.

Note #4: The FACP fault buzzer will sound for all faults.

Note #5: The FACP will report the type of fault on the LCD.

Isolation

If a trigger zone is isolated at the FACP the trigger zone isolated indicator at the Agent Release Module and Local Control Station is illuminated, and the system inoperative output is operated.

System Inoperative Output

The system inoperative output is switched to +24VDC under the following conditions;

- Operation of the Service Switch.
- A Fault in the selected trigger circuit.
- Operation of the Lock-off valve.
- Operation of the Inhibit at an Local Control Station.
- A Fault in any of the activation zones.
- If any of the activation zones are isolated.

Manual Mechanical Release of the Agent

With agent release systems, a manual mechanical means can be provided to release the agent.

If the pressure switch is activated (indicating that the agent has been released), and the agent release module has not activated the selected activation circuit, then the following will occur:

- Stage 1 output is switched to +24VDC and stage 1 relay is output closed
- Stage 2 output is switched to +24VDC and stage 2 relay output is closed
- Light the agent release led on the ACC and LCSs
- Activate gas-fired relay output

Monitoring of the Pressure Switch

Due to the requirements of Manual Mechanical Release of the Agent, the pressure switch input conveys two pieces of information:

1. When the pressure switch input is active, it signals that the agent has been released. The release can be as a result of the agent release module or due to a manual mechanical release.
2. When the pressure switch is not active, it signals that there is a full bottle of agent available to be discharged.

In order for the agent release module to respond to a manual mechanical release, the pressure switch must have been previously not active, to signify that a full bottle of agent is available

8.2 Agent Release Module BRD25ARB -A

The Agent Release Module controls and monitors all the requirements for agent release and carries the slide in label for identification of the agent and application area.

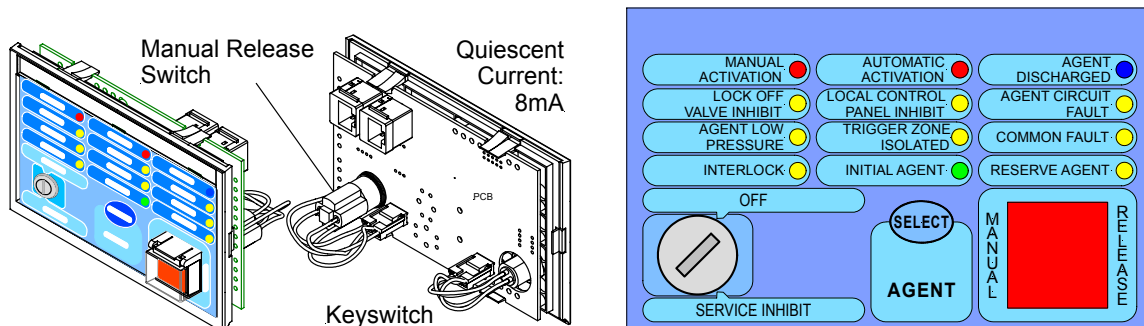
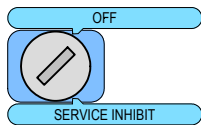


Figure 53: Exploded View of Module and Front Panel Layout

Controlled Access

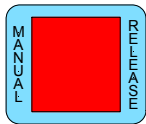


It is a requirement that control be secured from unauthorised use. A keyswitch has therefore been included in the control process.

The FCP goes into service mode when the keyswitch is switched to SERVICE INHIBIT. This results in the selected agent activation circuit being electrically isolated and a Common Isolate condition being indicated at the FACP. This condition can also confirmed through the Status Menu. To remove the key it is necessary for the switch to be in the **OFF** position.



Pressing Select toggles the selection of either the Main or Reserve release agent. Selection is indicated by the Main and Reserve Agent LED's



If activated the Manual Release will commence the discharge sequence of the selected agent and an alarm condition is initiated. Progress of the release can be monitored through the Status Menu. To prevent accidental operation this switch has a hinged clear plastic cover that has to be raised to access the switch.

Agent Release Module PCB Layout

The PCB is fitted with two 2 x RJ45 connectors CN6 & 7 for power (27VDC) and communications (RS485) for communications between the Agent Release Module and the FACP Main Control Board.

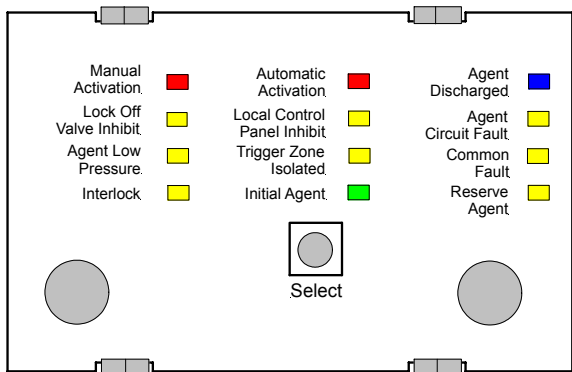


Figure 54: Module PCB Layout

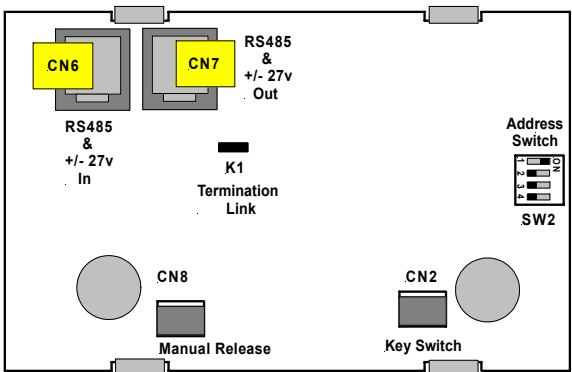


Figure 55: Underside of the Module PCB

Quiescent Current: 28.5mA



Note: If the keyswitch is not used CN2 will carry a link so as to enable the panel.

8.3 Local Control Station (LCS) BRD25ARB -B

The LCS has the same indicators, Inhibit and Manual Release buttons as the Agent Release Module but no Service Inhibit keyswitch or Agent Select button.

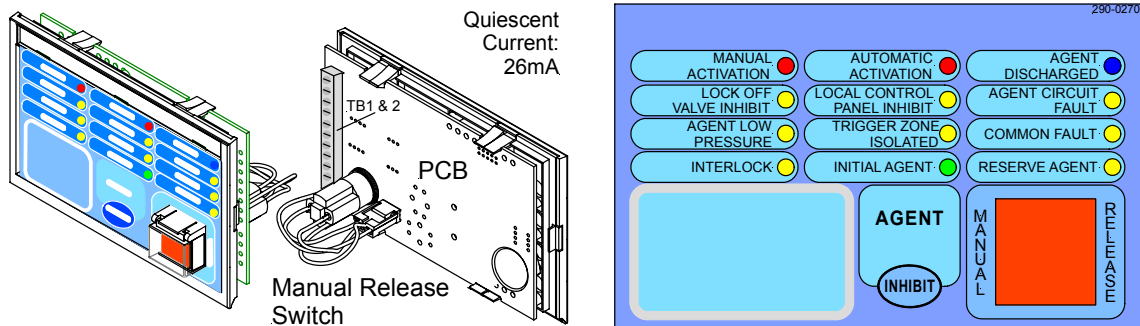
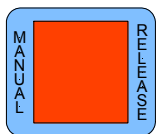


Figure 56: Local Control Station Layout



Lifting the switch cover and pressing the push button starts the manual agent release sequence and initiates an alarm. This two action safety feature prevents any accidental operation of the control and should not be disabled.



When pressed places the system into manual mode and prevents the initiation of the automatic discharge sequence.

8.4 Panel Indicators

There are 12 indicators on both the Agent Release Module and Local Control Station. They are;



– **Red** Illuminated when a manual discharge sequence is in progress.



– **Red** Illuminated when an automatic discharge sequence has commenced. Automatic discharge occurs when the selected zone(s) on the FACP have gone into alarm. For dual zones, the indicator should flash when the first zone goes into alarm, and be steady when the second zone goes into alarm.



– **Blue** Illuminated when the pressure switch indicates the agent has been discharged. For pyrogen, feedback is from the thermal switch. If there is no pressure switch fitted, the indicator will be illuminated as soon as the agent discharge signal is activated. (Selected via FACP on-site programming).



– **Yellow** Illuminated when the Lock-Off valve has been physically activated.



– **Yellow** Illuminated when the Inhibit switch is activated at any of the LCSs.

AGENT CIRCUIT
FAULT

– Yellow Illuminated when there is a fault on the monitored Main or Reserve activation circuits. Eg S/C or O/C.

AGENT LOW
PRESSURE


– Yellow Illuminated when the low pressure switch is activated. This could indicate the agent is leaking from its container.

TRIGGER ZONE
ISOLATED

– Yellow Illuminated when any of the programmed trigger zones on the FACP are isolated.

INTERLOCK

– Yellow Illuminated when the interlock input (eg from dampers, doors etc) is off during the discharge sequence – meaning the dampers, doors etc are not closed as they should be or a fault exists.

 **Note:** The Interlock is a Monitored Input and can be defaulted to the ON position by terminating the input (TB2 7 & 8) into a 10KΩ EOL resistor.

COMMON FAULT

– Yellow Illuminated when the;

- ✓ pressure switch is operated,
- ✓ low pressure switch is operated,
- ✓ lock-off valve has been manually operated,
- ✓ activation circuit is in fault,
- ✓ stage 1 or stage 2 output is in fault,
- ✓ LCS is in fault,
- ✓ Trigger zone(s) is in fault, and / or interlock is in fault.

INITIAL AGENT

– Green Illuminated when the “ Main “ Agent is selected.

RESERVE AGENT

– Yellow Illuminated when the “ Reserve “ Agent is selected.

Buzzer

The Buzzer is activated under programmed control as per the appropriate Standard.

Local Control Station Terminal Blocks TB1 & TB2

TB2 Terminal	Assignment	TB1 Terminal	Assignment
1	RS485 + In	1	+27V In
2	RS485 - In	2	0V In
3	RS485 Common	3	+27V Out
4	RS485 + Out	4	0V Out
5	RS485 - Out		
6	RS485 Common		
7	Interlock+		
8	Interlock-		

Quiescent Current: 18.5mA

Local Control Station Layout

The Local Control Station is supplied with its own mounting panel. The Comms line is RS485 between the Local Control Station and the Main Control Board.

The Interlock is a monitored input with 10KΩ EOL used to determine if air conditioning dampers and doors are closed. Typically the agent is not discharged until all dampers / doors are closed but can be defaulted to the “ON” condition by terminating the input with a 2K2Ω as shown below.

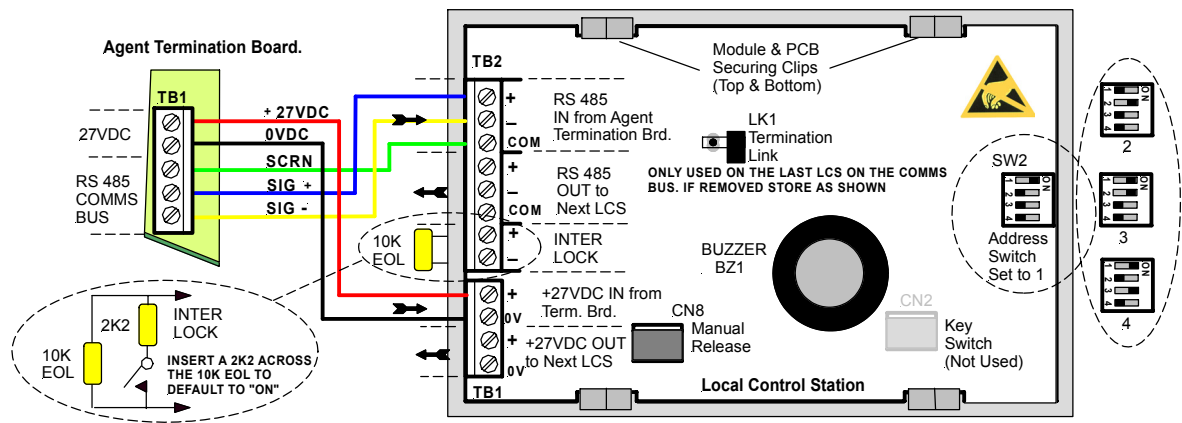


Figure 57: PCB Layout & Cabling Detail

8.5 Agent Release Termination Board BRD25ATB

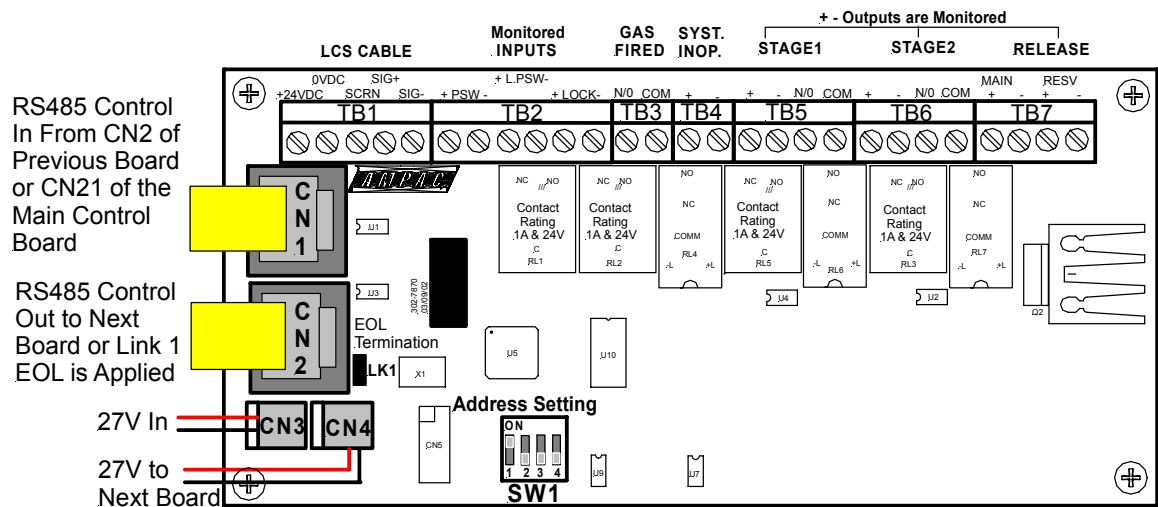


Figure 58: Agent Termination Board PCB Layout

The Agent Termination Board interfaces to;

1. The FACP via CN1, CN2 continuing the RS485 communications bus if required. LK1 is inserted if this is the last backpan board on the bus.
2. LCS's (up to 4) via TB1. LK1 is inserted in the last board in the RS485 Bus
3. **Monitored Inputs:** via TB2. (EOL Resistance 22K Ω , Series Resistance 4K7 Ω)
 - (a) Pressure Switch (**PSW**) agent released
 - (b) Low Pressure Switch (**LPSW**) agent storage cylinder pressure has dropped to a pre-determined level; and
 - (c) **Interlock**, the manual lock-off valve has been operated.
4. **Gas Fired:** Output via RL2 N/O contacts rated at 1A @ 24VDC wired to TB3. Used to indicate to other monitoring devices the agent has been released.
5. **System Inoperative:** via RL1 N/O contacts rated at 1A @ 24VDC wired to TB4. Used to warn by way of signage / audible alarm and/or monitoring that the system is inoperative.
6. **Stage 1:** Output; initiates the visual and audible Fire Alarm and Evacuate warnings.
 - (a) Monitored; via RL4 C/O contacts wired to TB5 1 & 2 (EOL required 10K Ω) and
 - (b) un-monitored; via RL5 N/O contacts wired to TB5 3 & 4.
7. **Stage 2:** output; initiates the visual and audible Fire Alarm and Do No Enter warnings
 - (a) Monitored; via RL6 C/O contacts wired to TB6 1 & 2; (EOL required is 10K Ω) and
 - (b) Un-monitored; via RL3 N/O contacts wired to TB6 3 & 4
8. **Release: Main** actuating circuit, monitored (10K Ω EOL required) via TB7 1 & 2 (2A current limited),
Release: Reserve actuating circuit, monitored (10K Ω EOL required) via TB7 3 & 4 (2A current limited)
 - (a) To Pyrogen Igniter (max of 10)
 - (b) Metron Igniters (max of 10 – a series 2watt 18 Ω resister must be added to the circuit)
 - (c) Solenoid valve (max current of 2 amps & 27VDC)

8.6 Interface Wiring

Monitored Inputs TB2 1 & 2

Pyrogen,

This input relies on a thermal fuse used in conjunction with 22K Ω EOL and 4K7 Ω series resistors. The type of agent release mechanism has to be set in the Programming Menu for the input to function as per the manufacturers specifications and be in accordance with the relevant Standard.

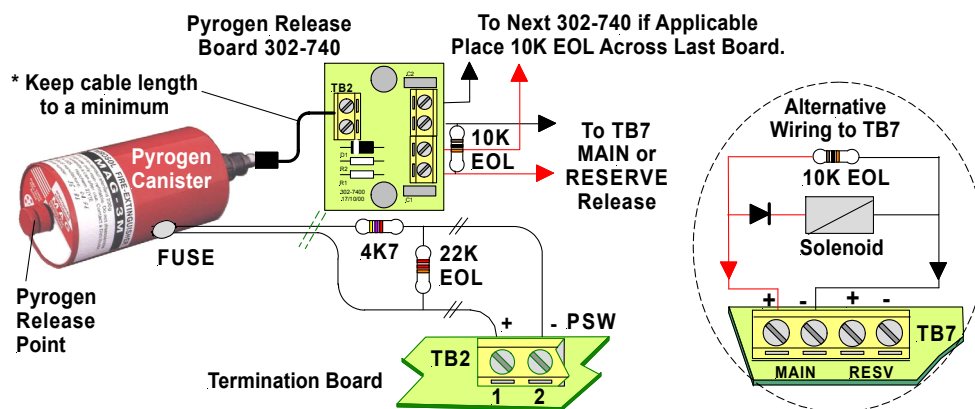


Figure 59: Pyrogen Wiring

Solenoid & Metron

This input relies on N/O or N/C relay contacts used in conjunction with 22KΩ EOL and 4K7Ω series resistors. The type of agent release mechanism and contacts used has to be set in the Programming Menu for the input to function as per the manufacturers specifications and be in accordance with the relevant Standard.

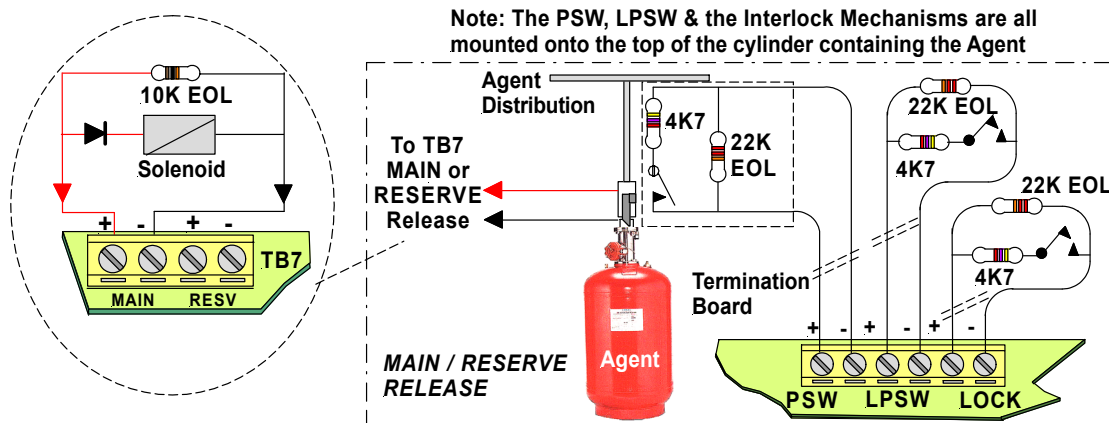


Figure 60: Solenoid, Metron PSW, LPSW and "LOCK" Wiring

LPSW & Lock

These inputs are also monitored and should be wired as shown above

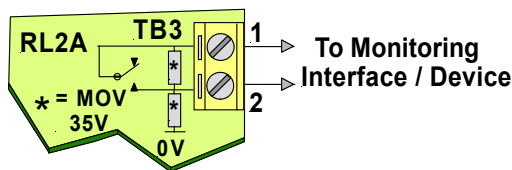


Figure 61: Gas Fired Wiring

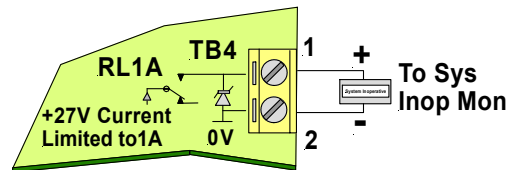


Figure 62: System Inoperative Wiring

As can be seen from above the;

Gas Fired Output can be wired to any interfacing or 1A monitoring circuit that requires a closed relay contact to indicate a change of state. This could be a relay or a solid state device.

System Inoperative Outputs 27V @ 1A to supply interfacing, signage and aural alarms to indicate the system has been taken out of service or has developed a fault.

Stage 1, Stage 2

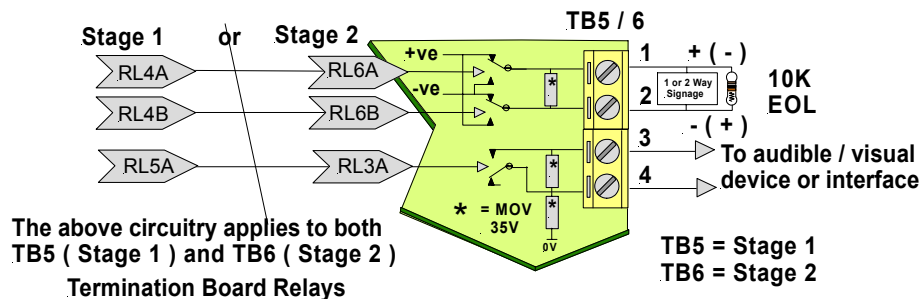


Figure 63: Stage 1 and 2 Wiring

8.7 Warning Signs

Description

The warning signs are driven by a 2 wire system and may be configured for single or dual stage operation.

An on-board buzzer provides an audible warning which may be disabled by removing JP3.

External evacuation devices, eg sounders may be connected to TB3 of the input termination board. An external mute push-button (N/O contacts) may also be connected to Term 3 on the warning sign PCB to enable the user to silence the internal buzzer and evacuation device. Inserting JP4 disables this function.

Enclosures

The **IP50** is a metal enclosure. The fascia surround is fitted by removing the screw on the left hand side of the enclosure and pulling it away to the left. The fascia sign is fitted in place and the tabs bent over to hold it in place. Two holes in the backpan of the chassis allow for mounting.

The **IP65** ABS enclosure has 10 screws, tightened evenly but not over tightened, hold the facia in place. Do not over tighten. 4 holes in the backpan allow for mounting.

Specifications:

- Operational Voltage ----- 28VDC
- Power Consumption Continuous ----- At 24VDC 55mA Stage 1
----- At 24VDC 140mA Stage 2 (100mA Muted)
- IP Ratings ----- IP50 (Dim: 190H x 315W x 73D mm)
----- IP65 (Dim: 200H x 295W x 65D mm)
- Environmental ----- -10°C to +55°C Dry heat
----- +40°C @ 0 to 93% Relative Humidity

Installation

1. Remove the backpan from the enclosure to ensure it is not damaged while mounting the enclosure.
2. Bring the cabling into the enclosure by removing the knockouts most appropriate for the installation.
3. Mount the enclosure, remount the backpan, set the configuration and then cable as per the following diagram.
4. ***ENSURE THE AGENT IS ISOLATED*** and test from the Agent Release Module.

Cabling

Term 3 (Buzzer Mute)

BUZZER MUTE

Normally Open [N/O] Push Button Switch (Optional)

INPUT

Term 4 (Single pair polarity reversing / 2 Stage Input)		
Stage 1		0V – 24VDC
Stage 2		24VDC – 0V

Configuration – Jumper Settings

JP 1 (Continuous / Flashing)		JP 2 (Single / Dual Stage)	
1-2 Continuous	LED's Permanently ON	1-2 Single Stage	Full sign on for Stage 1&2
2-3 Flashing (<i>DEFAULT</i>)	LED's flashing at 1.5Hz	2-3 Dual Stage (<i>DEFAULT</i>)	Half sign on for Stage 1
			Full sign on for Stage 2

JP 3 (Enable Buzzer)		JP 4 (Disable External Mute)	
1-2 ENABLE BUZZER (<i>DEFAULT</i>)	Buzzer activates for both Stage 1 & 2	1-2 EXTERNAL MUTE (<i>DEFAULT</i>)	Disable external mute for internal Buzzer

JP 5 (Enable External Evacuation Device) [*not used*]

1-2 ENABLE EXTERNAL EVACUATION
DEVICE (DEFAULT)

External evacuation device will activate on Stage 1 & 2 with the tone dependent on the input polarity

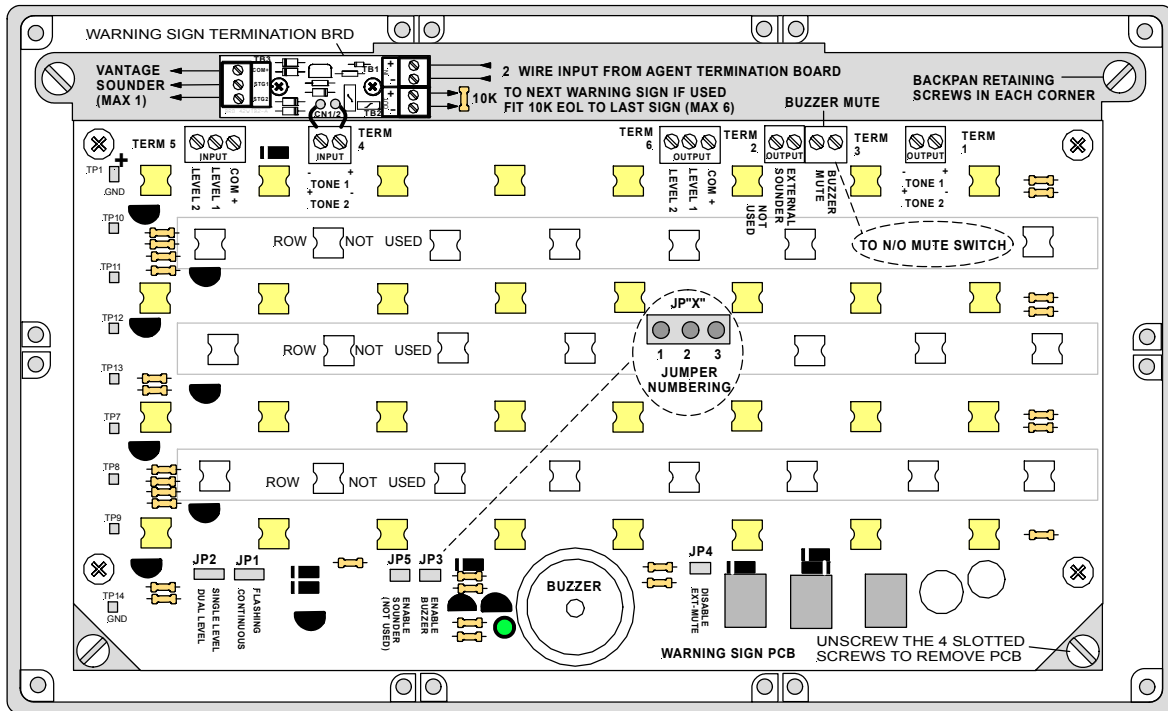


Figure 64: Warning Sign PCB Layout and Cabling

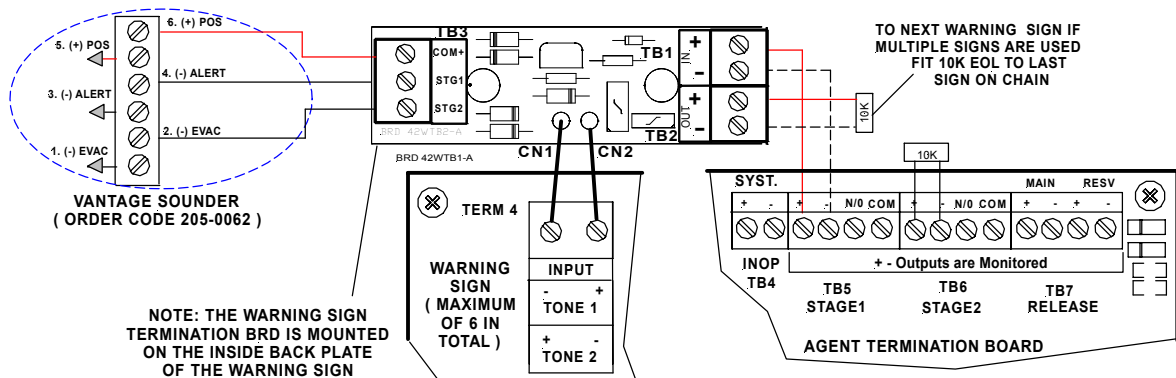


Figure 65: 2 Wire Cabling from the Agent Termination Board to the Warning Sign/s & Evacuation Device/s

9 Occupant Warning Systems

The EV20, EV40, EV60 and EV120 are compact single zone occupant warning devices that when triggered produce *Alert* and *Evacuation* signals to meet the requirements of AS1670.4.

EV20

At the heart of an EV20 single zone occupant warning system is a microprocessor that generates the alert and evacuation signals, controls timing and the input / output.

If an FACP warning system input is received when the rotary switch is in the AUTO position the EV20 will begin to output the “Alert” signal for a duration determined by the setting of the 4 way DIL switch SW1. The set duration is termed the changeover timeout and ranges from 0 seconds to a maximum of 300 seconds. If the time out is set to 0 seconds then the alert signal is bypassed and the evacuation signal commences immediately. The operator can manually stop the sequence by turning the rotary switch to the ISOLATE position.

IC4 performs the task of an audio amplifier with TX1 providing the impedance matching to a 100 volt speaker line. The alert and evacuation signal output Stages are set by adjusting RV1 and RV2 respectively.

Short or open circuit speaker faults are detected by the fault monitoring circuitry and will result in the illumination of the FAULT indicator mounted on the front panel control module.

Public Address

A microphone and pre-amplifier (Order Code 222-0007) is used to provide the public address capabilities.

EV20 Verbal Messaging

An optional verbal messaging PCB (Order Code 222-0026) is available and is mounted directly onto the main board.

EV40

At the heart of an EV40 single zone occupant warning system is a microprocessor that generates the alert and evacuation signals, controls timing and the input / output.

If an FACP warning system input is received when the rotary switch is in the AUTO position the EV40 will begin to output the “Alert” signal for a duration determined by the setting of the 4 way DIL switch. The set duration is termed the changeover timeout and ranges from 0 seconds to a maximum of 540 seconds. If the time out is set to 0 seconds then the alert signal is bypassed and the evacuation signal commences immediately. The operator can manually stop the signal sequence by turning the rotary switch to the ISOLATE position.

Amplifier 1 & 2 provides 40watts of audio output at 8 ohms which feeds TX1 to provide the impedance matching to a 100 volt speaker line. The “ALERT” and “EVAC” Stage controls adjust the output Stage of each set of signals.

Short or open circuit speaker faults are detected by the fault monitoring circuitry and will result in the illumination of the FAULT indicator mounted on the front panel control module and “SPEAKER SHORT” (red) or “SPEAKER OPEN” (yellow) LEDs on the main board.

Public Address

A microphone (Order Code 294-0001) is used to provide the public address capabilities.

EV40 Verbal Messaging

An optional verbal messaging PCB (Order Code 222-0013) is available and is mounted directly onto the main board.

EV20 / 40 Verbal Message

Alert / Evacuation – “*Emergency Evacuate Now*”

Control Module

When the control switch is in;


AUTOMATIC - occupant warning signals and if applicable verbal messaging is under the control of the microprocessor and outputted to the speaker system when it receives a “warning system” signal from the FACP.


ISOLATE – the occupant warning system is isolated from the FACP “warning system” signal and even if the signal is present there will be no output.

PUBLIC ADDRESS – the occupant warning system can be used locally as a PA system.

MANUAL EVACUATION – the occupant warning signal/s will be transmitted over the system.

Indicators

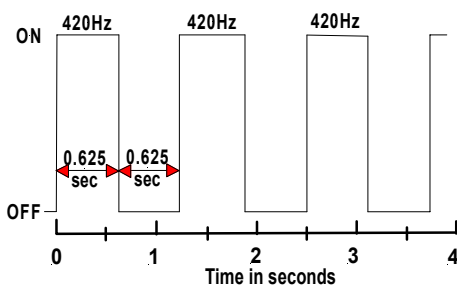
LINE FAULT  - In the event of an open or short circuit speaker line the LINE FAULT indicator (yellow) will be illuminated

ISOLATE  - the LED will be illuminated (yellow) when the warning system is isolated

Signal Structures

ALERT SIGNAL

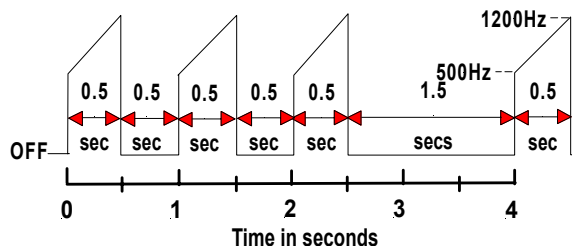
Australian AS1670.4 Alert Signal



AS1670.4:
420Hz pulsed on for 0.625 seconds
at 1.25 second intervals

EVACUATION SIGNAL

Australian AS1670.4 Evacuate Signal



AS1670.4:
0.5 second sweep signal 500-1200
Hz for 2.5 seconds at 4 second
intervals

EVACUATE SIGNAL WITH VERBAL MESSAGE

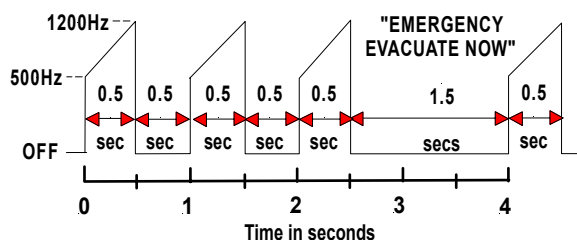


Figure 66: Alert & Evacuation Signal Structures

EV20 Cabling

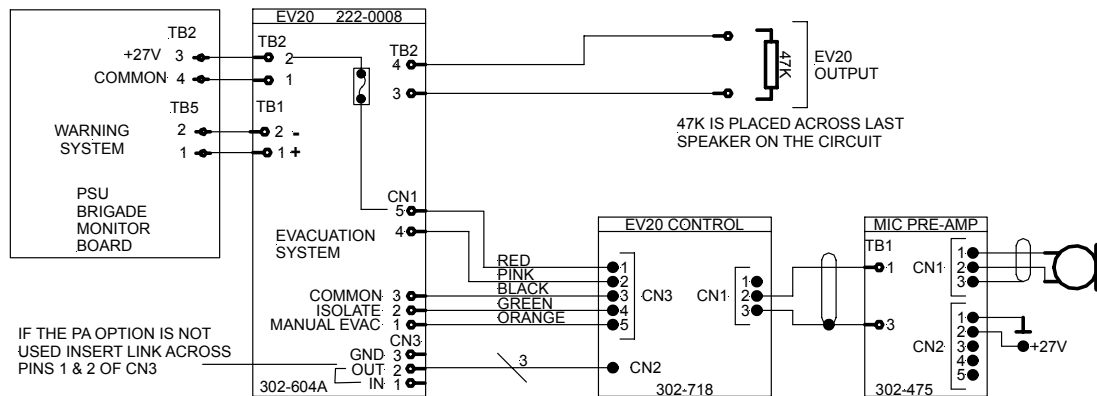


Figure 67: Typical EV20 & PA Wiring

Note: "WARNING SYSTEM" is a monitored O/P. The EOL is on board the EV20 and is effectively made to be O/C (at TB1) during an EV20 fault condition. This produces the fault condition at the FACP.

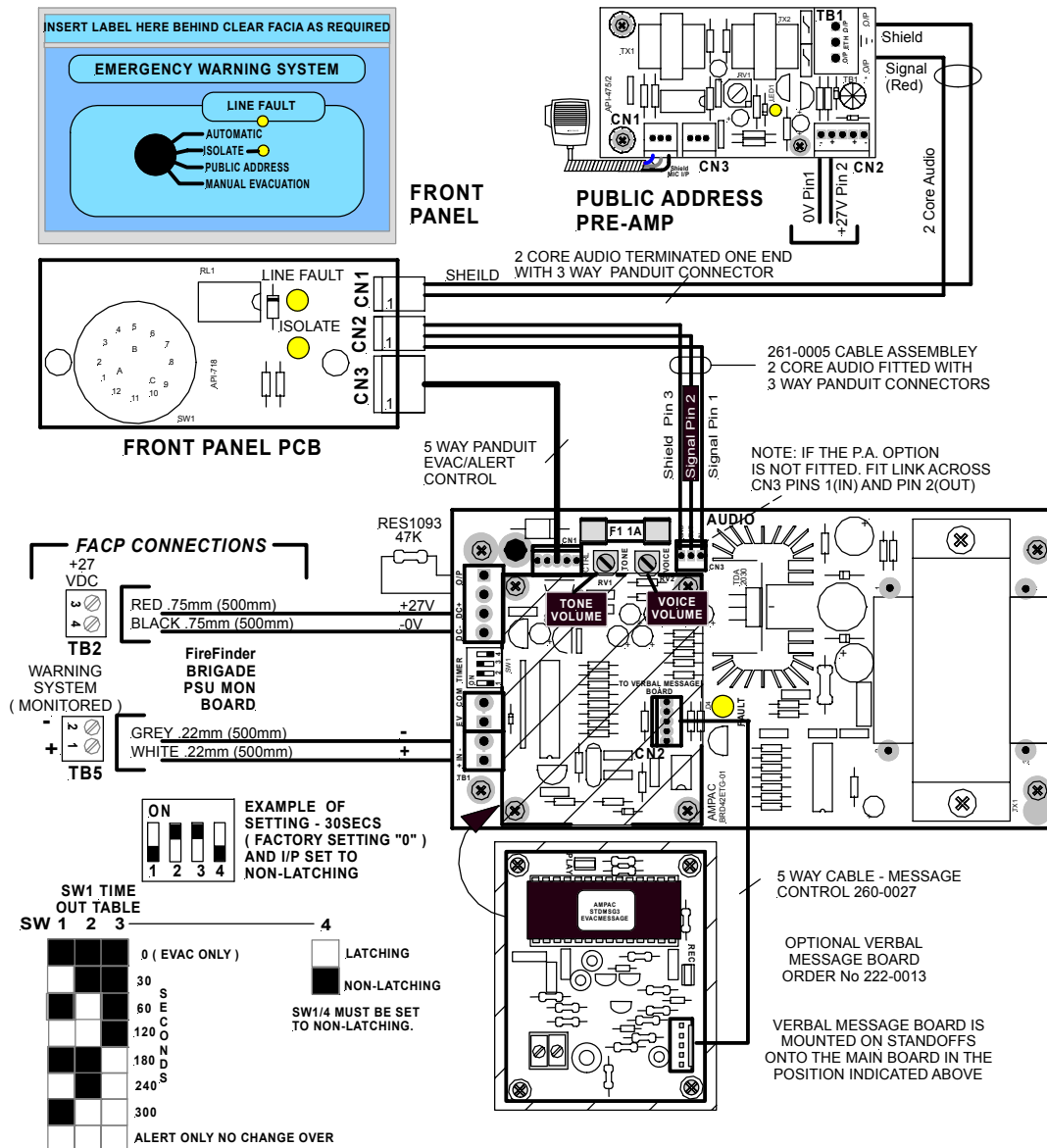


Figure 68: EV20 Wiring to Control Module, FACP Cabling and Time Out Table

EV40 Cabling

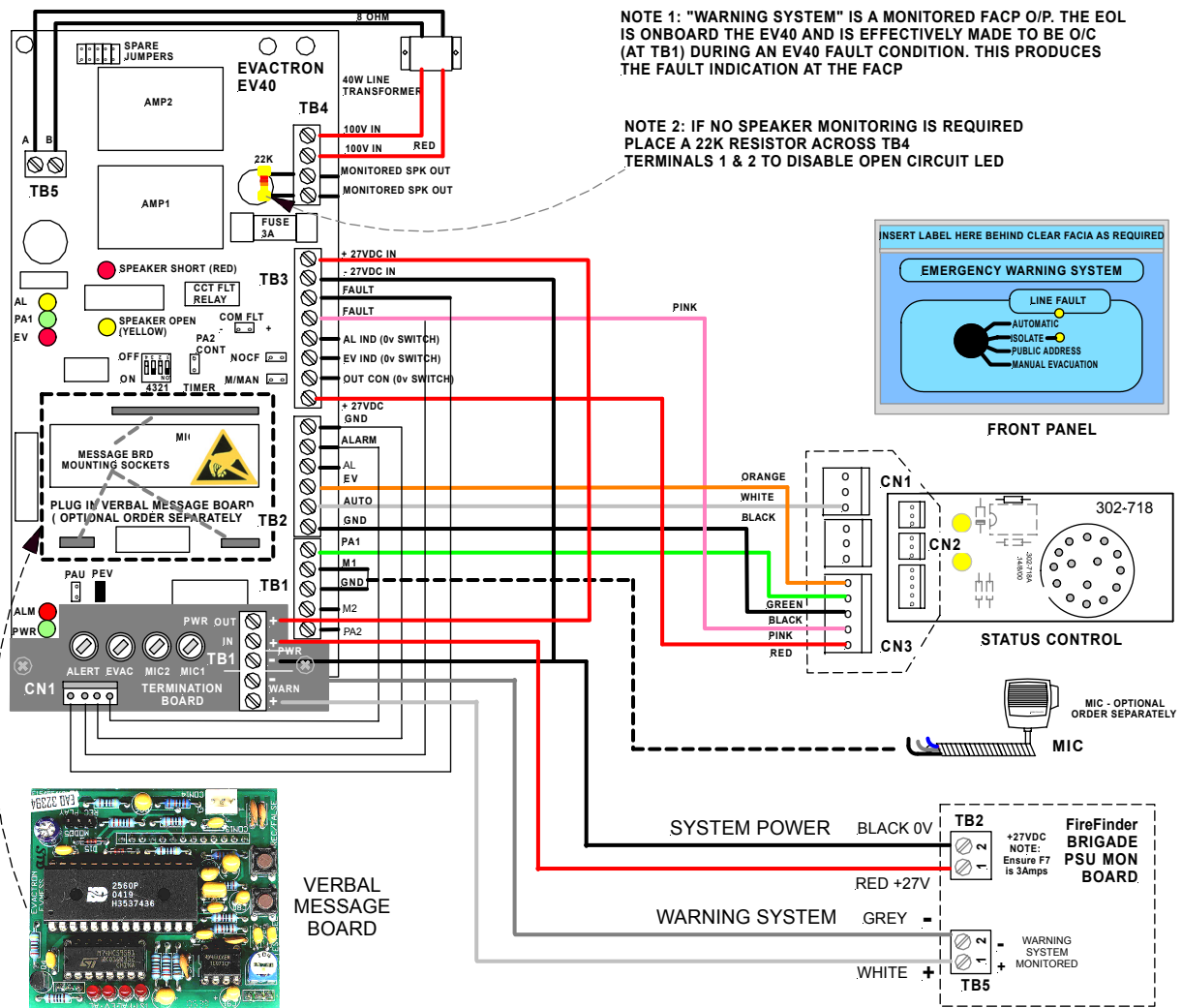


Figure 69: Typical EV40 Wiring to Control Module and FACP

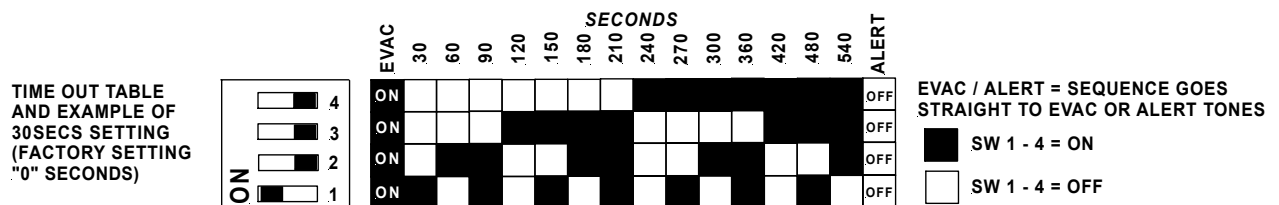


Figure 70: EV40 Time Out Table

Jumper settings

PEV: - PA + Evac – must be inserted when a selector switch is connected.

PAU: - PA in Auto – if inserted allows Mic 1 input (hand held microphone) to be used in "Auto" (with no FACP alarm) and paging in "Evac" mode.

PA2 CONT: - PA2 Control – if inserted allows the PA2 input to also switch the Control Output.

M2 1milli volt: - if inserted enables a 1mV microphone input for Mic 2, not inserted enables the input for 100mV line level (background music etc.)

9.1 EV60 / 120

The EV60 & 120 are essentially an EV20 MPU and driver but with 60 and 120 watt output amplifiers powered from a Current Limit Fuse Board.

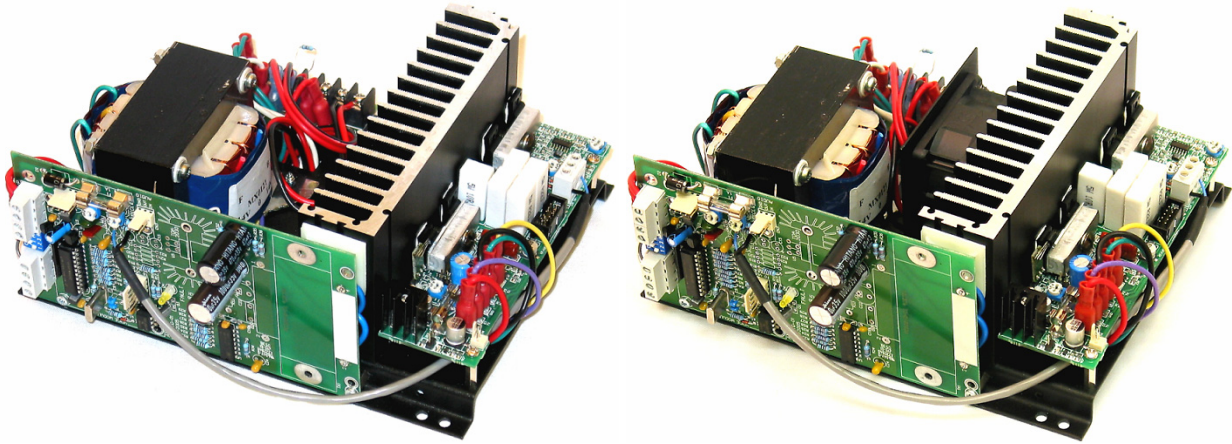


Figure 71: EV60

EV120

9.2 EV3000

Relay Board Operation

One of the relays on the 8 Way Relay Board will be programmed to operate on "Alarm". The subsequent shorting of the 10KΩ EOL initiates the Alert / Evac sequence

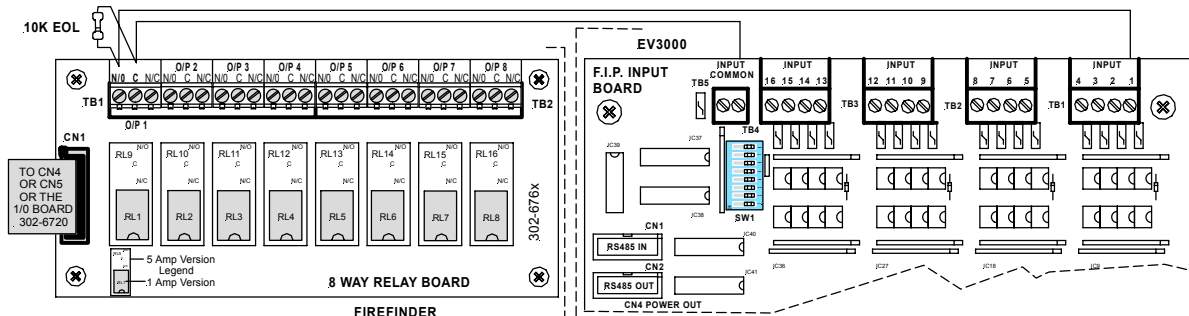


Figure 72: FACP / EV3000 Cabling Using Relay1 and I/P 1

HLI Interface Operation

The EV3000 Occupant Warning and Intercommunications System (OWIS) main central processing unit communicates via a RS485 bus with a Controller Interface Card (CIC) in an FACP.

A fault in the EV3000 will be indicated by the Master Control Panel which in turn initiates, via the Common Fault Relay Board and Brigade PSU Monitor Board, a Warning System Fault indication on the FACP.

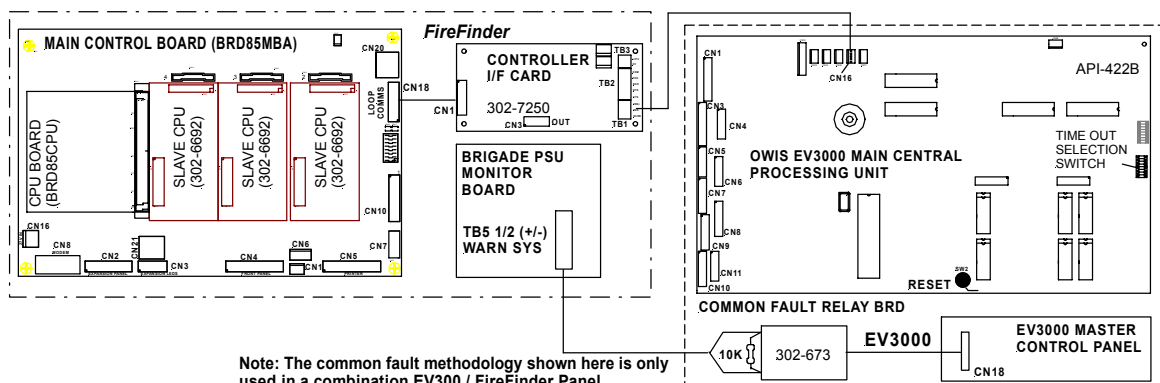


Figure 73: HLI & Common Fault Cabling To & From the FACP and EV3000

10 Brigade Devices

10.1 ASE (Vic Metro) Brigade Box

The ASE Brigade Box interfaces the Victorian Fire Brigade into the **FireFinder™** SP series of FACP's.

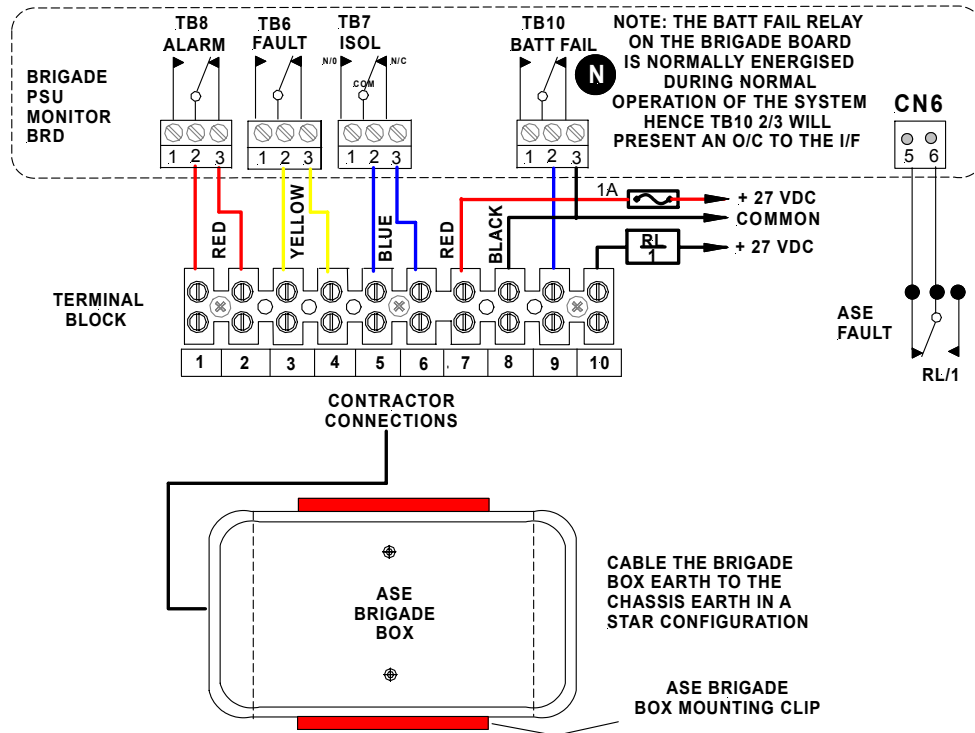


Figure 74: ASE FACP Internal Wiring

10.2 Brigade Box (Deltec WA, SA, TAS,QLD)

The Brigade Box interfaces the Fire Brigade to the **FireFinder™** SP series of FACP's.

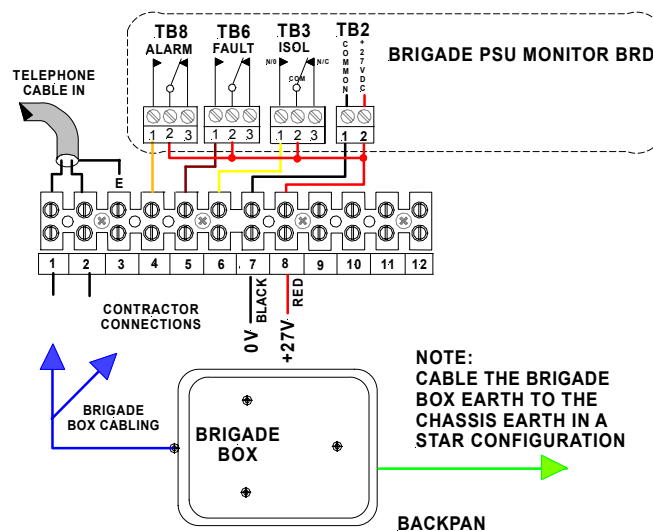


Figure 75: Brigade Box FACP Internal Wiring

11 FireFinder™ Operation

11.1 The Control Panel

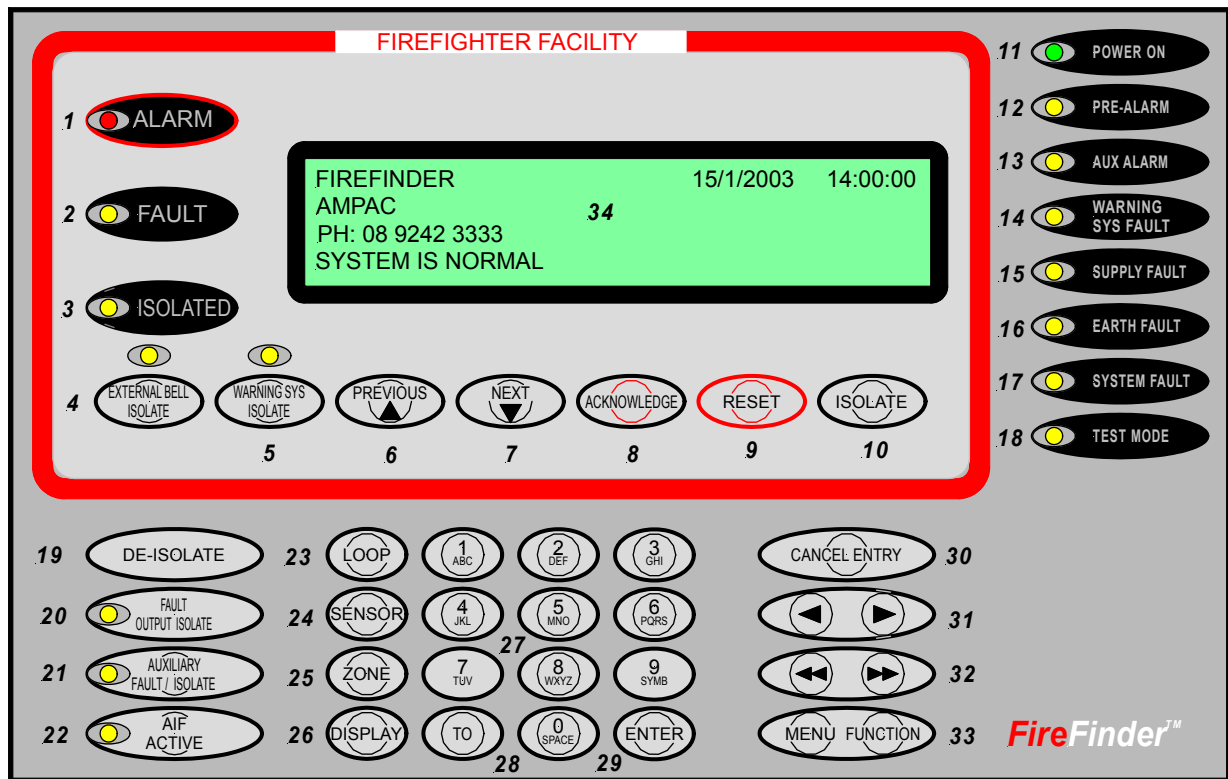







Figure 76: The FireFinder™ Control Panel with a 4 Line LCD











NOTE: The *Italic* numbers next to each of the Indicators and Keys / Buttons in the diagram above relate to the explanations below.














FIREFIGHTER FACILITY

1. **ALARM (Red):** This LED will flash if any unacknowledged alarms are present on the system. If all alarms have acknowledged it will light steady.
2. **FAULT (Yellow):** This LED will light steady if there are any faults on the system, whether they are loop faults, module faults, device faults etc.
3. **ISOLATED (Yellow):** This LED will light steady if any detectors, devices or zones in the system have been isolated.
4. **EXTERNAL BELL ISOLATE (Yellow):** Pressing this button will isolate any bells connected to the fire panel. If the bell is isolated the LED just above the button will glow steady yellow. Pressing the button again will de-isolate the bell.
5. **WARNING SYS ISOLATE** Pressing this button will isolate the FACP output to the Warning System if it is connected to one. Pressing the button again de-isolates the Warning System output. When the Warning System is isolated the LED just above the button will be illuminated steady.

6.  Pressing this key scrolls the display backwards through the alarms, faults, or isolates.
7.  Pressing this key scrolls the display forwards through alarms, faults, or isolates .
8.  Pressing this key will acknowledge an alarm currently displayed on the LCD. It will also silence the panel buzzer, which sounds whenever there is an alarm (optional) or fault.
9.  Pressing this key will reset the panel, clearing any acknowledged alarms and taking the LCD display back to its default screen, unless there are any uncleared faults or isolated devices, these will continue to be displayed.
10.  This key is used to isolate individual or groups of detectors, devices or zones.

Indicators

11.  **POWER ON** **(Green):** This LED will light when the mains power is turned on.
12.  **PRE-ALARM** **(Red):** This LED will light when a sensor/detector is in the pre-alarm state.
13.  **AUX ALARM** **(Yellow):** This LED will light if the auxiliary alarm output has been activated.
14.  **WARNING SYS FAULT** **(Yellow):** When a warning system is connected to the fire panel, this LED will light if the connection to the warning system becomes faulty.
15.  **SUPPLY FAULT** **(Yellow):** This LED will light if there is one of the following faults on the power supply.
 - The output voltage is too low (less than 26.5V)
 - The output voltage is too high (greater than 28V)
 - The battery is not connected properly.
16.  **EARTH FAULT** **(Yellow):** This LED will light if there is an incorrect earth on any of the signal cables of the system.
17.  **SYSTEM FAULT** **(Yellow)** This LED will light if the main system CPU is in fault.
18.  **TEST MODE** **(Yellow):** This LED will light when the panel is in any of the test modes.
19.  If a detector currently displayed on the LCD has been isolated, pressing this key will de-isolate it.
20.  **(Yellow):** Pressing this button will isolate the fault output relay on the brigade board. If the relay is isolated the associated LED will light. Pressing the button again will de-isolate the relay.

21.  (**Yellow**): Pressing this button or if the FACP is fitted with a door switch and the door is opened the auxiliary output relay on the brigade board will be isolated. If the auxiliary fault / isolate is isolated the associated LED will light steady. Pressing the button again will de-isolate the auxiliary fault / isolate relay.
The auxiliary output line is monitored, should it go into fault, the LED will flash.
22.  (**Yellow**): Pressing this button will activate the Alarm Investigation Facility. The LED just above the switch shall turn on.
23.  Press this key followed by a number to select the loop you wish to access eg LOOP 4.
24.  After selecting the Loop number press this key to enter the sensor number for the device to be interrogated.
25.  Press this key followed by a number eg ZONE 4 to select the required zone.
26.  Press this key after selecting the Zone number or the Loop and Sensor numbers to display the state of the device.
27.  These keys are used to navigate around the panel's menus and enter data. If entering a descriptor, or some other data that contains characters as well as numbers, pressing the keys multiple times will scroll through the available letters written on the button, in sequence. Eg 1,A,B,C
28.  Use this key to access a range of devices. Eg, 2 TO 7.
29.  Press the ENTER key when using the panel, to enter data.
30.  The CANCEL ENTRY key is used to delete data in a current field or return to the previously displayed menu.
31.  Used to move the cursor back and forth when entering data in a field.
32.  These keys are used to move between fields when entering data.
33.  Pressing the MENU key will display the main menu on the LCD. Similarly pressing the FUNCTION key will display the function menu on the LCD.
34. **LCD DISPLAY** - This screen can be configured with the servicing companies name and phone number. It also displays the current date, time and that the system is normal (no faults and alarms).

If there are any faults or alarms the LCD will display the device in question, if multiple detectors or zones are not in their normal state, the PREVIOUS and NEXT keys are used to scroll through them.



```

FIREFINDER      15/7/2005  14:00:00
AMPAC
PH: 08 9242 3333
SYSTEM IS NORMAL
  
```

IMPORTANT NOTE:

It is strongly recommended that all field programming changes be properly recorded.

12 Function And Memu

12.1 The Default LCD Display

In its normal state the **FireFinder™** will display a screen similar to that shown below.




Figure 77: The Default LCD Display

This screen can be configured with the servicing company's name and phone number via a laptop or modem. The current date, time is set in the Function menu while system status is automatically displayed.

12.2 Accessing Functions and Menus

At Levels 2 and 3 access to the panel Functions are password protected.

A new panel has a pre-programmed password of **2222** for Level 2 and **3333** for Level 3. When the customer takes control of the panel the password can be changed to suit their requirements.

 **NOTE:** All menus are provided with screen prompts and a "Quick Reference Guide" (see Section 24) guides the operator through the operation of the FAC .

From the **DEFAULT DISPLAY**, press **MENU** or **FUNCTION**. The **FUNCTION** menu is password protected (actually a pass-number as it can only contain numbers) to prevent unauthorised changes to the panel's configuration.



12.3 Function Menu and Access Levels

Three levels of ACCESS are available. Level 1 has access to MENU only while Password protected Levels 2 and 3 access MENU and FUNCTION as listed below. (also see the Quick Reference Guide, Section 24)

Level II: Allows access to:

- **Date:** Enter the Day, Month and Year (4 digit year).
- **Time:** Enter the hours and minutes (24 hour mode).
- **Day/Night Settings:** Enter the Day / Night ON times and Enable - Disable.
- **Logs:** Fire Alarm, Fault, Isolate, System & Input / Output logs.
- **Tests:** Walk and loop tests.
- **I/O:** Sets the functionality of Input / Output devices.
- **Access:** Password entry to Level 3


Level III: In addition to the Level I & II facilities, Add, Delete, Delete all passwords and Mode (Zone / Sensor) onsite Programming.

12.3.1 Forgotten Passwords

Follow the following process if a password has been forgotten or misplaced;

- a. entering 9999 into the password field;
- b. take note of the 4 digit password number displayed on the screen; then
- c. contact the AMPAC head office and quote the above number;

A temporary password will be issued and a new password can then be programmed into the FACP.

 **NOTE:** The temporary password becomes invalid if 9999 is entered again or if the panel is re-powered after 9999 has been entered.

13 The Main Menu

The **MAIN MENU** is accessed by pressing MENU.

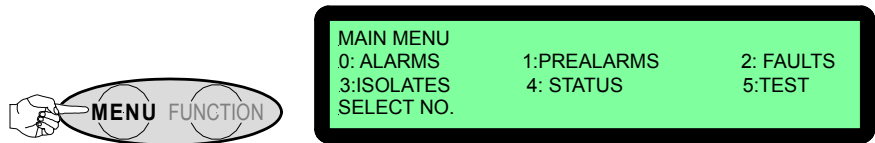


Figure 78: The Main Menu

Pressing the appropriate number on the keypad while in the MAIN MENU the user can view any;

- ① **FIRE ALARMS;**
- ① **PRE-ALARMS,**
- ② **FAULTS;** Pressing ② brings up a sub-menu from which a more detailed description of the fault can be displayed. With a Fault present select a field (① to ⑥) to view details of the fault.

① Zones Sensors	① Loops	② Modules	③ Power Supply	④ Brigade	⑤ Test Failures	⑥ Bells
--------------------	---------	-----------	-------------------	-----------	--------------------	---------

- ③ **ISOLATES** on the system.

If there are no alarms, pre-alarms, faults or isolates, a message, eg. NO ZONES OR SENSORS IN ALARM, will be displayed for 1 to 2 seconds and then the display will return to the Main menu.

13.1 Status Menu

- ④ Is pressed to access the STATUS MENU.

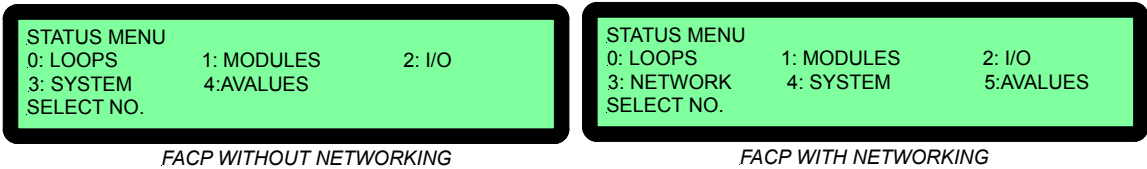


Figure 79: The Status Menu

From the STATUS MENU the status of system components and settings can be selected and displayed as listed below. Note that different screens are displayed for a system with and without networking.

Press

- ① **Loops:** Enter the loop number and the LCD will display its status, eg normal, type of fault etc.
 - ① Press to print all devices on the loops (Press RESET to stop printing)
 - ① Press to print totals of the loops (Press RESET to stop printing)
- ① **Modules:** Select the type of module, Slave ①, P/S ①, Brigade ② or External LED Mimic ③ and follow the screen prompts to display the status of the selected field.
- ② **I/O:** The LCD will display the status of an input or output in a panel or on a loop.
 - ① Press to display Output status – ① IN A PANEL or ① ON A LOOP
 - ① Press to display Input status – ① IN A PANEL or ① ON A LOOP

Once the above is selected follow the prompts and enter the;
i) I/O controller number then the input or output on that controller or,
ii) loop, sensor and output number on that device.

The LCD will display if it is configured and if so a description of what that input or output does and its current state.

Network: Note: This option is only available if the system configuration is networked.

3 Is pressed to access NETWORK STATUS.

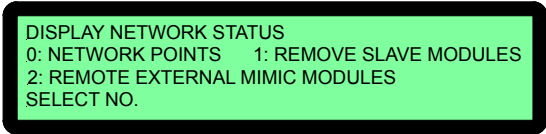


Figure 80: Display Network Status

0 Network Points:

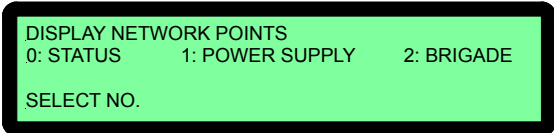
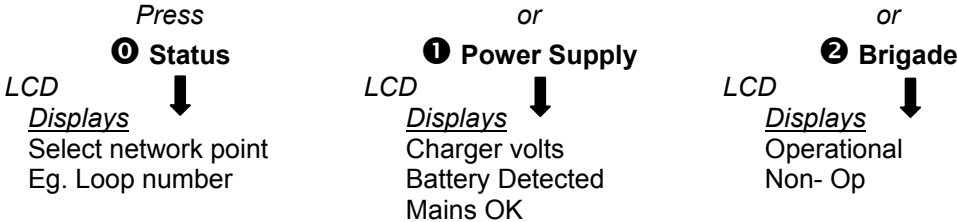


Figure 81: Display Network Points

Network Points Screens are



1 Remote Slave Modules:

Select from Network Status Remote Slave Modules, then Module number, then **ENTER**.

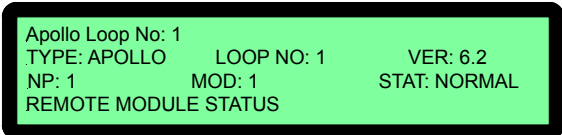


Figure 82: Display Remote Module Status

2 Remote External LED Mimic Modules:

Select from Network Status Remote External LED Mimic Modules, then NP number, then **ENTER**, then External LED Mimic number, then **ENTER**

4 Is pressed to access SYSTEM STATUS.(If the system configuration is not networked Press **3**)

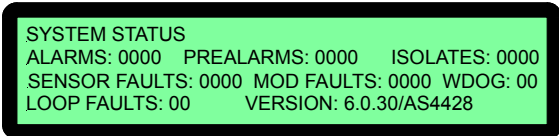


Figure 83: System Status

A Values:

5 Is pressed to access AVALUES. Enter Loop number, then ENTER , then Sensor number, then ENTER . (If the system configuration is not networked Press 4)

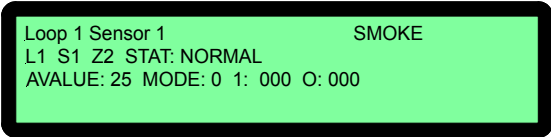


Figure 84: Analogue Values

13.2 Testing Menu

5 Is pressed to access the ALARM, FAULT AND LAMP TESTING MENU.

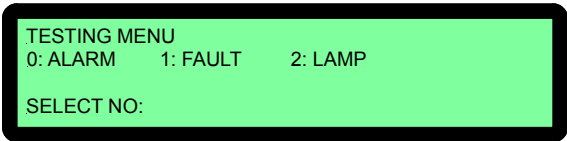


Figure 85: The Testing Menu

13.2.1 Alarm Test

i Important: Ensure “Alarm” outputs are isolated / inhibited before commencing the test.

0 is pressed to initiate an Alarm Test: Alarm tests either a zone or a sensor on a loop or a range of zones or sensors on a loop if the TO key is used, eg, ZONE 1 TO 3. This test will force a zone/s or sensor/s to go into the Alarm state or a conventional zone to a simulated Alarm condition. Pressing ENTER initiates the test.



Figure 86: Alarm Test Selection Screens

13.2.2 Fault Test

1 is pressed to initiate a Fault Test: Fault tests either a zone or a sensor on a loop or a range of zones or sensors on a loop in the same way as for the Alarm test above. This test will force a sensor to go into the Fault state or a conventional zone to a simulated Fault condition. Pressing ENTER initiates the test.



Figure 87: Fault Test Selection Screens

Once the above tests have been completed the TEST FAILURE screen will appear. Each ALARM and FAULT that was detected can be viewed by scrolling through them using the NEXT and PREVIOUS keys. If an Alarm or Fault was not detected a short message displays this result and the screen returns to the Fault Test default screen.

13.2.3 Lamp Test

2 is pressed to initiate a Lamp Test: The test will sequentially flash the LED’s on the front panel and illuminate the various segments on the LCD display.

14 Main Functions

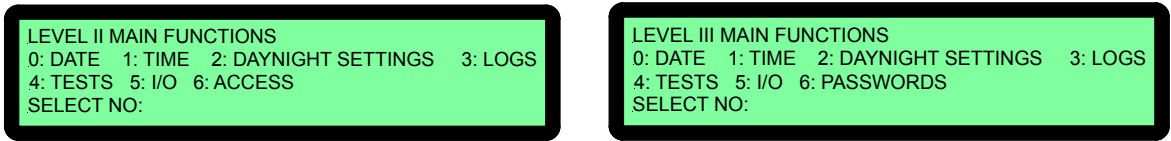


Figure 88: The Level II & III Functions Menu

14.1 Setting the Function Date Facility

Select **FUNCTION**. A prompt will ask for a **PASSWORD** if the control panel is not currently active. Using the keypad key in the Level 2 or 3 **PASSWORD** and press **ENTER**.

Press

➊ to select the set **DATE SCREEN**. The prompt will ask for the date to be entered in this format, **DD/MM/YYYY** (EG 18/08/2005), key in and press **ENTER**. The screen will then return to the **MAIN FUNCTIONS MENU**.

14.2 Setting the Function Time Facility

Press

➋ then in the following format key in the time, **HH:MM** (EG 16:00) *using the 24 hour mode*. Press **ENTER** and the screen will return to the **MAIN FUNCTIONS MENU**.

14.3 Setting the Function Daynight Facility

Press

➌ The **DAY-NIGHT SETTINGS** screen will appear. Time entry is the same as setting the “Time” facility
Press

➍ to enter the **DAY ON** time then **ENTER** and,

➎ to enter the **NIGHT ON** time then **ENTER**.

➏ to **ENABLE / DISABLE** then **ENTER**.

For this Function to have control it must be **ENABLED**, press ➐ Re-pressing ➐ will toggle to **DISABLE**.

14.4 Function Logs Facility

Press

➑ and the **EVENT LOG MENU** will be displayed.

The **LOGS MENU** allows the operator to select and view the events that have occurred of all;

Press: ➒ **ALARM**, ➓ **FAULT**, ➔ **ISOLATE**, ➖ **SYSTEM**

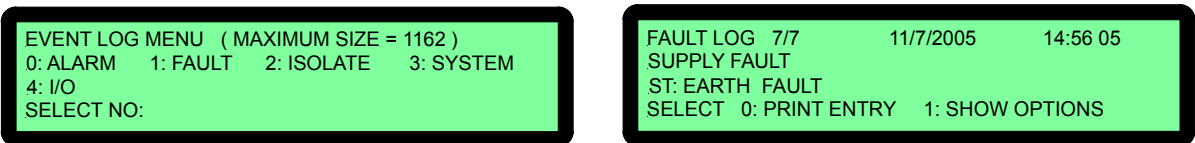




Figure 89: Logs Function Menu & Fault Log Selected

Once the type of log is selected, eg. **FAULT** above, each entry can be viewed by stepping through them

using the  and  keys

The type of log, number and totals logged, date and time of the ALARM, FAULT, ISOLATE, SYSTEM or I/O as well as device information will be displayed. The SYSTEM screen displays events and watchdog activity. From these screens the operator can select two other facilities, they are;

Press

① **PRINT ENTRY** will print out the displayed information if a printer is installed, or

① **SHOW OPTIONS** allows the operator to select how the Logs are viewed.

Press

① to **VIEW BY ENTRY NUMBER** or ① to **VIEW BY DATE**. In each case the screen will ask for the appropriate information (ENTRY NUMBER or DATE) to be entered before the selected option will be displayed.



NOTE: it is possible to scroll through the alarms by using the **PREVIOUS** and **NEXT** keys.

14.5 The Function Test Facility

Press

④ **TESTS:** prompts the operator to select either the **WALK** or **LOOP** test.

Press

① **WALK TEST;** the operator will be prompted to select either **ZONE** or **SENSOR** test.

Press

① **ZONE WALK TEST MENU;**

This screen requires the operator to select a Zone or number of Zones to be tested, that is enter the Zone number press ENTER or enter the Zone number press TO then the next highest Zone number to be tested EG. 2 TO 7 then ENTER.

The **TEST MODE LED** will be illuminated for the duration of the test and the test will run until the operator **RESETS** the system.

Press

① **SENSOR WALK TEST MENU**

This screen requires the operator to select a Zone and then a Sensor or number of Sensors (using the TO key) to be tested then pressing ENTER to start the test.

The **TEST MODE LED** will be illuminated for the duration of the test and the test will run until the operator **RESETS** the system.

Press

① **LOOP TEST** requires the operator to select a **LOOP** for **DIAGNOSTIC TESTING**

Entering the LOOP number and pressing ENTER will initiate the **DIAGNOSTIC TEST**.



NOTE: The LEDs on the Brigade Board will indicate which leg is being tested.

The tests displayed are;

- > TESTING SIDE A IDENTIFYING DEVICES on SIDE A, and
- > TESTING SIDE B IDENTIFYING DEVICES on SIDE B.

Once the testing is completed the final screen will display the number of devices found and tested on the LOOP and a Reset is requested to return the system to normal.



NOTE: If the data is not entered within 2 minutes the screen will time out and return to the **DEFAULT SCREEN**.

14.6 Function Manual I/O Control

Press

5 to display the Manual I/O Control menu

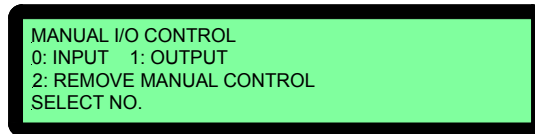


Figure 90: The Manual I/O Control Menu

Manual I/O control allows the technician to turn ON or Off inputs and outputs off a device to facilitate testing or isolation of plant during maintenance. Removal of manual control returns control to the panel.

Press

① Input Selected:

Press

① IN A PANEL: Enter the I/O Controller number then the input number . This will display the description for the input and its current state, you can then turn the input ON or OFF or remove manual control.

① ON A LOOP: Enter the loop number , the sensor number and the input number . This will display the description for the input and its current state, you can then turn the input ON or OFF or remove manual control.

② Remove All Manual Input Control: Will remove all manual input control.

① Output Selected:

Same sequences as above for inputs but substitute outputs for inputs.

② Remove All Manual Control Selected:

Globally removes all manual control.

14.7 Function Access (Level II) / Passwords (Level III)

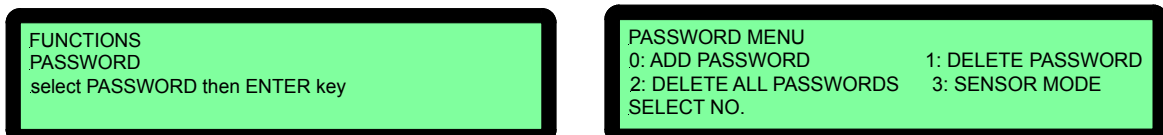


Figure 91: The Level II Password Entry & Level III Password Menu Screens

Press

6 while in the Main Functions menu and enter the Level III Password if in Access Level II or, if in Access Level III to display the Password Menu.

① Add Password: Enter the new password, then press **ENTER** . The password is always a 4 digit number.

① Delete Password: Enter the password that you want to delete, then press **ENTER**.

② Delete All Passwords: This asks you to confirm that you want to delete all the passwords. Press **ENTER** then **ENTER** again.

③ Zone / Sensor Mode: This sets the mode in which Alarms, Faults, Prealarms and Isolates status information will be displayed. “Zone” is the default setting.

14.8 Function Programming

Press

7 to display the Level III Programming Menu.

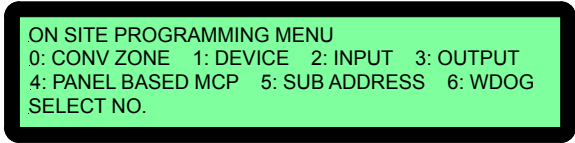


Figure 92: The Programming Menu

14.8.1 Conventional Zone Programming

Press

0 **Zone:**

Key in the zone number and enter or change the description (**DESC**) by pressing the numeric buttons multiple times to access characters while at the same time using



buttons to move the flashing underline or cursor.

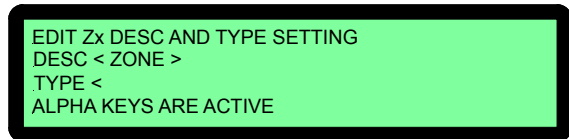


Figure 93: Zone Description & Type Programming

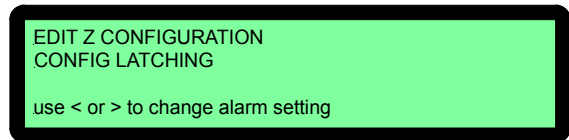




Figure 94: Brigade Options

Press  to move to the **TYPE** field or edit the information.

Press  to move between fields use the reciprocal button

By going through all the fields a second screen can also be accessed to show the Output options.

Press  to step through these fields.

The keys  are used to set the Y/N field, that is the selected Zone that will activate the Brigade Options ALRM, BELL etc and Config.

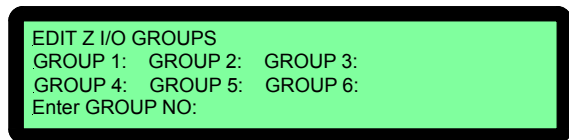




Figure 95: Zone Configuration Latching / Unlatching

Use  or  to change the setting

Configuration settings are Latching, Non-Latching, AVF, Self Reset (0 to 99 seconds). After setting the Configuration the ZONE I/O GROUPS are programmed.

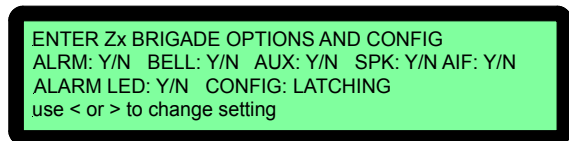






Figure 96: Zone I/O Groups

After scrolling through the groups and entering what I/O GROUPS will be turned on by what module/s or device/s in a zone/s the operator is prompted to press **ENTER** to confirm the entries and / or changes.

14.8.2 Device Programming

Press

① DEVICE:

Screen:  use these keys  to **EDIT** and move through wording & these   keys to **MOVE** between fields ie: DESC & TYPE and next parameter

Enter the **Loop** and **Sensor** number then scroll through the following screens.

Press

or

Press

① to **EDIT**

or

① to **DELETE**

1. EDIT LxSx DESCRIPTION AND TYPE STRING. Edit then *press.*

eg: **DESC** **Loop 1 Sensor 1**
TYPE **SMOKE**

2. Allocate / Edit the Sensor to a Zone and set the device type then *press.*

eg: *XP95 Photo, XP95 Heat etc-*

3. Set /Edit and display the Output Configurations or options then *press.*

eg: *Latching, AVF, Non-latching etc*

4. Set / Edits and enables / disables the day/night settings then *press.*

5. Allocates / Edits the Loop and Sensors Groups.

After scrolling through the groups a prompt tells the operator to press **ENTER** to confirm the changes.

14.8.3 Input Programming

Press

② INPUT:

By following the screen prompts as above Edit or Delete an **INPUT** in a panel or a loop.

Screen: PROGRAM MENU SELECTING AN INPUT

① IN A PANEL

I/O MODULE

Select I/O MODULE **NO.** then **ENTER**

INPUT

Select I/P NO then **ENTER**

EDIT / DELETE DESC

ALPHA KEYS ARE ACTIVE

① ON A LOOP

LOOP

Select **LOOP NO.** then **ENTER**

SENSOR

Select **SENSOR NO.** then **ENTER**

INPUT

Select **INPUT NO.** then **ENTER** key

EDIT LxSxl/Px DESC STRING DESC

14.8.4 Output Programming

Press

③ OUTPUT:

By following the screen prompts as above Add, Edit or Delete an output in a panel or on a loop.

14.8.5 Manual Control Point (MCP)

Press

④ MCP:

The operator will be prompted to enter the NODE Number, that is the Node or panel on which the MCP is mounted.

14.8.6 Sub Address

Press

⑤ Sub Address lets the operator EDIT or DELETE the address of an IO device on a Loop.



Note: *an input is the only function that can bring up an alarm.*

Select the LOOP, then **ENTER**, SENSOR, then **ENTER** then the SUBADDRESS (eg 1, 2 or 3 for 3IO device), or press **0** to EDIT or press **1** to DELETE.

Editing

If editing, the screen will display the Loop number, Sensor number and sub address followed by DESC < TYPE < INPUT > and advise the Alpha keys are active. Once edited and pressing **ENTER** the message UPDATE TO MEMORY message will be displayed.

ENTER should not be pressed if the CONFIGURATION is to be edited, instead press **▶▶** to go to the next screen where the output is configured to be latching (general alarm requiring a Reset to be returned to normal), NON-LATCHING (hence self resetting) or FAULT which clears when the fault is cleared.)

14.8.7 Watchdog

⑥

This Function provides a counter to record any re-initialisation of the processor. If due to a software failure the panel is automatically reset then the counter will increment by 1 The maximum count is 99 after which the counter resets to 00. Pressing **0** will reset the counter. When the panel is commissioned this counter **MUST** be reset to 0 as must be the **Events Logs**.

14.9 Self Learn

Self Learn is enabled / disabled in the EEPROM programming. If enabled **FireFinder™** has the ability to detect extra or missing modules or devices, (that is devices or modules that have been added or removed) or there has been a change of the type of module or device.



Note: *If a change does occur the FACP will take 30seconds to register the event on the LCD and illuminate the FAULT LED.*

14.9.1 Extra Devices Detected

The **FireFinder™** LCD will indicate extra devices have been detected by displaying the screen below and the FAULT LED will be illuminated.

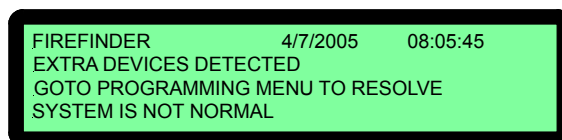


Figure 97: Resolving Extra Modules And Devices

To resolve select **FUNCTION**, enter **PASSWORD**, press **6** and the screen below will appear

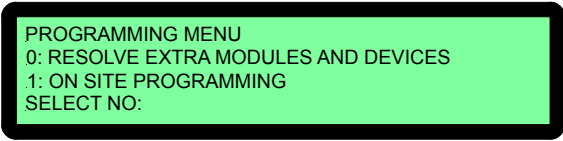


Figure 98:Added Module Or Device

Select **0** (Selecting **1** presents the **PROGRAMMING MENU**) then **0** or **1** (as seen below) then **ENTER** to ADD the module or device to the configuration, or skip to resolve the changes manually in the Programming Menu.

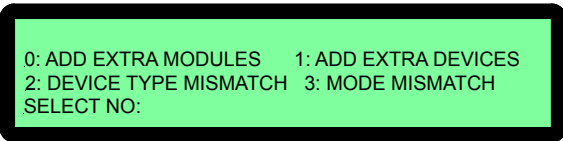


Figure 99: Resolving Extra Modules Or Devices

14.9.2 Mismatch Detected



If a mismatch is detected the Normal Default Screen will change to that shown below. Go to the Programming Menu and select either **0** *Resolve Extra Modules and Devices* then **2** (*Device Type*) or **3** (*Mode*) to resolve the mismatch, OR On Site Programming to resolve manually.



Figure 100: Resolving A Mismatch

15 Incoming Fire Alarm Signal

- Will operate the red common LED fire indicator
- Will display location of fire alarm origin on the LCD
- Will activate external alarm.
- Will activate the internal FACP buzzer. (optional)
- Will activate any ancillary equipment so programmed.
- Will abort any test in progress.

The LCD will always display the first fire alarm signal received in the top section of the LCD. The lower section of the LCD will also permanently display the most recent zone in alarm. Other essential fire alarm information and fault or disablement information is available via the  and  keys. After 30 seconds if no key is pressed the top section of the display will revert to displaying the first zone in alarm.

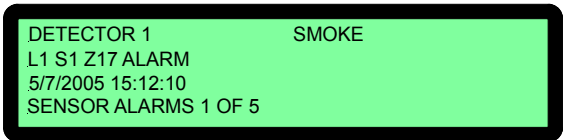


Figure 101 LCD Screen With 5 Devices In Alarm

Note: The displayed information changes to that associated with the device as the PREVIOUS / NEXT push buttons are pressed. If there is a fault condition or a fire alarm and the buzzer is sounding, press the ACKNOWLEDGE button to stop it sounding

16 Accessing a Loop, Sensor or Zone

LOOP OR SENSOR

1. From the default display, press **LOOP**
2. Enter the **loop number** you wish to interrogate then press **SENSOR**.
3. Press the button for the **sensor number**.
4. Press the **TO** button if you wish to access a range of sensors on the loop,
5. Press the **DISPLAY** button if you wish to display the status of a sensor,
6. Press the **ISOLATE** button if you wish to isolate a sensor then **ACKNOWLEDGE**
7. Press the **DE-ISOLATE** button to de-isolate a sensor.

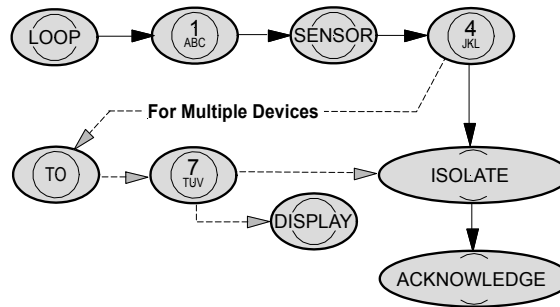


Figure 102: Steps for Isolating Single and / or Multiple Devices

ZONE

1. From the default display, press **ZONE**
2. Press the button for the **zone number**.
3. Press the **TO** button if you wish to access a range of zones,
4. Press the **DISPLAY** button if you wish to display the status of a zone,
5. Press the **ISOLATE** button if you wish to isolate a zone then **ACKNOWLEDGE**
6. Press the **DE-ISOLATE** button to de-isolate a sensor.

17 List of Compatible Devices

17.1 Short Circuit Isolation

The Ampac modules listed above feature built-in Short Circuit Isolation that continually monitors the Apollo detection loop. In the event the loop voltage drops below 14.0V DC, an open circuit condition is introduced on the negative line of the loop. This action effectively isolates the short circuit condition, and allows the device to function by drawing power from the unaffected side of the loop. The isolated section of the loop is tested every four (4) seconds, and is automatically reconnected when a loop voltage of greater than 14 V DC can be maintained.

Note: Should an OC/SC condition eventuate on a loop the LEDs A & B on the Loop Termination Board will both be illuminated.

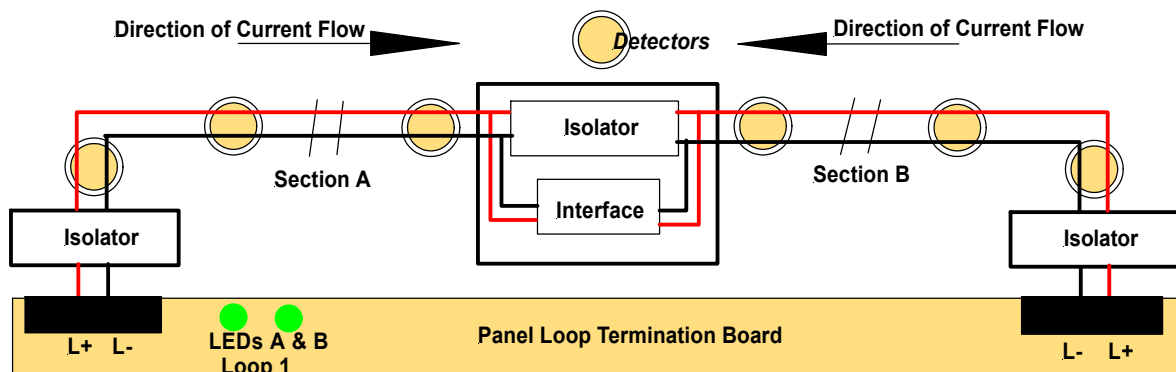


Figure 103: Short Circuit Isolation Block Diagram

17.2 Compatible Devices

Description	Ampac Order Code
XP95 Analogue Thermal – ‘A’ & ‘B’	201-0001
Discovery Analogue Thermal ‘C’	201-0089
Discovery Analogue Thermal ‘D’	201-0090
XP95 Analogue Ionisation	201-0002
XP95 Analogue Photo Optical	201-0003
XP95 Analogue Universal Base	201-0004
XP95 Short Circuit Isolator	201-0005
XP95 S/C Isolator Base	201-0006
XP95 Input / Output Unit	201-0007
XP95 Sounder Control	201-0010
XP95 Zone Monitor	201-0012
XP95 Xpert Card (Nos. 1 – 126)	201-0013
XP95 Analogue Duct Probe inc. Detector	214-0004
XP95 1 Metre Inlet Tube	214-0005
XP95 Manual Call Point	213-0028
XP95 MCP Spare Glass	213-0030
XP95 Waterproof MCP	213-0034
XP95 Ionisation Black	201-0091
XP95 Photo Optical Black	201-0092
XP95 Universal Base Black	201-0093
Discovery Multisensor	201-0094
Discovery Carbon Monoxide Detector	201-0102
XP95 XPert Card blank	201-0095
Zone Interface Device	201-0100
Single Input Device Enc	201-0300
Single Input/Output Device Enc	201-0301
3 Input Device Enc	201-0308
3 Input/Output Device Enc Loop Powered	201-0309
3 Input/Output Device Enc Ext Powered	201-0310
Single Input Device DIN	201-0350
Single Input/Output Device DIN	201-0351
3 Input Device DIN	201-0358
3 Input/Output Device DIN Loop Powered	201-0359
3 Input/Output Device DIN Ext Powered	201-0360
Alarm Acknowledge Module	226-0001
ACP-01 Manual Call Point Square Red	213-0017
ACP-01 Manual Call Point Protective Cover	213-0014
Glass for ACP-01 MCP	213-0015
FP2 Manual Call Point Resettable Red	213-0021
FP2 Manual Call Point Resettable White	213-0022
FP2 Manual Call Point Protective Cover	213-0023

Description	Ampac Order Code
Thermal Type A Series 60 White Dot	201-0023
Thermal Type B Series 60 Blue Dot	201-0024
Thermal Type C Series 60 Green Dot	201-0025
Thermal Type D Series 60 Red Dot	201-0026
Smoke Ionisation Series 60	201-0027
Smoke Optical Series 60	201-0028
Universal Base Series 60	201-0029
S60 Duct Probe inc Detector	214-0001
Type E Detectors available on request	223-0001
Remote Indicator Latching Type E	209-0019
S60 I.S. Heat Grade 3	201-0032
S60 I.S. Heat Grade 1	201-0033
S60 I.S. Ionisation	201-0034
S60 I.S. Universal Base	201-0035
XP95 I.S. Ionisation Detector	201-0103
XP95 I.S. Photo Optical Detector	201-0104
XP95 I.S. Heat Detector	201-0105
XP95 I.S. Base	201-0106
XP95 I.S. Manual Call Point	201-0107
XP95 Protocol Translator Single Channel	201-0108
Beam Detector Fireray 2000	220-0004
EV20 single zone EWS AS1670.4	222-0020
EV40 single zone EWS AS1670.4	222-0021
EV60 single zone EWS AS1670.4	222-0022
EV120 single zone EWS AS1670.4	222-0023
Vantage Sounder Red Inc Shallow Base AS1670.4	205-0062
Vantage Sounder White Inc Shallow Base AS1670.4	205-0063
Vantage Combi Red Inc Shallow Base AS1670.4	205-0066
Vantage Combi White Inc Shallow Base AS1670.4	205-0067
Vantage Combi Red Inc Deep Base AS1670.4	205-0064
Vantage Combi White Inc Deep Base AS1670.4	205-0065
Vector White AS1670.4	205-0077
XP95 Ana Uni Base Inc Vector Sounder AS1670.4	205-0078
Ampac Integrated Base Sounder AS1670.4	201-0110
Ampac Integrated Base Sounder Lid AS1670.4	201-0114
Ampac Loop Powered Beacon	201-0113

18 Certification Information

The **FireFinder™** is designed and manufactured by:

AMPAC TECHNOLOGIES PTY LTD

97 Walters Drive
Osborne Park 6017
Western Australia
PH: 61-8-9242 3333
FAX: 61-8-9242 3334



Manufactured to: AS4428

SSL Certificate of Compliance Number:

Equipment Serial Number:

Job Number

Date of Manufacture:

19 Statement of Compliance

Please PRINT

- | | | | |
|--|-------|--|--------------------------|
| 1. Name of building | | _____ | |
| 2. Address | | _____ | |
| 3. I/WE have installed in the above building | | <i>Fire Alarm Control Panel Brand Name</i> | |
| an alteration to the system | | _____ | |
| manufactured by, OR | | _____ | |
| a system manufactured by | | _____ | |
| 4. The system is connected to the | | <i>Name of Service Provider</i> | |
| monitoring service provider | | _____ | |
| | | by a permanent <input type="radio"/> , non-permanent <input type="radio"/> connection (tick) | |
| 5. Date of connection | | ____ / ____ / ____ | |
| 6. Ancillary equipment connected to the control and indicating equipment (attach). | | | |
| 7. Current drain of ancillary loads powered from the CIE power supply | | _____ | |
| 8. Primary power source voltage | | _____ | |
| 9. Battery type and capacity | | Manufacturer _____ AH | |
| 10. Is maintenance agreement held for the system? | Yes | <input type="radio"/> | No <input type="radio"/> |
| 11. Operator's handbook supplied? | Yes | <input type="radio"/> | No <input type="radio"/> |
| 12. Logbook supplied? | Yes | <input type="radio"/> | No <input type="radio"/> |
| 13. 'As-installed' drawings supplied? | Yes | <input type="radio"/> | No <input type="radio"/> |
| 14. Portions of the building not protected by this system are; (Please PRINT) | | | |
| 1. | _____ | 2. | _____ |
| 3. | _____ | 4. | _____ |
| 5. | _____ | 6. | _____ |
| 7. | _____ | 8. | _____ |
| 9. | _____ | 10. | _____ |

15. I/We

1. _____ 2. _____ 3. _____
Print Name/s

hereby certify that the installation has been thoroughly tested from each actuating device and that a test of the transmission of the alarm signal to the monitoring service provider has been satisfactorily carried out.

I/We further certify that the whole system and all components called up in Clause 1.3 in connection therewith are installed entirely in accordance with the current requirements of AS 1670.1, -

except with regard to the following details which have already been approved", approval attached.

Strike out the bolded sentence if there have not been any exceptions.

Signature _____

Date ____ / ____ / ____

Installing Company _____
Please PRINT or Stamp

19.1 Installation Details

Indicate with a number in brackets the number of actuating devices in concealed spaces.

* Add addressable loop number in brackets where applicable.

Zone of Protection	Number and Type of Actuating Devices											
Alarm Zone	* No of Actuating Devices per Zone	Thermal					Smoke		Flame		MCP	Other
#		A	B	C	D	E	Ion Photo		IR	UV		
1.												
2.												
3.												
4.												
5.												
6.												
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20 Commissioning Test Report

This **FireFinder™** Fire Alarm Control Panel is installed at:

Company Name _____
Street _____
Suburb _____
State / Country _____

(Company Name & Installation Address) Postcode _____

Owner or Owners' Authorized Representative:

Company Name _____
Street _____
Suburb _____
State / Country _____

Postcode _____

Type of Installation: NEW MODIFIED ADDITION UPGRADE
(Circle)

Date of commissioning tests: _____ / _____ / _____

Name and address of commissioning company, (in 'BLOCK LETTERS')

Company Name _____
Street _____
Suburb _____
State / Country _____

Postcode _____

Commissioning Representative: Name (Print) _____

Signature: _____

20.1 Procedure

The following tests are the minimum that shall be performed when commissioning a system using the **FireFinder™** Fire Alarm Control Panel. Supplements to these test may be added by way of attachments or notation (*using waterproof ink*) to this documentation. If supplements or tests are added reference to them shall be made at an appropriate point on this document.

This Commissioning Record is to be completed in conjunction with the -

1. operator's manual;
2. installer's statement(s);
3. 'as-installed' drawings; and
4. detector test records,

The Record provides a complete description of the installed system and its tested performance at the time of being commissioned.

20.2 System Information

	Tick relevant box	Yes	No	Not Applicable
1. Ensure that all detectors used in the system –				
i Are listed in the operator's manual;		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii Are compatible with the installed AZF,		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii Do not exceed the permitted number of detectors on each circuit; and		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv installed in an environment for which they are suitable.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Check that the primary power source for the system has been provided in accordance with AS 3000, and that the isolating switch disconnects the active conductors.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Check that the detector and the FIP locations are in accordance with the appropriate clauses of Standard, AS 1670.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Alarm zone circuit:				
i Measure each alarm zone circuit voltage, and ensure each is within the equipment manufacturer's specifications.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii Insulation resistance of all installation wiring measured in accordance with AS 3000 or similar approved method and record the worst case result in the logbook.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- | | Y | N | NA |
|--|-----------------------|-----------------------|-----------------------|
| 5. Open circuit and short circuit the end of line device' on each alarm zone circuit, or conduct other appropriate tests to ensure that fault and alarm conditions are operating correctly on all alarm zone facilities on other sections of the control and indicating equipment. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. FIP test to be carried out as follows: | | | |
| i Operate each alarm test, fault test, isolate and reset facility provided for each alarm zone facility to determine correct operation. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| ii Operate the primary power source switch on and off at least five times to check the system will not cause a false alarm from primary power source interruptions. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. Detector testing to be carried out as follows: | | | |
| i Test each installed detector or sampling point with an approved in-situ tester, and ensure that each detector has operated in the correct range, and the alarm has indicated on the control and indicating equipment and, if applicable, at the detector tested. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| ii Confirm that response of the system does not exceed 6 s from the time the detector operates until the master alarm facility registers the alarm (while in normal mode) on each zone, or 32 s when AVF is fitted. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| iii Record tests on detector test record as required by AS 1851.8 and attach to the report. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. Check the operation of each manual call point and all other actuating devices. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

For flame detectors, perform the following:

- | | | | |
|---|-----------------------|-----------------------|-----------------------|
| i Check that the number and type of detectors provide adequate protection of the area. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| ii Check that there are no 'blind' spots in areas protected. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| iii Check that detectors are rigidly fixed. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| iv Check that detectors are properly connected to compatible control and indicating equipment. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| v Check that detector lenses are clean and adequately protected from dust and extraneous radiation sources where these are present. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| vi Test the detection response to a flame source or simulated flame. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

		Y	N	NA
9.	For smoke detection sampling systems, perform the following:			
i	Measure the response time of all sampling points using smoke placed at each sampling point.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii	Check the back-up power supply capacity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii	Check the operation of alarm settings and indicators.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv	Check operation of remote indication of alarm and fault signals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
v	Check the operation of airflow failure indicators.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vi	Check the operation of the system (signal) failure indicators.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vii	Check the isolate/reset functions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
viii	Check the fault and alarm test facilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	Test each ancillary function by operating the alarm zone facility(ies), associated with the ancillary function.			
11.	Alarm signaling:			
i	Check that the master alarm facility is able to receive the alarm signal by operating each alarm zone facility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii	Check that the master alarm facility initiates an alarm to the fire control station equipment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	Battery supply:			
i	Check that both the primary and secondary power sources are of a suitable type and capacity complying with Clause 8.2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii	Perform a float voltage check according to the battery manufacturer's recommendation to ensure that the charger type and setting is correct.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Type of battery. _____			
	Charger type. _____			
	Float voltage/ required. _____			
	Charger set at. _____			
13.	Check that all alarm zone facilities have been correctly labeled and that the alarm zone is immediately apparent from the labeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	Check the 'as-installed' drawings are marked up, are consistent with the installation and the operator's manual is relevant to the installation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	Ensure the results of these tests are recorded in the system logbook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21 Troubleshooting Chart

Problem	Solution
No Mains Power	Check mains Fuse
Supply fault LED illuminated	Check output voltage it should be set to 27.6V. Low = (less than 26.5V) High = (greater than 28V) Check the battery has been connected properly
Earth Fault LED illuminated	Check all input and output cabling and wiring assemblies for short to ground
System Fault LED illuminated	Ensure correct software is installed Check all connections for loose wiring
Warning System Fault LED illuminated	Check correct E.O.L is fitted (10K) Check wiring is connected correctly
Maintenance Alarm cleared but FireFinder™ still displays Maintenance Alarm	Carry out Loop Test
LCD displays LOOP (number) open circuit	Check in and out legs are connected correctly at the loop termination board
Unable to clear an O/C or S/C on a loop	You must perform a loop test to clear the fault. This is a level 1 function.
Communication Loop not working	Check for correct software installed in all communication boards. Check LCD at Main controller. This may identify where there is a break in the communication line
Can not access Function menu	Incorrect Password entered
Forgotten password	Ring AMPAC and directions will be given to provide you with a temporary code
An Analogue Fault occurs when using a Zone Monitor to monitor a switch.	A 1.8k Ohm resistor must be placed in series with the switch contacts.
Sounder Fault	Make sure you have a 10K Ohm EOL resistor fitted and a diode (1N4004) in series with the sounder

22 Address Setting

BINARY ADDRESS SETTING (APOLLO)

SERIES XP95 - ADDRESS DATA

DIL SWITCH: ON = 1 OFF = 0 ADDRESS TAG FOR DETECTORS (I/O DEVICES)

ADDRESS 1234567	ADDRESS 1234567
01 = 1000000	64 = 0000001
02 = 0100000	65 = 1000001
03 = 1100000	66 = 0100001
04 = 0010000	67 = 1100001
05 = 1010000	68 = 0010001
06 = 0110000	69 = 1010001
07 = 1110000	70 = 0110001
08 = 0001000	71 = 1110001
09 = 1001000	72 = 0001001
10 = 0101000	73 = 1001001
11 = 1101000	74 = 0101001
12 = 0011000	75 = 1101001
13 = 1011000	76 = 0011001
14 = 0111000	77 = 1011001
15 = 1111000	78 = 0111001
16 = 0000100	79 = 1111001
17 = 1000100	80 = 0000101
18 = 0100100	81 = 1000101
19 = 1100100	82 = 0100101
20 = 0010100	83 = 1100101
21 = 1010100	84 = 0010101
22 = 0110100	85 = 1010101
23 = 1110100	86 = 0110101
24 = 0001100	87 = 1110101
25 = 1001100	88 = 0001101
26 = 0101100	89 = 1001101
27 = 1101100	90 = 0101101
28 = 0011100	91 = 1101101
29 = 1011100	92 = 0011101
30 = 0111100	93 = 1011101
31 = 1111100	94 = 0111101
32 = 0000010	95 = 1111101
33 = 1000010	96 = 0000011
34 = 0100010	97 = 1000011
35 = 1100010	98 = 0100011
36 = 0010010	99 = 1100011
37 = 1010010	100 = 0010011
38 = 0110010	101 = 1010011
39 = 1110010	102 = 0110011
40 = 0001010	103 = 1110011
41 = 1001010	104 = 0001011
42 = 0101010	105 = 1001011
43 = 1101010	106 = 0101011
44 = 0011010	107 = 1101011
45 = 1011010	108 = 0011011
46 = 0111010	109 = 1011011
47 = 1111010	110 = 0111011
48 = 0000110	111 = 1111011
49 = 1000110	112 = 0000111
50 = 0100110	113 = 1000111
51 = 1100110	114 = 0100111
52 = 0010110	115 = 1100111
53 = 1010110	116 = 0010111
54 = 0110110	117 = 1010111
55 = 1110110	118 = 0110111
56 = 0001110	119 = 1110111
57 = 1001110	120 = 0001111
58 = 0101110	121 = 1001111
59 = 1101110	122 = 0101111
60 = 0011110	123 = 1101111
61 = 1011110	124 = 0011111
62 = 0111110	125 = 1011111
63 = 1111110	126 = 0111111

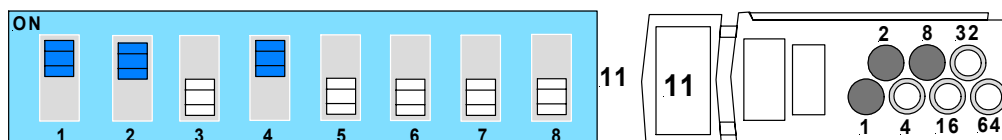


Figure 104: Switch and Tab Set to 11

POWER SUPPLY & BATTERY CALCULATOR

Panel Configuration	Iq Calculation		Iq	Evac Type	Iq in mA	Ia in mA
	No	Off X mA	= Iq			
Basic 1 loop panel	<input type="text"/>	240	<input type="text"/>	EV20	41	650
Basic 2 loop panel	<input type="text"/>	254	<input type="text"/>			
Basic 16 Zone panel	<input type="text"/>	360	<input type="text"/>	EV40	140	2500
Extender	<input type="text"/>	1.8	<input type="text"/>	EV60	150	3800
LCD repeater	<input type="text"/>	156.2	<input type="text"/>	EV120	150	8500
LED repeater	<input type="text"/>	27	<input type="text"/>			
Evac Module	<input type="text"/>		<input type="text"/>			

Interface Modules

Additional 3,5 loops add	<input type="text"/>	40 each	<input type="text"/>
Additional 2,4 loops add	<input type="text"/>	15 each	<input type="text"/>
16 zone	<input type="text"/>	143	<input type="text"/>
16/16 I/O	<input type="text"/>	5	<input type="text"/>
Fire Fan Control	<input type="text"/>	14	<input type="text"/>
32 Zone LED	<input type="text"/>	0	<input type="text"/>
Network I/F	<input type="text"/>	74	<input type="text"/>
Controller I/F	<input type="text"/>	5.1	<input type="text"/>
Valve or Pump Display	<input type="text"/>	3.7	<input type="text"/>
8 Way Bell Monitor	<input type="text"/>	20	<input type="text"/>
Agent Release	<input type="text"/>	29	<input type="text"/>

Loop Devices

XP95 Thermal A / B	<input type="text"/>	0.25	<input type="text"/>
Discovery Thermal C&D	<input type="text"/>	0.5	<input type="text"/>
XP95 Ion	<input type="text"/>	0.28	<input type="text"/>
XP95 Photo	<input type="text"/>	0.34	<input type="text"/>
Discovery Multisensor	<input type="text"/>	0.5	<input type="text"/>
Discovery Photo	<input type="text"/>	0.4	<input type="text"/>
Discovery Ion	<input type="text"/>	0.5	<input type="text"/>
XP95 Short cct isolator	<input type="text"/>	0.11	<input type="text"/>
XP95 I/O module	<input type="text"/>	1.2	<input type="text"/>
XP95 Sounder control	<input type="text"/>	1.9	<input type="text"/>
XP95 MCP	<input type="text"/>	0.35	<input type="text"/>
XP95 Zone Monitor	<input type="text"/>	6	<input type="text"/>
Ampac 3 I/O loop power	<input type="text"/>	2.1	<input type="text"/>
Ampac 3 I/O ext. power	<input type="text"/>	1.5	<input type="text"/>
Ampac SID / SIOD	<input type="text"/>	1.7	<input type="text"/>

Iq =

Devices activating when the system is in alarm

8 x Relays	<input type="text"/>	60	<input type="text"/>
Bell	<input type="text"/>	30	<input type="text"/>
Other	<input type="text"/>		<input type="text"/>

I_{da} =


Devices de-activating when the system goes into alarm

Aircon Relays	<input type="text"/>	20	<input type="text"/>
Electric locks	<input type="text"/>	100	<input type="text"/>
Other	<input type="text"/>		<input type="text"/>

I_{dd} =

$$I_{Alarm} (I_a = I_q + I_{da} - I_{dd}) = mA$$

Battery capacity at end of battery life	=	(I _q x 24) + Fc(I _a x 0.5)
	=	Note: The figure of 24 above
	=	should be replaced with 96 if
	=	Agent Release is used
	=	
	=	Ah

Note:  1,000ma = 1 Amp
Fc = capacity de-rating factor
AS 1670.1 states a factor of 2 is deemed to satisfy the criteria.

New battery capacity requirement	=	Ah x 1.25
	=	Ah
Rounded up to nearest available		Ah
	=	

PRIMARY POWER SOURCE CALCULATIONS

Battery Charger Current

Requirement: Battery is charged for 24 hrs. to provide 5I_q + 0.5I_a

	=	(5x I _q) + Fc(0.5 x I _a)
	=	
	=	
Ah Requirement	=	Ah

Battery Charging Current Required	=	<u>Ah above</u>
		24 x e
e is the battery efficiency, 0.8	=	A

Power Supply Requirement

Select the greater of 1 or 2

1. I_a + non- battery backed ancillary alarm loads
2. I_q + non – battery backed quiescent loads

If the power supply is used as the charger the current rating of the supply shall be [(1 or 2) + battery charger current].

EXAMPLE CALCULATION

Panel Configuration	Iq Calculation		Iq	Evac Type	Iq in mA	Ia in mA
	No Off	X mA	= Iq			
Basic 1 loop panel	1	240	240	EV20	41	650
Basic 2 loop panel		254	0			
Basic 16 Zone panel		360	0	EV40	140	2500
Extender	1	1.8	1.8	EV60	150	3800
LCD repeater		156.2	0	EV120	150	8500
LED repeater	2	27	54			
Evac Module			0			

Interface Modules

Additional 3,5 loops add		40 each	0
Additional 2,4 loops add		15 each	0
16 zone	3	143	429
16/16 I/O	1	5	5
Fire Fan Control	1	6	6.7
32 Zone LED		0	0
Network I/F		74	0
Controller I/F		5.1	0
Valve or Pump Display	1	3.7	3.7
8 Way Bell Monitor		20	0
Agent Release		29	

Loop Devices

XP95 Thermal A & B	30	0.25	7.5
Discovery Thermal C&D		0.5	0
XP95 Ion		0.28	0
XP95 Photo		0.34	0
Discovery Multisensor	30	0.5	15
Discovery Photo		0.4	0
Discovery Ion		0.5	0
XP95 Short cct isolator		0.11	0
XP95 I/O module	5	1.2	6
XP95 Sounder control		1.9	0
XP95 MCP		0.35	0
XP95 Zone Monitor		6	0
Ampac 3 I/O loop power		2.1	0
Ampac 3 I/O ext power		1.5	0
Ampac SID / SIOD		1.7	0
			0

Iq = 768.7

Devices activating when the system is in alarm

8 X Relays	10	60	600
Bell	4	30	120
Other			

I_{da}= 720

Devices de-activating when the system goes into alarm

Aircon Relays	2	20	40
Electric locks	4	100	400
Other eg LAM			

I_{dd}= 440

I Alarm (Ia = Iq + I_{da} – I_{dd}) = 769 + 720 – 440 = 1049mA

$$\begin{aligned}
 \text{Battery capacity at end of battery life} &= (I_q \times 24) + F_c(I_a \times 0.5) \\
 &= (769\text{ma} \times 24) + 2(1049\text{ma} \times 0.5) \\
 &= 18456\text{ma} + 1050\text{ma} \\
 &= 19.506\text{Ah}
 \end{aligned}$$

Note: 1,000ma = 1 Amp

$$\begin{aligned}
 \text{New battery capacity requirement} &= 19.5 \times 1.25 \\
 &= 24.375 \text{ Ah}
 \end{aligned}$$

Rounded up to nearest available 25 Ah

PRIMARY POWER SOURCE CALCULATIONS

Battery Charger Current

Requirement: Battery is charged for 24 hrs. to provide $5I_q + 0.5I_a$

$$\begin{aligned}
 &= (5 \times I_q) + F_c(0.5 \times I_a) \\
 &= (5 \times 769) + 2(0.5 \times 1049) \\
 &= 3845 + 1050 \\
 \text{Ah Requirement} &= 4.895\text{Ah}
 \end{aligned}$$

$$\begin{aligned}
 \text{Battery Charging Current Required} &= \frac{4.895}{24 \times e}
 \end{aligned}$$

e is the battery efficiency, 0.8 = 0.26A (rounded)

Power Supply Requirement

Select the greater of 1 or 2

1. I_a + non- battery backed ancillary alarm loads

2. I_q + non – battery backed quiescent loads

If the power supply is used as the charger the current rating of the supply shall be $[(1 \text{ or } 2) + \text{battery charger current}]$.

List of Compatible Batteries

(tested by SSL to comply with AS 1603 . 4 1987 Appendix G [valid until June 2002]).



Note 1: **afp** number is the SSL Listing Number.

Note 2: Types are the Manufacturers and not the suppliers.

Note 3: Automotive type batteries are not normally suitable for stationary use.

afp - 791	afp - 792	afp - 1220	afp - 1228
Yuasa NP Series	Power-Sonic PS Series	Matsushita LCR Series	B & B BP Series
NPH1.3-12	PS-1208	LCR12V4BP	BP 1.2-12
NPH2-12	PS-1212	LC-R125P	BP 1.9-12
NPH3.2-12	PS-1219	LC-RC1217P	BP 4 –12
NPH5-12	PS-1232	LC-R127P	BP 7 –12
NPH16-12	PS-1240	LC-R127R2P	BP 12-12
NP0.8-12	PS-1270		BP 17-12
NP1.2-12	PS-12120	afp - 1221	BP 24-12
NP1.9-12	PS-12180	Matsushita	BP 40-12
NP2.3-12	PS-12240	LCL Series	
NP2-12	PS-12330	LC-LA12V33P	
NP2.6-12	PS-12400		
NP4-12	PS-12650	Afp - 1222	
NP7-12		Matsushita	
NP12-12		LCX Series	
NP24-12		LC-X1224P9(AP)	
NP24-12B		LC-X1228P(AP)	
NP38-12		LC-X1238P(AP)	
NP65-12		LC-X1242P(AP)	
		LC-X1265P	
		LC-XA12100P	

24 **Glossary of Terms**

ACF :	ANCILLARY CONTROL FACILITY
ACKD :	ACKNOWLEDGED
AHU :	AIR HANDLING UNIT
ALM :	ALARM
AVF :	ALARM VERIFICATION FACILITY
AZF :	ALARM ZONE FACILITY
AZC :	ALARM ZONE CIRCUIT
C :	RELAY COMMON CONTACT (WIPER)
CIC :	CONTROLLER INTERFACE CARD
CN :	CONNECTOR
CPU :	COMMON PROCESSOR UNIT
DGP :	DATA GATHERING POINT
EARTH :	BUILDING EARTH
EOL :	END OF LINE
FDS :	FIRE DETECTION SYSTEM
FACP :	FIRE ALARM CONTROL PANEL
FLT :	FAULT
GND :	GROUND (0 VOLTS) NOT EARTH
I/O :	INPUT/OUTPUT
LCD :	LIQUID CRYSTAL DISPLAY
MAF :	MASTER ALARM FACILITY
MCP :	MANUAL CALL POINT
MOV :	METAL OXIDE VARISTOR (TRANSIENT PROTECTION)
NIC :	NETWORK INTERFACE CARD
N/C :	NORMALLY CLOSED RELAY CONTACTS
N/O :	NORMALLY OPEN RELAY CONTACTS
N/W :	NETWORK
PCB :	PRINTED CIRCUIT BOARDS
P/S :	POWER SUPPLY
PSM :	POWER SUPPLY MODULE
REM :	REMOTE
SPOT :	SINGLE PERSON OPERATING TEST
TB :	TERMINAL BLOCK
VDC :	DIRECT CURRENT VOLTS

25 **Definitions**

Addressable system - a fire alarm and detection system that contains addressable alarm zone facilities or addressable control devices.

Alarm Verification Facility (AVF) - that part of the FACP, which provides an automatic resetting function for spurious alarm signals so that they will not inadvertently initiate Master Alarm Facility (MAF), or ACF functions. Using ConfigManager prior to downloading to the **FireFinder™** sets this option

Alarm zone - the specific portion of a building or complex identified by a particular alarm zone facility.

Alarm Zone Circuit (AZC) - the link or path that carries signals from an actuating device(s) to an alarm zone facility(s).

Alarm Zone Facility (AZF) - that part of the control and indicating equipment that registers and indicates signals (alarm and fault) received from its alarm zone circuit. It also transmits appropriate signals to other control and indicating facilities.

Alert signal - an audible signal, or combination of audible and visible signals, from the occupant warning system to alert wardens and other nominated personnel as necessary to commence prescribed actions.

Ancillary Control Facility (ACF) - that portion of the control and indicating equipment that on receipt of a signal initiates predetermined actions in external ancillary devices.

Ancillary equipment - remote equipment connected to FACP.

Ancillary relay - relay within FACP to operate ancillary equipment.

Ancillary output - output for driving ancillary equipment.

Approved and approval - approved by, or the approval of, the Regulatory Authority concerned.

Card-detect link - a link on a module connector to indicate the disconnection of the module.

Conventional System - is a fire detection system using a dedicated circuit for each alarm zone.

Distributed system - a fire alarm and detection system where sections of the control and indicating equipment are remotely located from the FACP or where sub-indicator panel(s) communicate with a main FACP.

Field connections - are connections made to FACP or ancillary equipment during installation.

Fire alarm system - an arrangement of components and apparatus for giving an audible, visible, or other perceptible alarm of fire, and which may also initiate other action.

Fire detection system - an arrangement of detectors and control and indicating equipment employed for automatically detecting fire and initiating other action as arranged.

Fire Alarm Control Panel (FACP) - a panel on which is mounted an indicator or indicators together with associated equipment for the fire alarm or sprinkler system.

Fire resisting - an element of construction, component or structure which, by requirement of the Regulatory Authority, has a specified fire resistance.

Indicating equipment - the part of a fire detection and or alarm system, which provides indication of any warning signals (alarm and fault), received by the control equipment.

Interface - The interconnection between equipment that permits the transfer of data.

Main equipment - equipment essential to the operation of the system including, control equipment, amplification equipment and power supply modules.

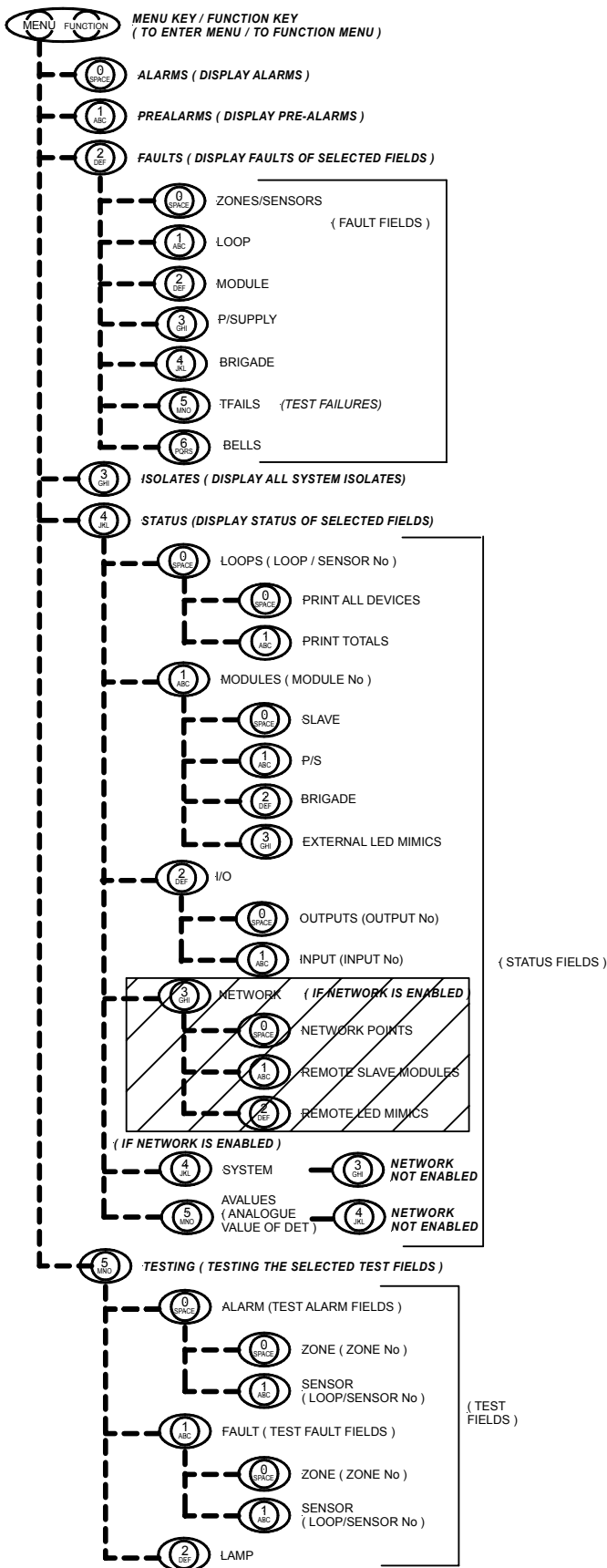
Master Alarm Facility (MAF) - that part of the equipment which receives alarm and fault signals from any alarm zone facility and initiates the common signal (alarm and/or fault) for transmission to the fire control station. Bells and other ancillary functions may be initiated from this facility.

Power Supply - that portion of the FACP which supplies all voltages necessary for its operation.

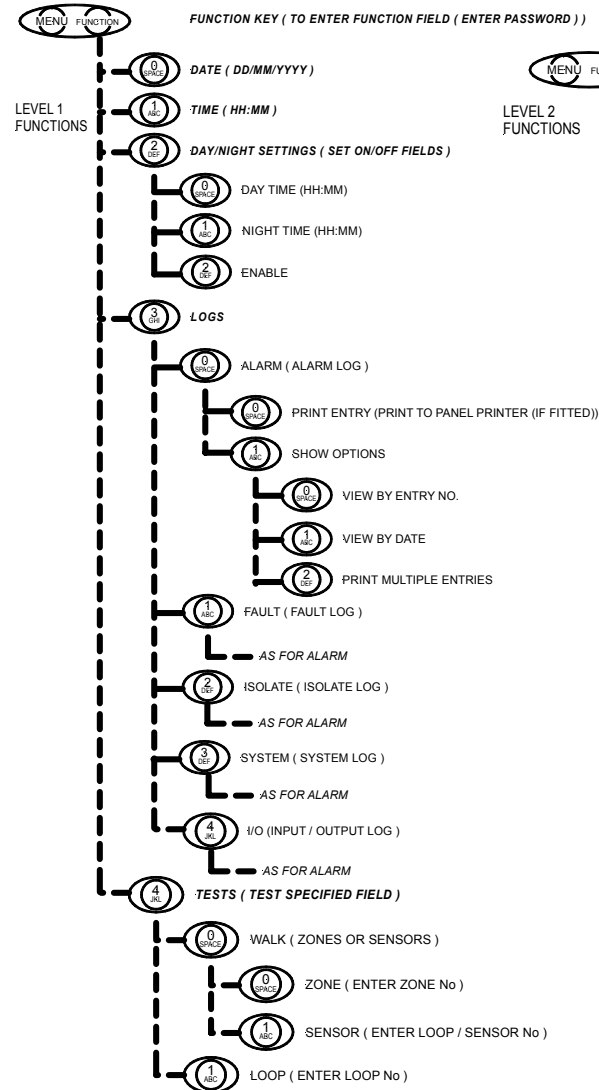
Regulatory Authority - an authority administering Acts of Parliament or Regulations under such Acts.

26 Quick Reference Guides

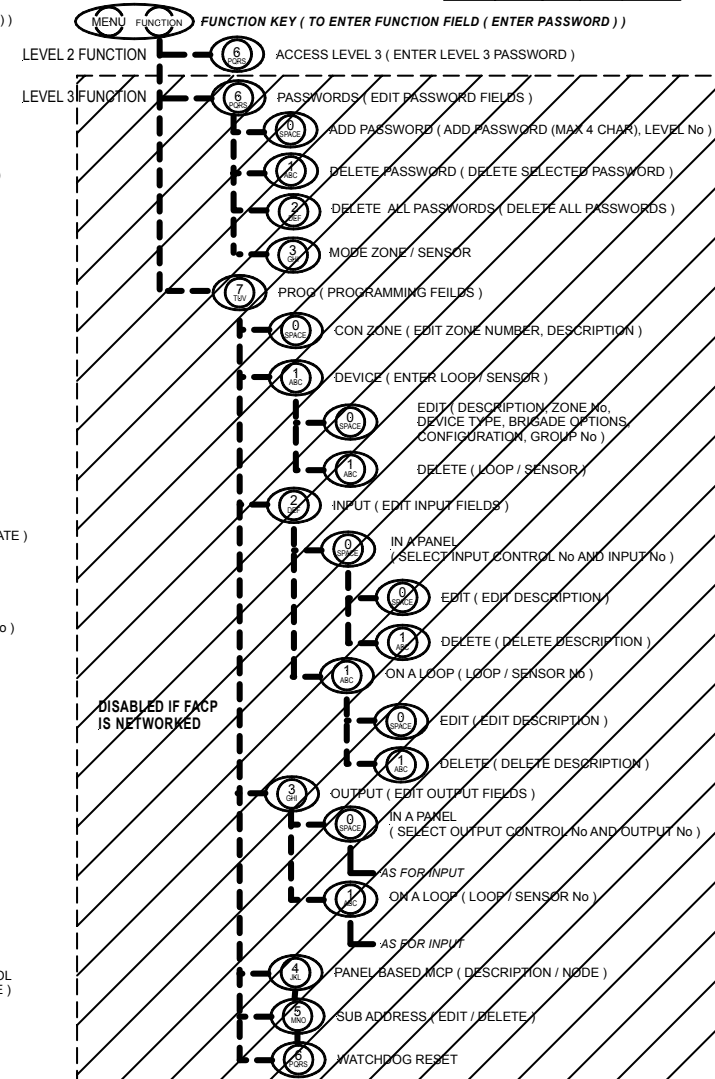
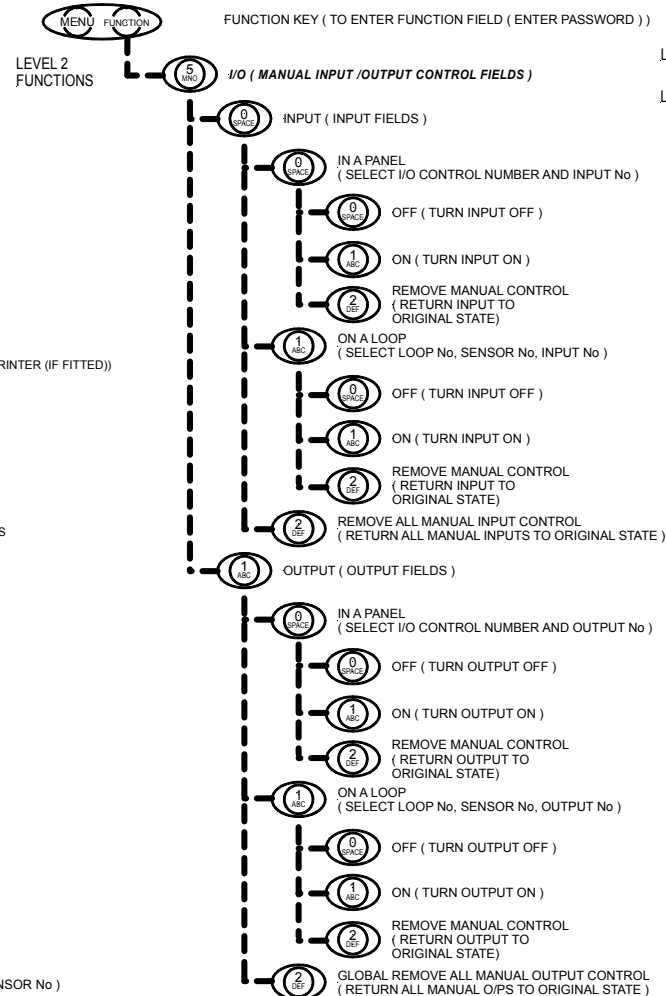
MAIN MENU OPTIONS



FUNCTION MENU OPTIONS



FireFinder™ Quick Reference





www.ampac.net

AUSTRALIA
AMPAC TECHNOLOGIES PTY LTD
97 Walters Drive
Osborne Park 6017
Western Australia

Tel: 61 8 9242 3333
Fax: 61 8 9242 3334
Email: info@ampac.net

EUROPE
AMPAC EUROPE LTD.
Unit 1, Norden Court,
Alan Ramsbottom Way
Great Harwood, Blackburn
England BB6 7UR

Tel: 44 (0) 1254 880 201
Fax: 44 (0) 1254 880 202
Email: info.eu@ampac.net

NEW ZEALAND
AMPAC INDUSTRIES LTD.
Unit 4, 101 Diana Drive
Glenfield, Auckland
New Zealand

Tel: 64 9 443 8072
Fax: 64 9 443 8073
Email: info.nz@ampac.net



UNCONTROLLED DOCUMENT

NOTE: Due to Ampac's commitment to continuous improvement specifications may change without notice.