AMPAC
ADVANCED WARNING SYSTEMS

FireFinder

**FireFinder
Fire Alarm Control Panel
(EN54- 2 & 4)
Installation, Commissioning &
Operation**

MAN 2375-8
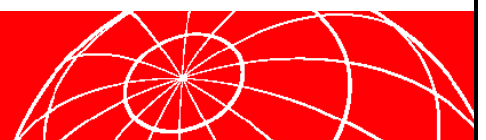
INCOMING ALARM CONDITION

1) INDICATION

FIRE

FIRE LED STEADY

```
DESCRIPTION                          TYPE
LOOP No SENSOR No STATUS: ALARM
DATE TIME


SENSOR ALARMS 1 OF xx
```
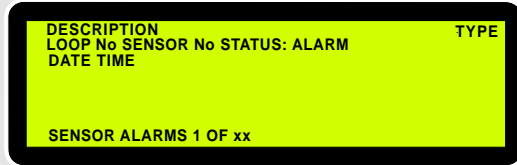
LCD DISPLAY OF DESCRIPTION
TYPE, ADDRESS, DATE TIME
AND NUMBER OF ALARMS

2) SOUNDER SILENCE OR SOUND EVACUATION

SOUNDER
SILENCE

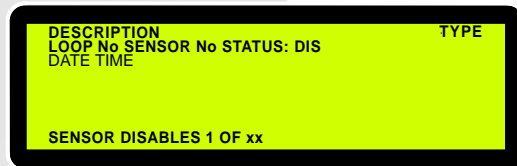EVACUATE

PRESS KEY

DEVICE
DISABLE / ENABLE

DISABLE ALARM

REPEAT THE ABOVE STEPS
AFTER PRESSING NEXT TO
DISABLE ALARMS

```
DESCRIPTION                          TYPE
LOOP No SENSOR No STATUS: DIS
DATE TIME


SENSOR DISABLES 1 OF xx
```

LCD DISPLAY OF DESCRIPTION
TYPE, ADDRESS, DATE TIME
AND NUMBER OF DISABLES

FIRE

FIRE LED STEADY

3) SOUNDER SILENCE

SOUNDER
SILENCE

IF NECESSARY PRESS TO
SILENCE SOUNDERS
INDICATOR WILL TURN ON

3) RESET ALARMS

RESET

PRESS TO RESET ALL ALARMS

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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 7 Ledgar Rd, Balcatta, Western Australia 6021 under the 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.

2. The Trader shall disclose Proprietary Information received by AMPAC under this Agreement to persons within its organisation only if such persons are legally bound in writing to protect the confidentiality of such Proprietary Information.

3. The undertakings and obligations of the Trader under this Agreement shall not apply to any Proprietary Information which:
   - 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;
   - Is generally disclosed to third parties by AMPAC without restriction on such third parties;
   - Is shown by the Trader to have been in its possession prior to the receipt thereof from AMPAC;
   - Is approved for release by written authorisation of AMPAC; or
   - 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 SERIES II* 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 Series II* 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;

➢ Be qualified and trained for the task they undertake;
➢ Be familiar with the contents of this manual prior to the installation, commissioning or operation of a FireFinder control system;
➢ Observe anti-static pre-cautions at all times; and
➢ 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

FireFinder Detector Manual

British Standard: EN54 parts 2 & 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 Series II* 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

> ➤ *SmartGraphics*

> ➤ SmartTerminal

> ➤ Remote LED mimics

> ➤ Peer to Peer networking

> ➤ Master Slave (Main - Sub) networking

> ➤ Main panel plus Data Gathering Panels networking

The panel is built to comply with the following standard:
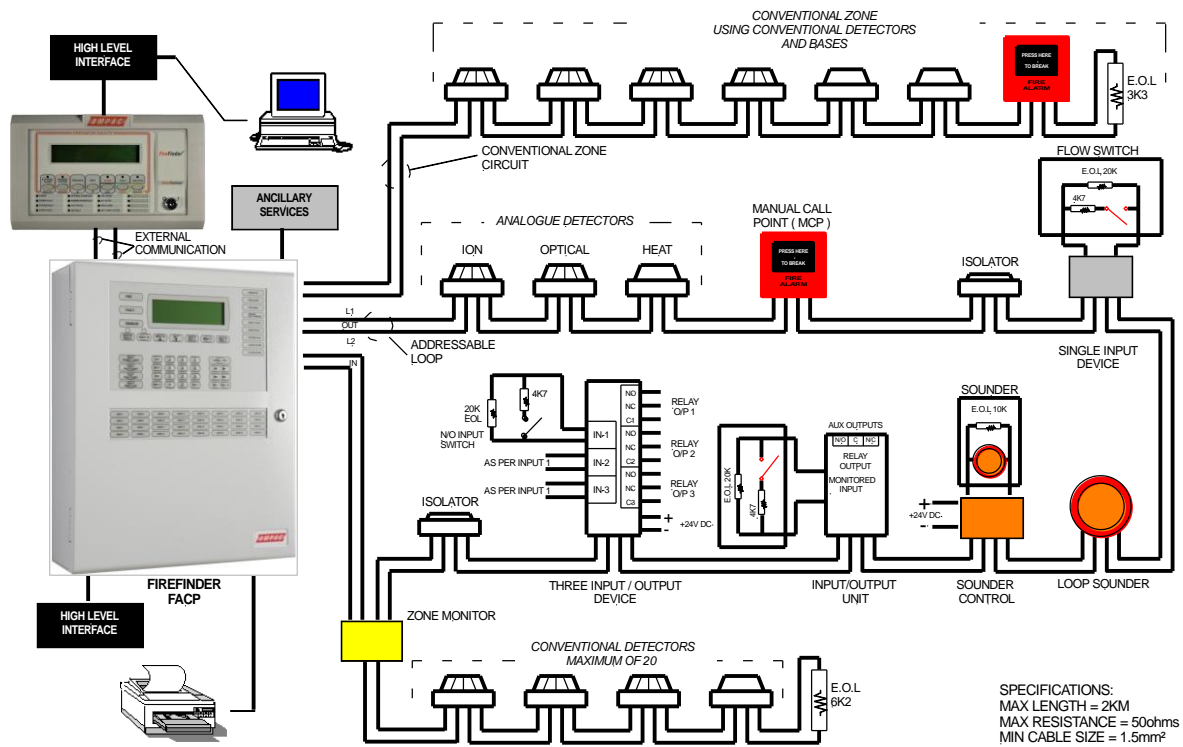
> ➤ British Standard: EN54 parts 2 & 4

Figure 1: Typical Application

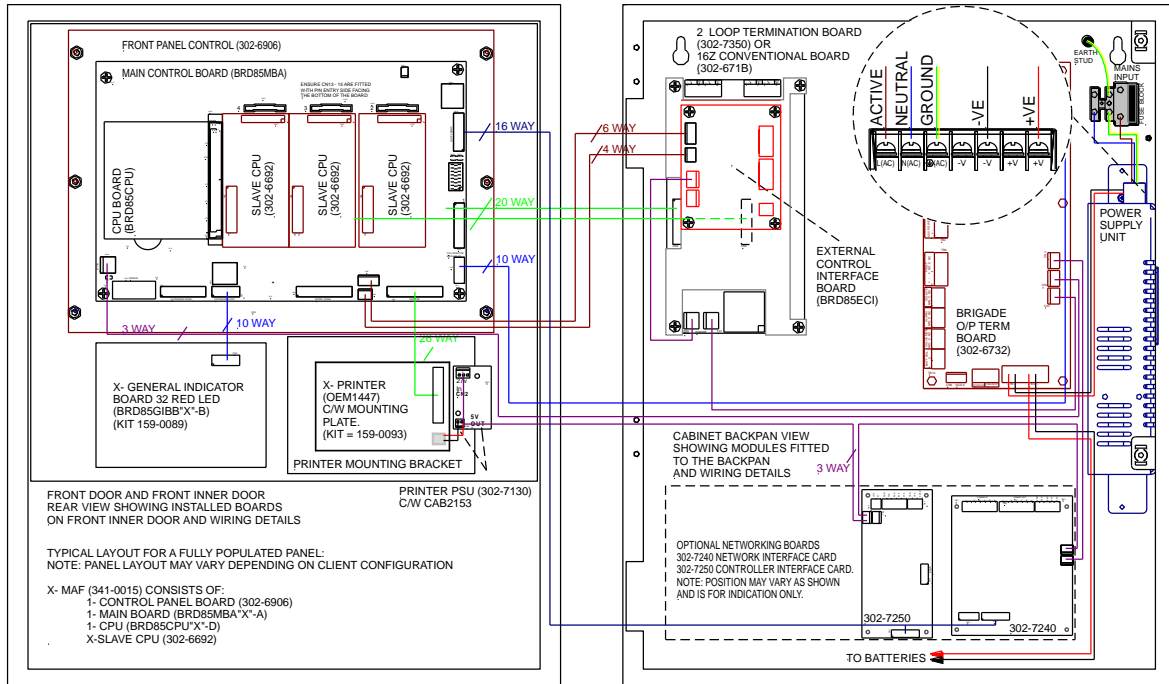## 3.1   FACP Configuration Examples
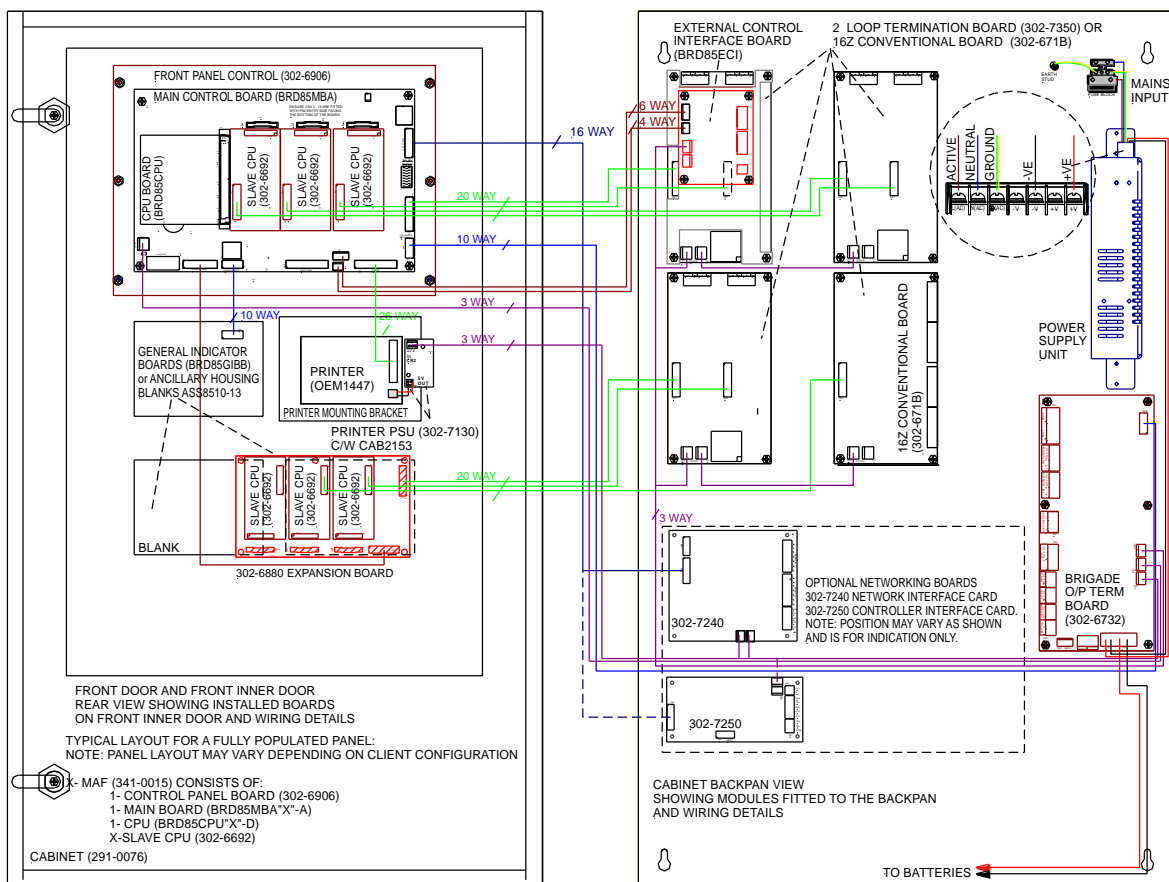
Figure 2: Typical Example of an SP2 Layout

Figure 3: Typical Example of an SP8 Layout

4   *FireFinder Description*

The following descriptions do not relate to specific cabinet sizes, as the size of each cabinet will vary dependant upon the amount of hardware fitted.

The heart of the FireFinder consists of two boards collectively known as a Controller. These boards are the Main Board (BRD85MCB) and the CPU board (BRD85CPU) and when combined with a front panel board (302-690) this forms the basis for a FireFinder FACP. A single FireFinder Controller without an expansion board has the capacity to interface to (4) FireFinder Slave CPU's (159-0007) modules. Each of these Slave CPU's may interface to either 16 Zone Conventional Boards, Apollo/Hochiki Loop Termination Boards or Input/Output Modules. It also communicates with the Brigade PSU Monitor Board (302-673).

The Main Board (BRD85MCB) carries the CPU Board (BRD85CPU) and up to three FireFinder Slave CPU's. The first Slave CPU is permanently mounted on the Main Board (BRD85MCB). The FireFinder Slave CPU's all have the same software installed and the manner in which they automatically determined by the interface board into which they connect.

If the system is to be expanded above four Slave CPU's an Expansion Board (302-688) is used. This board contains FireFinder Slave CPU No. 5 and expansion sockets for three more FireFinder™ Slave CPU's. This configuration allows for the maximum number of Slave CPU's (8), that one Controller can accommodate. If a system is required to expand beyond eight modules then either local networking using other Controllers (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 Serial Peripheral Interface bus that provides interfacing to the Brigade PSU Monitor Board and / or when required up to 8 Sounder Board/s (302-7420/1).

A second serial interface is also available for connection to 32 Zone Mimic Board, (159-0018), Pump Indicator Board, (159-0047), Valve Indicator Board, (159-0048) and Serial Relay Boards (159-0072).

A combination of up to eight (8) Fan Control (159-0020) and Fan Termination Boards operating in conjunction with a Slave CPU (159-0007) can also be designed into a system to control / monitor field plant and equipment

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) Fire Alarm Control Panel arrangement (MFACP / SFACP)
 ➢ A Peer to Peer System
 ➢ Use of Data Gathering Panels (DGP's)
 ➢ LCD Repeater Panels (LCDR)
 ➢ SmartGraphics

A Network FireFinder system can support a combination of, or, all these options on a single network. Each module or panel on the network is regarded as a "node".

Master / Sub FACP: Where there is 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 has 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 achieved by a 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 a designated areas or the entire site as well as execute specific interrogation tasks.

SmartGraphics: Is an active graphics system that may be connected to the FireFinder via a PC.

The NETWORK BUS can be accessed using either a Network Interface Card (NIC 302-724) and/or Controller Interface Card (CIC 302-725). Boards that are supported on the network are the Remote LED Mimic Board (302-715), Remote Liquid Crystal Display (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.

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 colours 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 100º. 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.
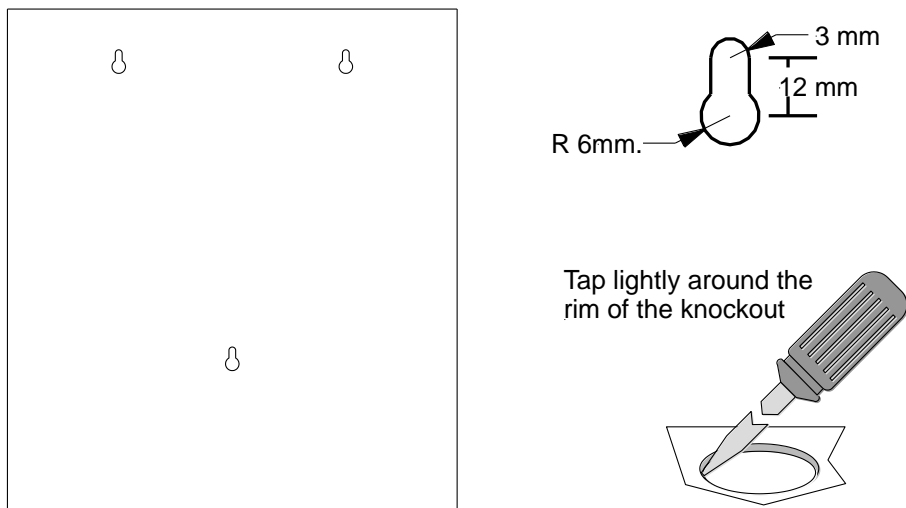
Figure 5: Example SP1X Back Pan Mounting Hole & Removing Knockouts

5.6   Operational Parameters

GENERAL	
Max No of Devices per Loop	126
Max No of Devices per Conventional Zone	40
Cable Loop Characteristics	2 core. 1.5 to 2.5mm²
POWER SUPPLY	
Power Supply Output Voltage	27V (Set to 27.2V)
Power Supply Output Current	2Amp, 5.6Amp or 18Amp
Power Supply Input	85 - 264VAC (47 – 63Hz)
Panel Current Draw	220 mA (min)
Minimum Operating Voltage	19.2 V
Battery Type & Capacity	2 x 12V sealed lead-acid SP1,2 & M = 12AH SP4 = 24AH SP8 = 24AH
ENVIROMENTAL	
Temperature	-5ºC to + 55ºC
Humidity	25% to 75%
IP Rating	IP51
MECHANICAL	
Material	1.2mm Steel
Finish	Arch White Ripple Coat
Dimensions	495mm (H) x 397mm (W) x 125mm (D)
Dimensions	450mm (H) x 400mm (W) x 130mm (D)
Dimensions	420mm (H) x 515 mm (W) x 140mm (D)
Dimensions	840mm (H) x 515mm (W) x 140mm (D)

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 0.75mm^2, 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 picot farads 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

SmartTerminal

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

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 1.5mm^2 PVC sheathed MIMS (**M**ineral **I**nsulated **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.		High efficiency; low ripple noise	
Universal AC input/ full range		Soft start with limiting AC surge current	
Short circuit/ over load		100% full load burn-in test	
Built in EMI Filter and PFC Circuit		Remote control on/off (option)	
Over voltage protection		Over temp. protection (option)	
Input Voltage:	85 to 264 VAC	Tolerance at 27V	+/- 1%
Input Freq	47 to 63Hz.	Load Regulation	+/- 0.5%
PFC	0.95~230VAC	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%	

5.8.1   Connecting the Mains Earth

All earth cabling shall be terminated to the panel Chassis Earth Terminal in a star configuration.

The earth cable closest to the cabinet body shall have an M4 SPW beneath the lug then an M4 SPW and M4 nut.

Each additional earth cable shall be terminated with an M4 SPW and M4 nut.

An additional M4 nut and M4 SPW are fitted to the Chassis Earth Terminal for installers to connect their Mains Earth.

CHASSIS EARTH TERMINAL

M4 Nut *
M4 Shake Proof Washer *

Note:
* Extra M4 Nut and M4 SPW are provided finger tight on the Earth bolt.

M4 Nut
M4 Shake Proof Washer
Earth Cable

M4 Nut
M4 Shake Proof Washer
Earth Cable
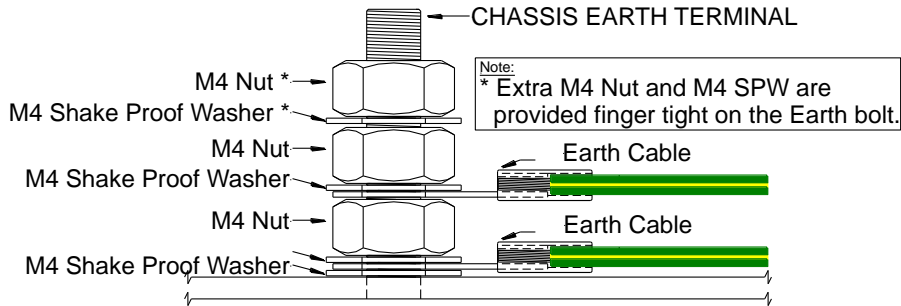
Figure 6: Panel Earthing

5.8.2   Connecting the Mains Power to the Power Supply

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

2 AMP Power Supply

Output Voltage: is set to 27.4Volts.

FUSE Rating: 1 Amp 3AG Slow Blow

Mains cable should be no less than 0.75mm^2

MAINS CORD
BROWN (ACTIVE)
POWER SWITCH (LOOKING AT REAR)

EARTH (GREEN) TO CHASIS EARTH TERMINAL

BLUE (NEUTRAL)

BROWN (ACTIVE)

DC 27V TO PANEL

LED
V ADJ
V+   V-   GND   N(AC)   L(AC)
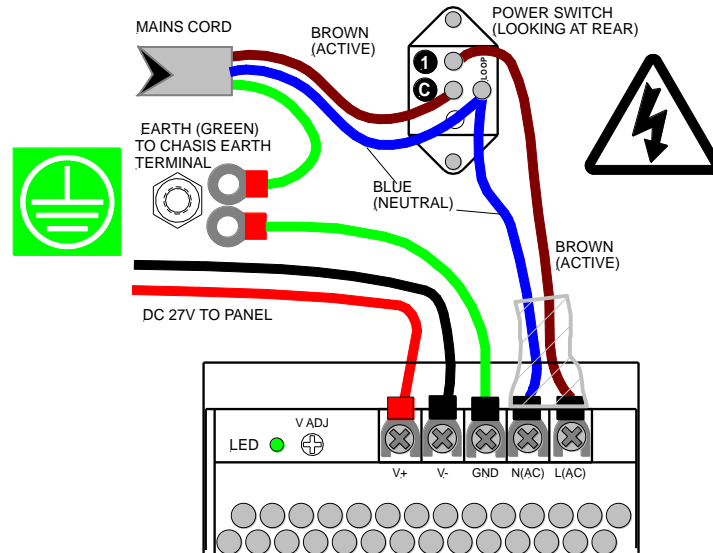
Figure 7: Mains Power Connection 2 AMP Power Supply

5 AMP Power Supply

Output Voltage: is set to 27.4 Volts.

FUSE Rating: 2 Amp 3AG Slow Blow

Mains cable should be no less than 0.75mm^2
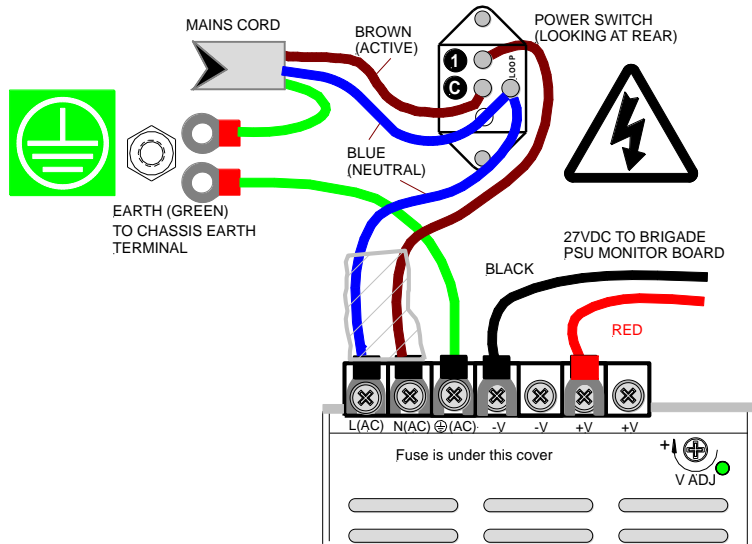
Figure 8: Mains Power Connection to the 5 AMP Power Supply

18 AMP Power Supply

Output Voltage: is set to 27.4 Volts.

FUSE Rating: Amp 3AG Slow Blow

Mains cable should be no less than 0.75mm^2
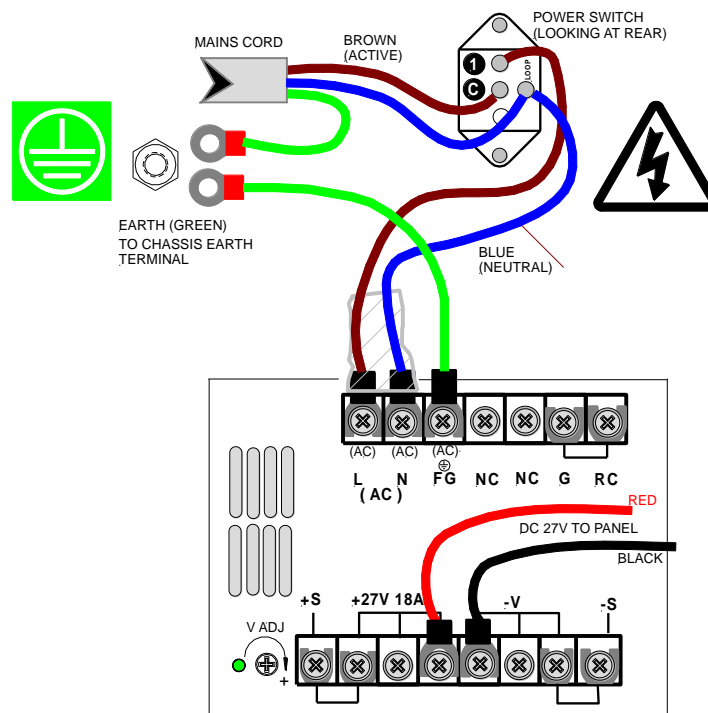
Figure 9: Mains Power Connection to the 18 AMP Power Supply

5.9   Current Limiter, Fuse Board (BRD85CLFB1)

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.
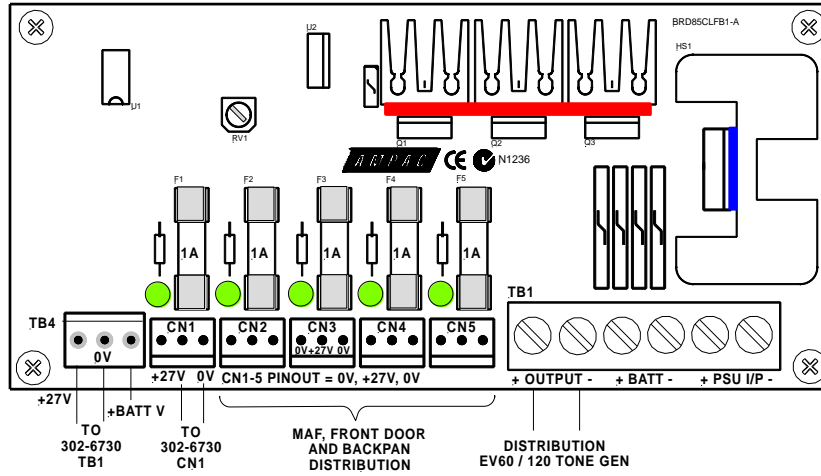
Figure 10: Current Limiter Fuse Board

5.10   Brigade / PSU Monitor Board (BRD85BPMB)

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 *ConfigManager*.

For all outputs combined, total output current is 2A (if 2A 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	Sounder 1.1	2 Amp Fused	F2	RL 1
	Sounder 1.2	2 Amp Fused	F3	RL 1
4	F.A.R.E Monitored	1 Amp Fused	F4	
	F.A.R.E Non-Monitored	1 Amp Voltage Free Contacts		RL2
5	Sounder 2 Monitored	1 Amp Fused	F5	
	Sounder 2 Un-Monitored	1 Amp Voltage Free Contacts		RL3
6	F.W.R.E Monitored	1 Amp Fused	F6	
	F.W.R.E Non-Monitored	1 Amp Voltage Free Contacts		RL 4
7	Disable	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

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

Transient Protection

ⓘ   Recognised transient line protection methodologies at the FACP and the load MUST be considered when connecting any control devices to the outputs be they in close or remote to the FACP.
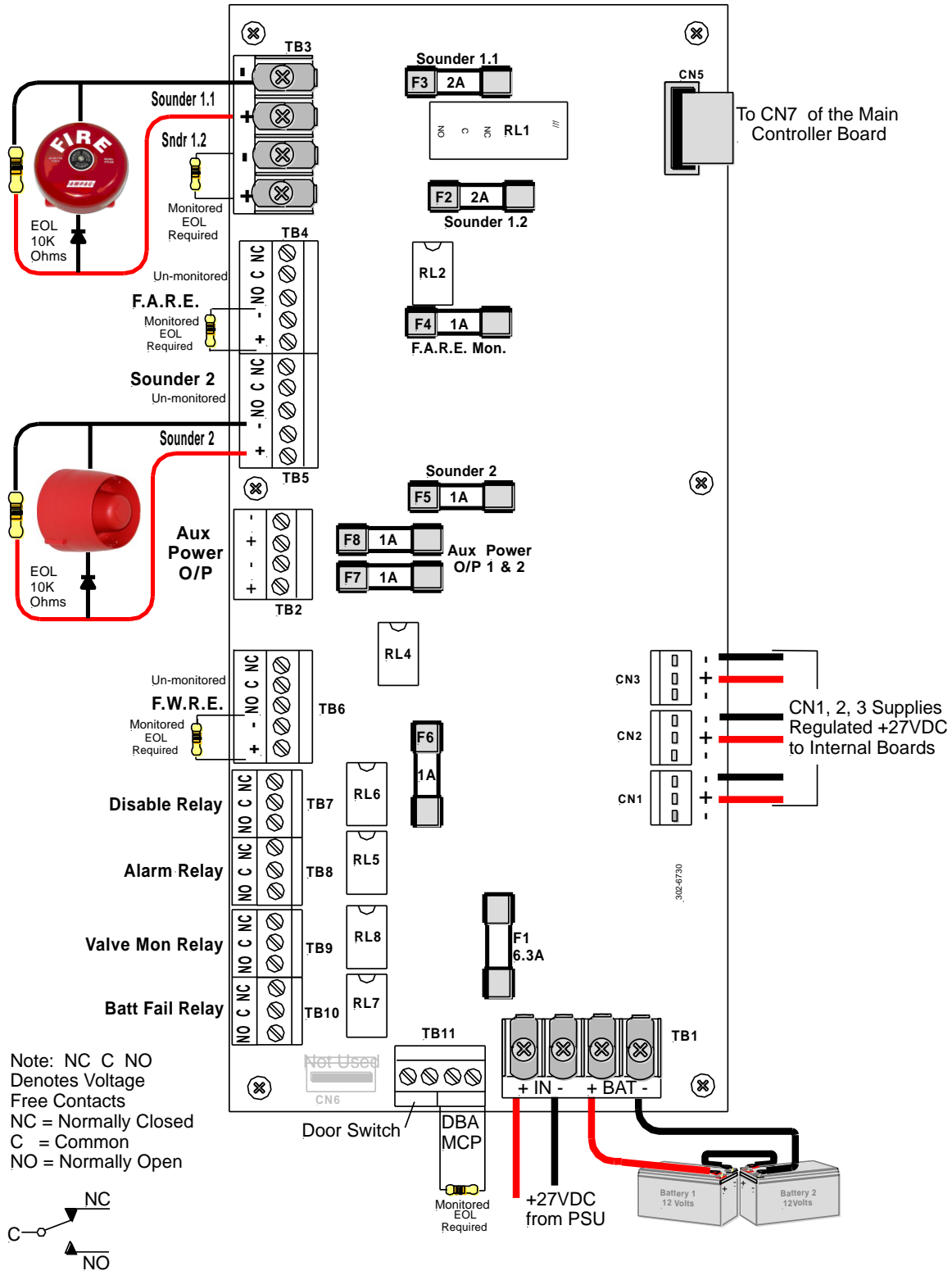
Figure 11: Brigade / PSU Monitor Board Layout

☞ **Note:** *When connecting to the Brigade PSU Monitor board transient and "Flyback" (Back EMF) protection methodologies MUST be applied.*

5.10.1 Battery Connections (TB1)

A *FireFinder* requires 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. Battery size is dependant on system configuration and can vary from 12 AHr to over 100 AHr.
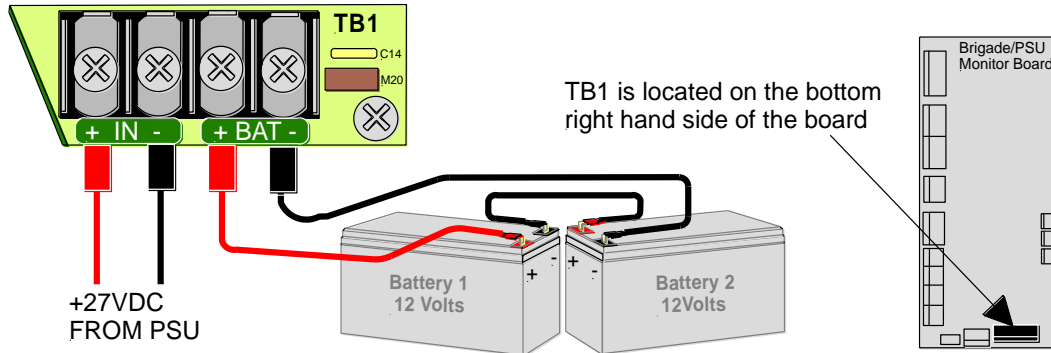
Figure 12: Battery Connection to the Brigade Board

5.10.2 Auxiliary 27 Volt Power (TB2)

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.
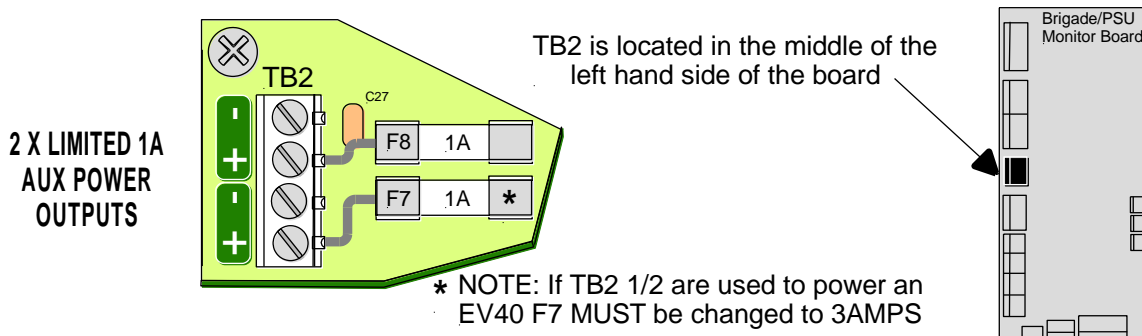
Figure 13: Auxiliary 27v Power Output

5.10.3 Bell / Sounder Monitored Outputs (TB3 & TB5)

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.
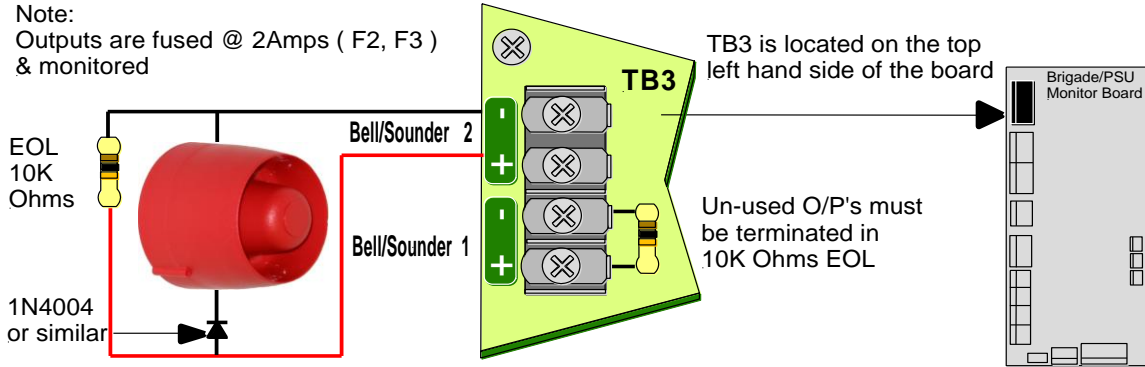
Figure 14: Connecting a Bell / Sounder to TB3
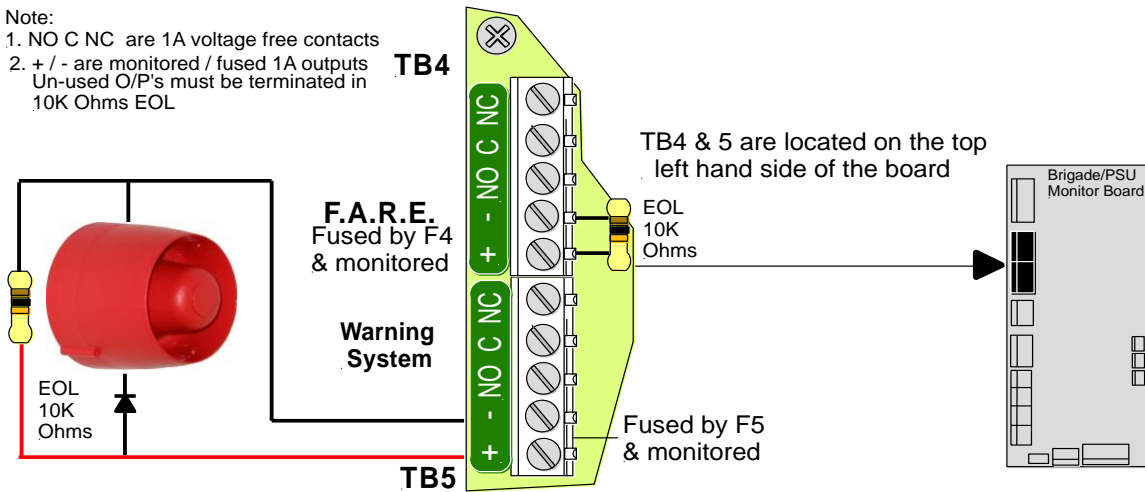
Figure 15: Connecting a Bell / Sounder to TB5

5.10.4 Relay Output Connections (TB6 – TB10)

The relay contacts are connected as shown below.
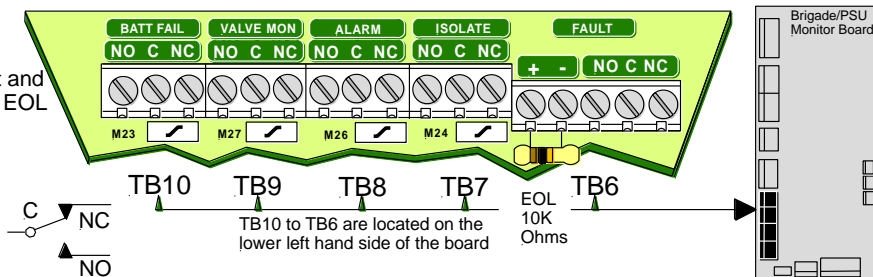
Figure 16: Relay & F.W.R.E Outputs

5.11 Main Board (BRD86MBA)

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.

RV1 – LCD contrast adjust

Supply and Current = 27VDc @ 120mA

Connections

CONNECTOR   CONNECTS TO

CN1	Keyswitch Input	CN12	LCD Expansion Lead
CN2	Expansion Panel	CN13	Slave CPU connection
CN3	Serial Communication Port	CN14	Slave CPU connection
CN4	Front Keypad	CN15	Slave CPU connection
CN5	Printer	CN16	27VDC in
CN6	Misc	CN17	To LCD Backlight supply
CN7	Brigade Output	CN18	External Loop Communication
CN8	Modem [RS232]	CN19	LCD Characters
CN9	External Buzzer Output	CN20	RS485 Communications Port 1
CN10	Slave CPU output 1	CN21	RS485 Communications Port 2
CN11	Main CPU		

Figure 17: Main Board Layout with no Main CPU or Slave CPU's

5.12   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.
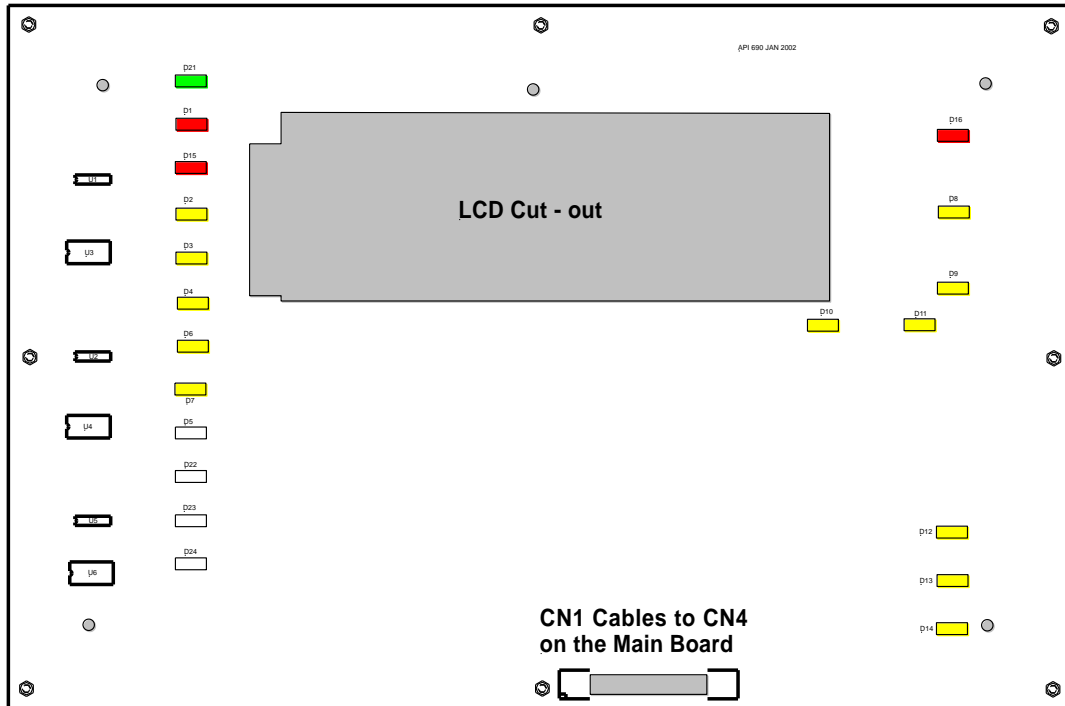
Figure 18: Front Panel Board

5.13   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

CN2	To Main Board BRDMBA CN11
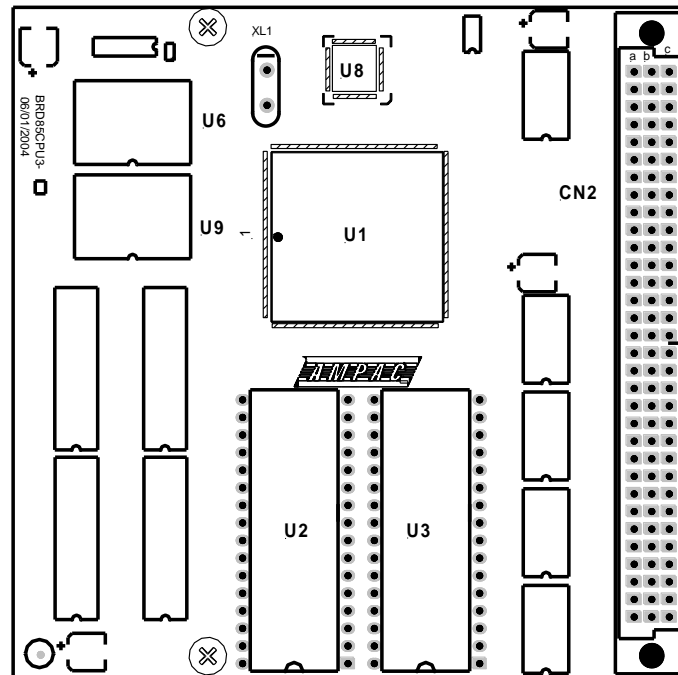
Figure 19: The Main CPU Board PCB Layout

5.14 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

CN1	To 302-735 or 302-671 or 302-672
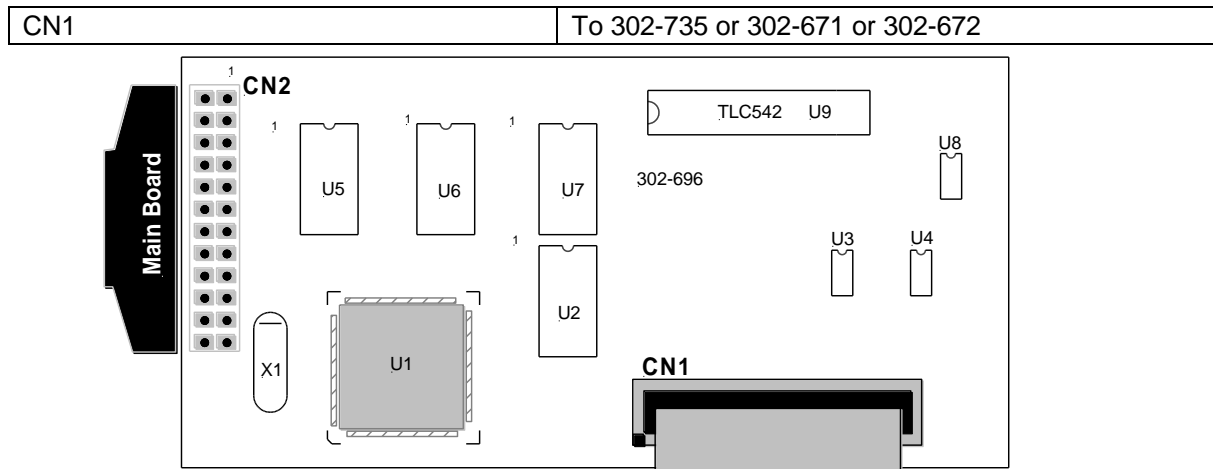
Figure 20: Slave CPU Board

5.15   RS232 Modem / Programming / Debug Interfacing

The *FireFinder, FireFinder Series II, FireFinder Plus* and *LoopSense* can be programmed using the Debug Interface. The modem I/O port is a DB9 connector (CN8 situated on the lower left hand corner of the Main Board BRD86MBA) 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.
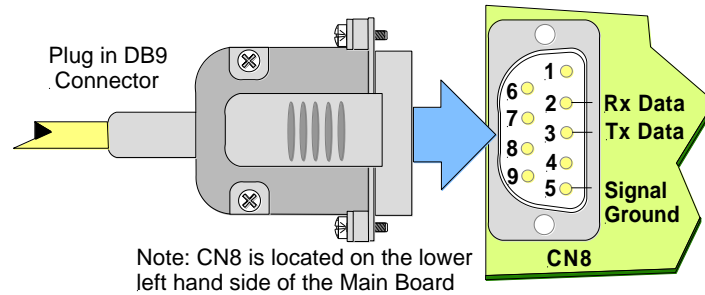
Figure 21: DB9 Cable Programming and Debug

FireFinder (CN8), FireFinder Series II(CN8) and LoopSense (CN1)
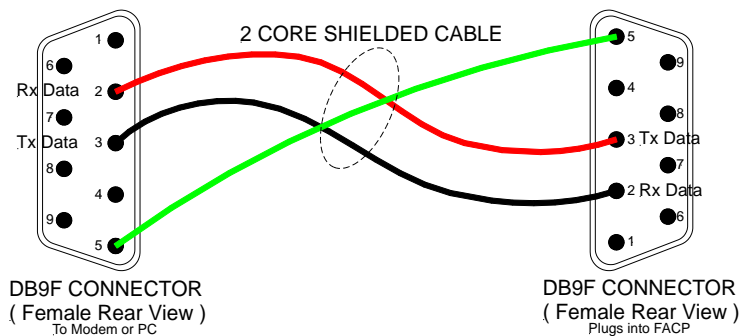
Figure 22: DB9 Programming and Debug wiring diagram

5.16   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:

➢ Actuation of fixed fire-extinguishing systems;

➢ Closing of windows, smoke and fire doors,

➢ Control of ventilating systems;

➢ 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.

5.17   Conventional Zone Board (302-671B)

Under the control of a Slave CPU the Conventional Zone Board provides the interface between it and the external conventional devices. 16 Conventional zones can be connected to TB4 to TB1.
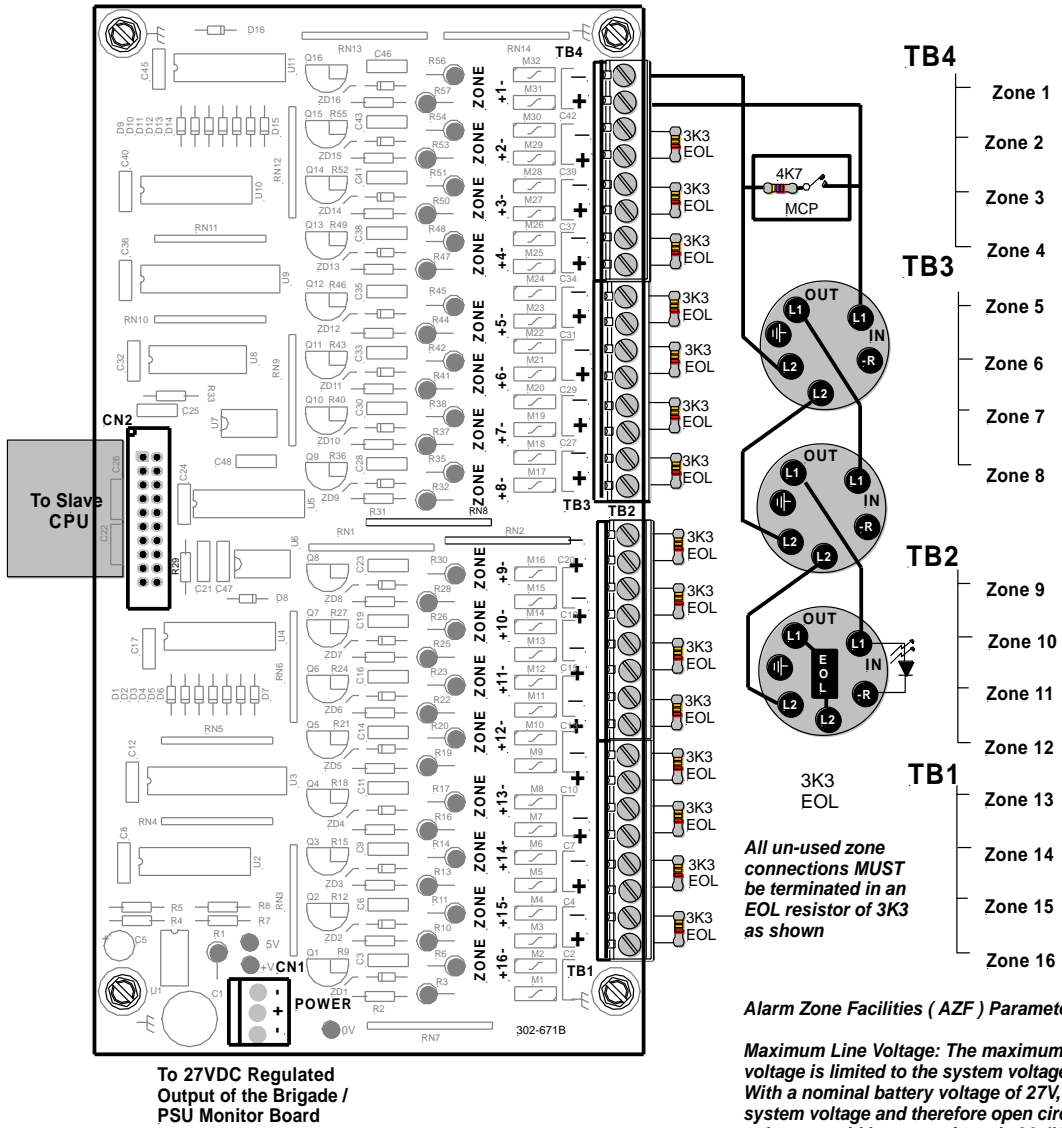
Figure 23: Conventional Board Layout

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.

5.18   Addressable Loop Termination Board (BRD86DLTB)

The Apollo Loop Termination Board provides the terminations and interfacing for two loops between the external addressable devices and the FireFinder™. One slave CPU is required per loop. Addressable loops are connected to TB1 and TB2 on Apollo / Hochiki Loop Termination Board which also has the added advantage of having its own switched mode regulator to maintain the loop voltage under low battery conditions.

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

AMPAC strongly recommend that the Apollo XP95 / Series 90 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
 ➢ 250mA Current Max
 ➢ S/C protected
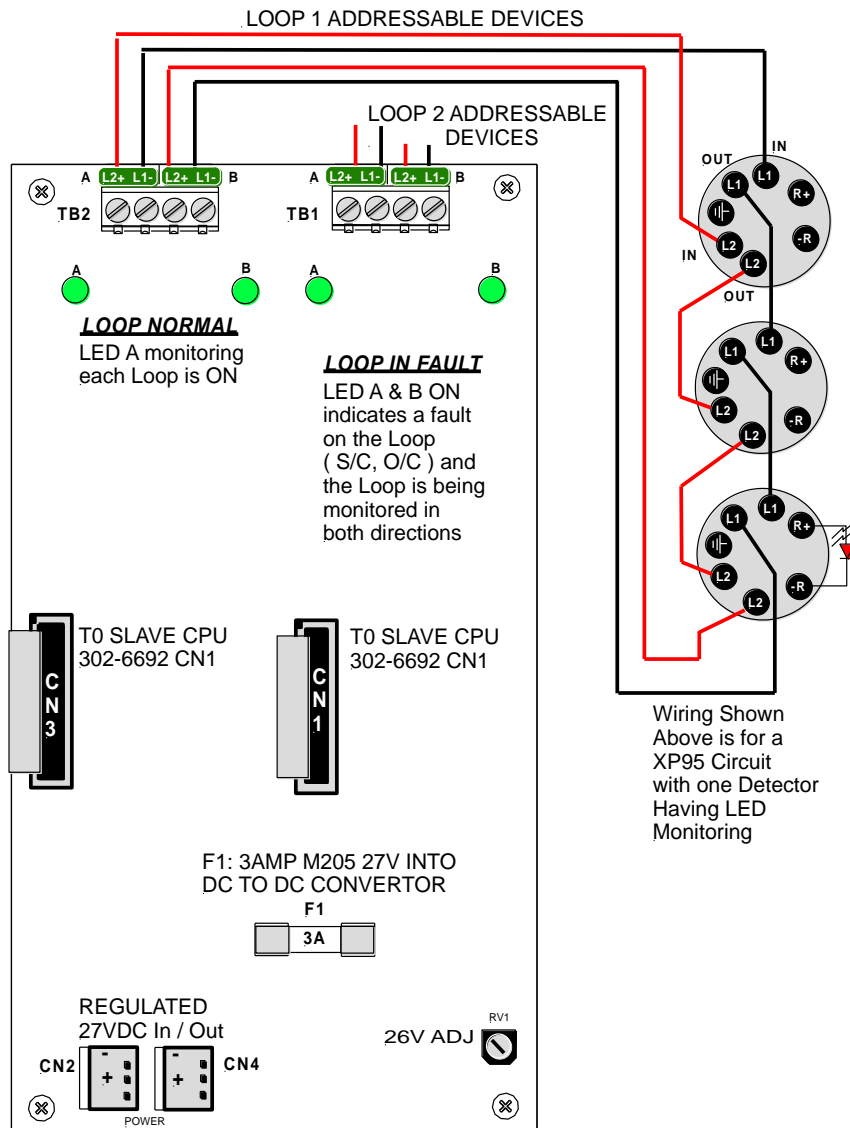
Figure 24: Loop Termination Board

6   *Expanding the FACP with Compatible FireFinder Boards*

	Module ID	Fast Fit Kit
Slave CPU	302-669	159-0007
Conventional Zone Board	302-671	159-0005
Apollo / Hochiki Loop Termination Board	302-735	159-0003
16/16 Input / Output Board	302-672	159-0008
Expansion Board	302-688	159-0045
Brigade / Power Supply Monitor Board	302-673	N/A
Pump Display Module	302-717	159-0047
Valve Display Module	302-716	159-0048
Zone Display (32 Zone)	302-700	159-0018
8 Way Relay Board 1Amp Contacts	302-676	159-0012
8 Way Relay Board 5Amp Contacts	302-6761	150-0013
16 Way Input Board	302-677	159-0010
External Control Interface Board BRD85ECI	N/A	
Printer	302-739	150-0016
Fire Fan Module	BRD85FCB	4310-0020
Fan Termination Board	BRD85FCB	for above module
Sounder/Bell Controller Board 1Amp per Circuit	302-742	159-0071
Sndr/Bell Controller Board 4 volt free, 4X 1A	302-7421	150-0069
Serial Relay Board	302-732	159-0072
Expansion Controller	BRD85MCB	159-0077

Compatible Networking Devices

Network Interface Card	302-724	159-0053
Controller Interface Card	302-725	159-0054
LCD Repeater (Supplied complete)	302-720	159-0044
LED Mimic Board	302-715	N/A

6.1   16/16 Input / Output Board (302-672)

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.
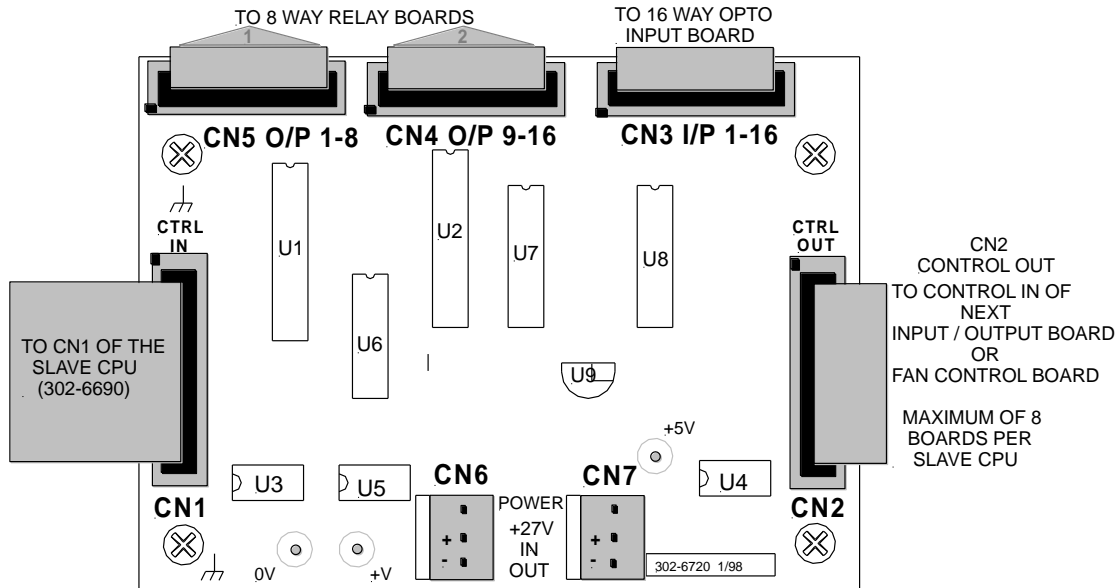
Figure 25: 16 / 16 Input / Output Board

6.2   8 Way Relay Board (302-6760/1)

Relay Outputs: Each 8 Way Relay Board 302-676 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 (e.g. releasing doors) or monitoring (e.g. driving indicators, door open / closed) purposes.
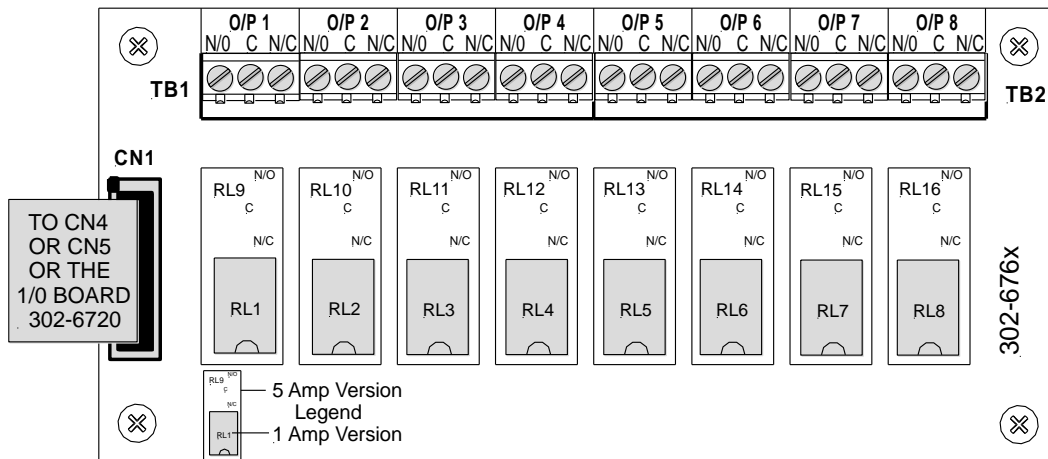
Figure 26: 8 Way Relay Board with 1A Relays Fitted

6.3   16 Way Input Board (302-677)

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.
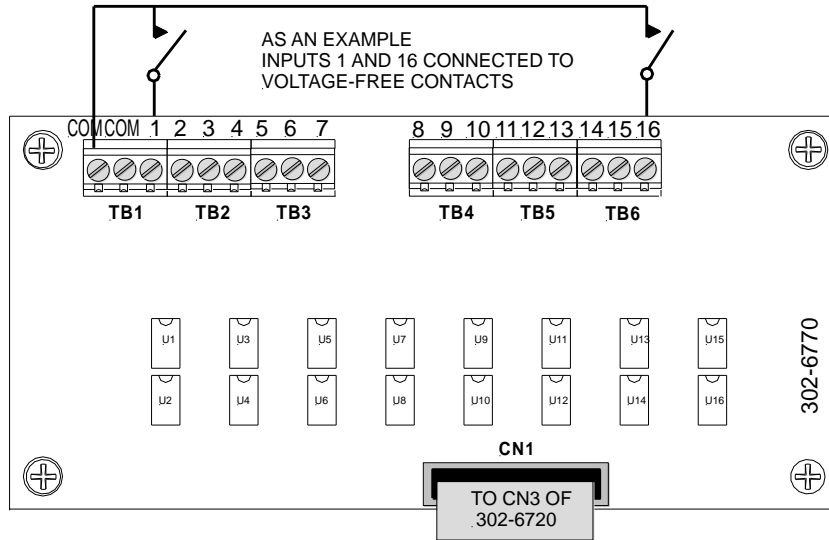
Figure 27: 16 Way Input Board

6.4   Serial Relay Board (302-732)

Relay Outputs: Each Serial Relay Board communicates with the Main Controller via the Serial Bus and is fitted with eight 1A relays fitted with voltage free contacts. A maximum of 8 boards can be daisy chained together per Controller.
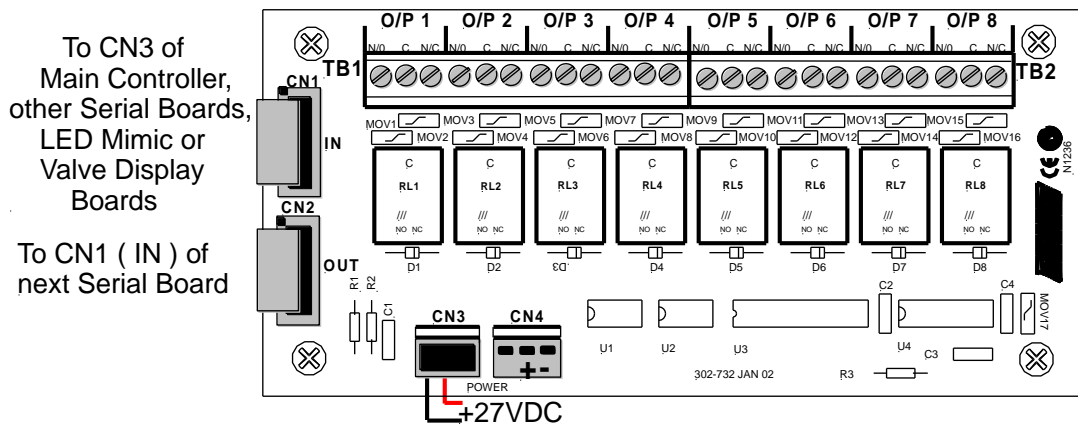
Figure 28: Serial Relay Board

6.5   32 Zone LED Mimic Board (302-7000)

The 32 Zone LED Mimic Board connects to the internal serial communication bus and provides visual indication by way of flashing LED's zones in an alarm and /or fault (32 fire alarm LED's and 32 fault LED's) condition. A Fault LED that is illuminated continuously rather than flashing indicates the associated Zone has been disabled.

Depending on the panel configuration a maximum of 4 boards may be daisy chained together, or a combination of LED Mimics, Valve Display and Serial Relay Boards such that a maximum of 256 control functions are used.
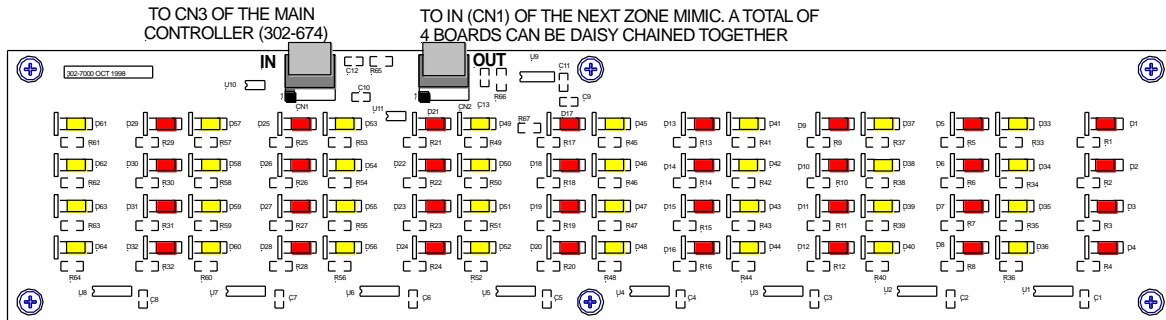
Figure 29: 32 Zone LED Mimic Board
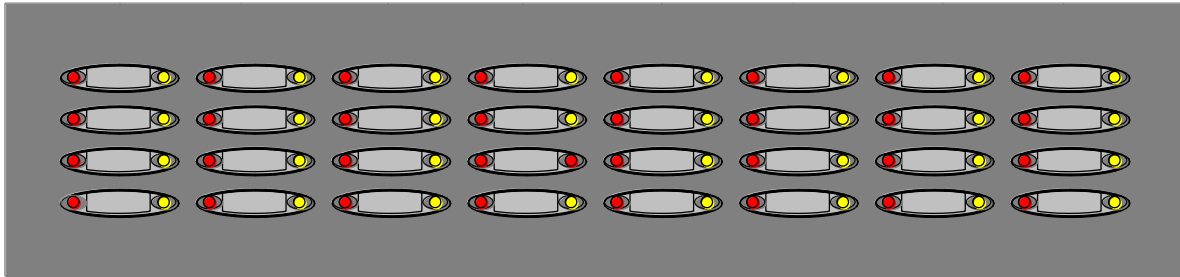
Figure 30: 32 Zone LED Mimic Board Membrane

☞ **Note:** *In Europe and Malaysia this panel is numbered 1 to 32 and comes as a fast fit kit Part Number 159-0075*

6.6   External Control Interface Board (BRD85ECI)

The External Control Interface Board provides interfacing for 8 external 0V control inputs that are configured as outlined in the table below.

The FACP is programmed to recognise the individual inputs as listed and initiates the appropriate response.

0V control is configured for a normally open contact for each input with the facility to monitor whether or not the controls are enabled.

Link1 (LK1) is fitted when the control "Enable" switch is not fitted to the FACP

Configuration Cabling:

Input	TB	Purpose	Input	TB	Purpose
-	1/1	0Volts	-	2/1	0Volts
1	1/2	ALERT	5	2/2	EXTERNAL FAULT
2	1/3	EVACUATE	6	2/3	SILENCE BUZZER
3	1/4	SILENCE ALARMS	7	2/4	CLASS CHANGE
4	1/5	SYSTEM RESET	8	2/5	CONTROLS ENABLED
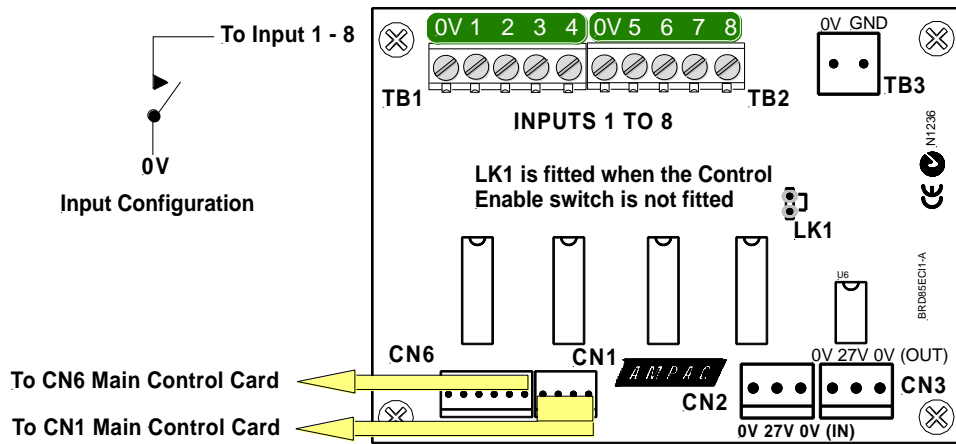
Fig 1: Input Board Layout and Cabling

6.7   Valve Display Module (302-7160)

The Valve Display Board connects to the internal serial communication bus and provides visual indication of whether or not a monitored valve is open or closed (16 x Valve open [green LED's], 16 x Valve closed [Yellow LED's]). Depending on the panel configuration a maximum of 8 modules can be daisy chained together per Controller.
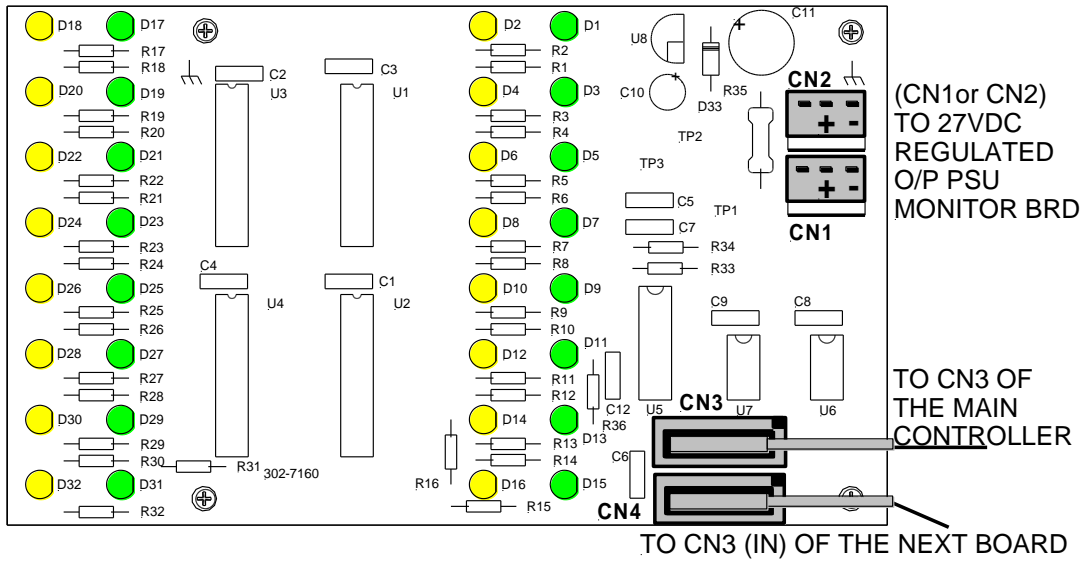
Figure 31: Valve Indicator Board

Figure 32: Valve Indicator Membrane

6.8   8 Way Sounder Monitor Board (302-7170)

The Pump Display Board connects to the internal serial communication bus and provides visual indication of a pump's status (8 x Supply Healthy, 8 x Pump Running, 8 x Pump Fault). Depending on the panel configuration a maximum of 10 modules can be daisy chained together per Controller.
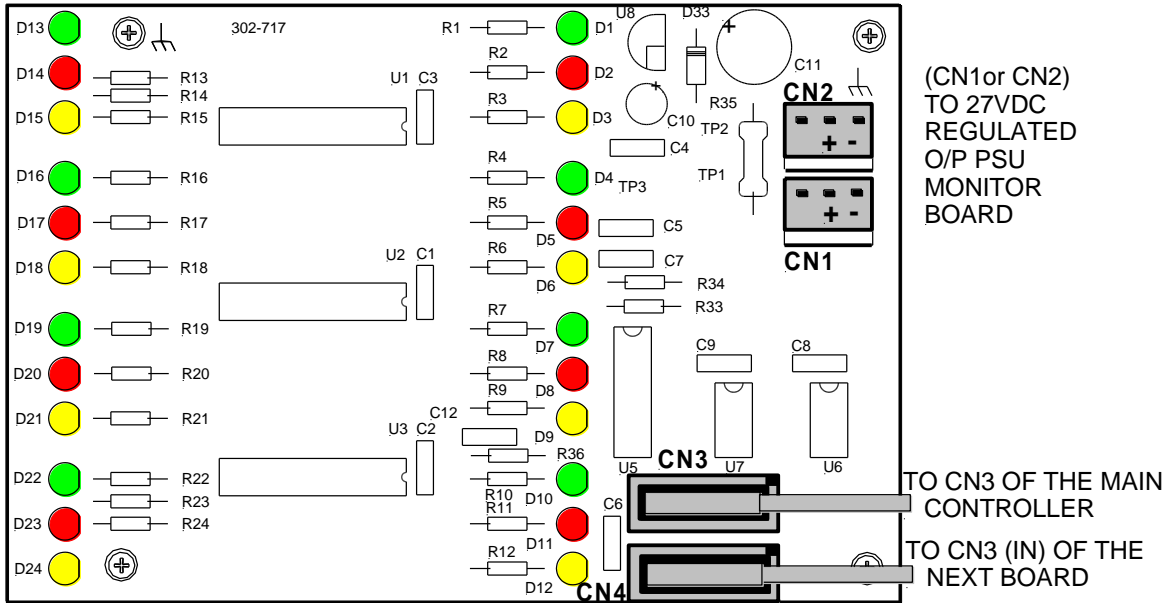
Figure 33: Pump Display Board
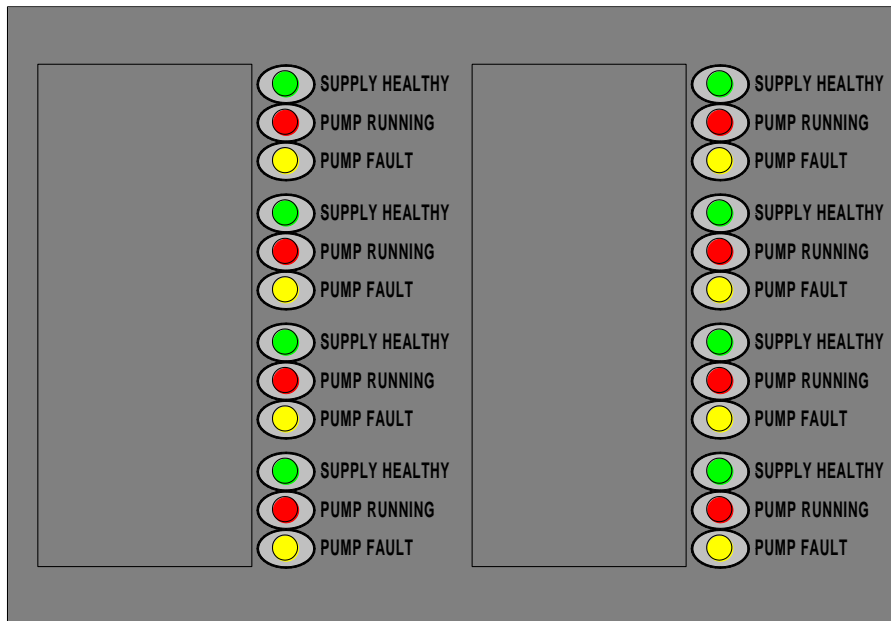
Figure 34: Pump Display Membrane

☞ **Note:** *Labels are fitted to the above two items as per the 302-700*

6.9   Sounder / Bell Control 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:

4.   302-7420: All outputs are monitored and provide 1 Amp per circuit.

5.   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 302-673.

The Sounder/ Bell monitor board connects to the serial peripheral interface (SPI) bus. This is the same bus that connects to the Brigade PSU Monitor Board and a maximum of 8 boards can be daisy chained together.
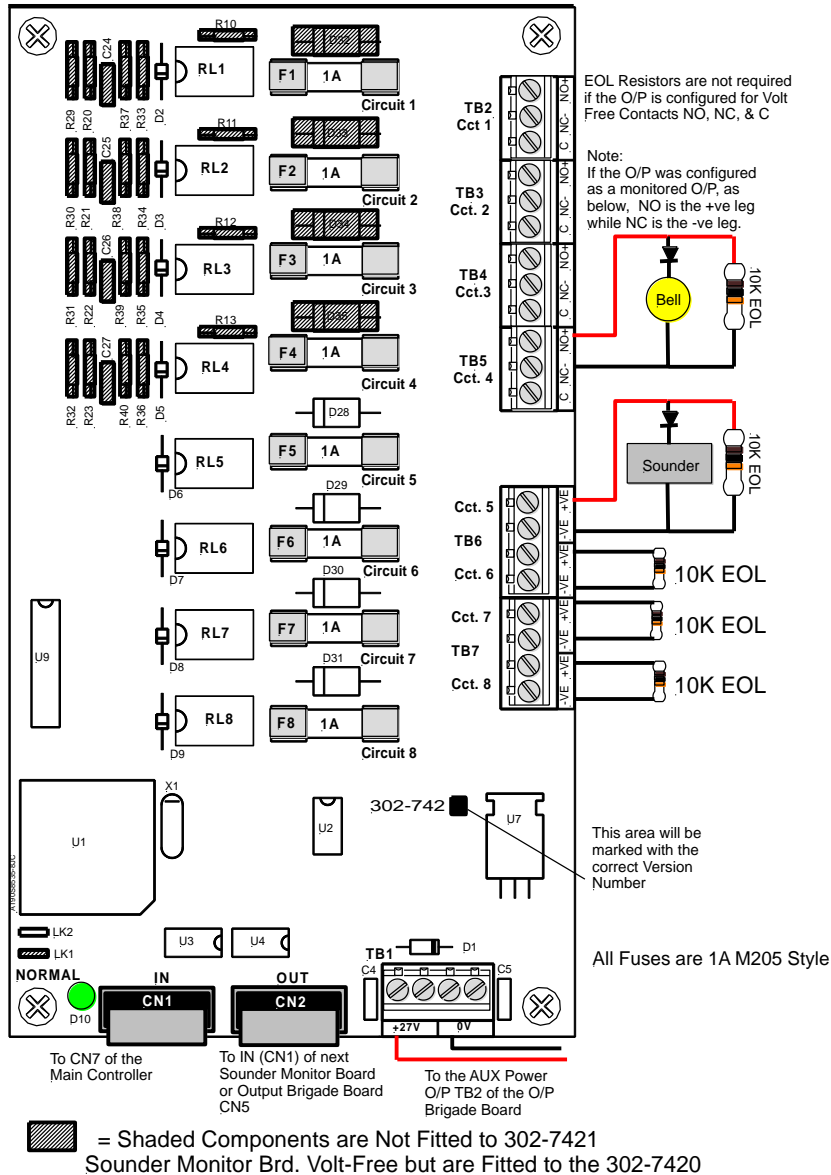
Figure 35: Sounder / Bell Controller Board

6.10 Printer

Specifications

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

6.10.1 Indicators and Buttons

The front panel has an LED indicator and two buttons SEL (SELECT), LF (LINE FEED).
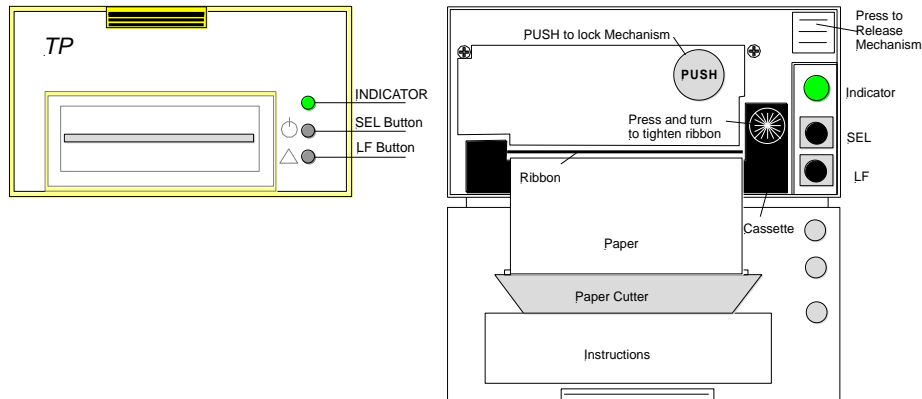
Figure 36: Printer Front Panel Layout (Front Cover Closed / Open)

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.

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.

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.

Exit the Self-Test Mode:

After printing out the complete Self-Test list the printer will exit the mode automatically; or

Press the SEL button and the printer will immediately exit the Self-Test mode.

6.10.2 Maintenance

Installing the Ribbon Cassette

The printer has a factory loaded ink ribbon cassette. Remove the power from the printer.

Unlock the front cover by pushing down on the tab at the top of the front panel.

Push the mechanism release button in the top right corner to release the print head.

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 and 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.
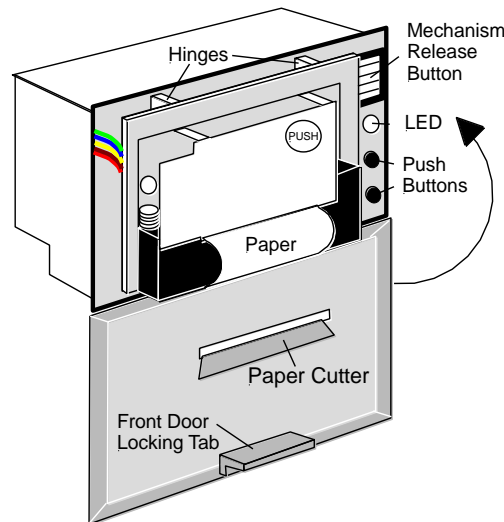
Figure 37: Paper Access

Ribbon Replacement;

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

Loading the Paper Roll

Disconnect the power, unlock and open the front cover.

Push down on the mechanism release button in the top right corner to release the head.

Lift the mechanism as shown below.
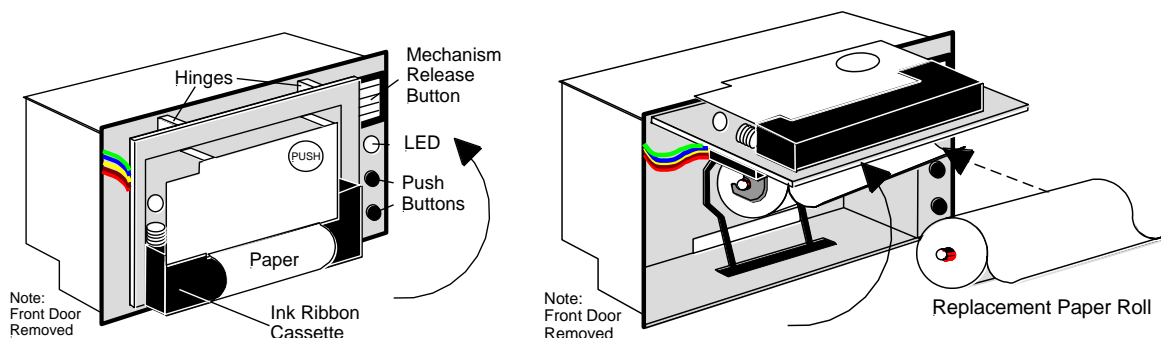
Figure 38: Head Mechanism Rotation and Paper Roll Removal / Insertion

Take out the empty paper roll and roller

Put the new paper roll onto the paper roller and replace as shown above.

Connect to the power supply.

Press the SEL button to take the printer Off Line, (LED is off).

Press the LF button, (paper feed).

Feed the edge of the paper into the mechanism and allow it to feed through.

Once it established the paper is feeding through the head mechanism correctly press the SEL button to stop the paper feed.

Return the printer head to its original position.

Pushing on the affixed label PUSH the head mechanism back into position.

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...*

6.10.3 Printer Connections and Jumpering

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

➤ Connectors for interconnection to the Main Board,
➤ Jumper links required to set the programmed print modes; and
➤ Printer 5 volt DC Power Supply.
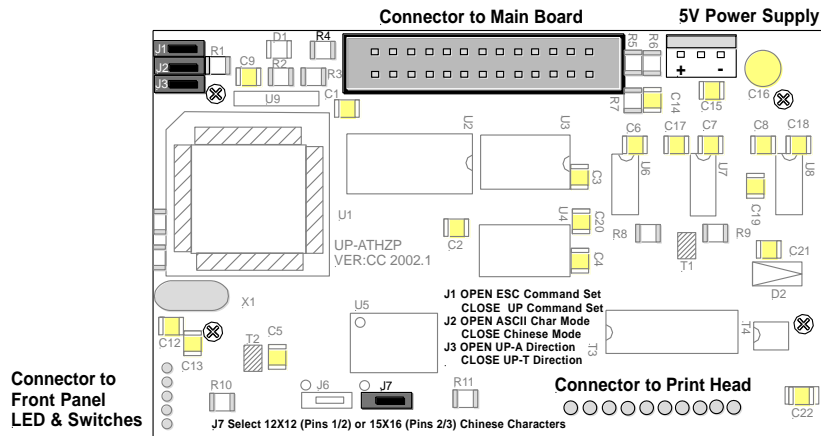
Figure 39: PCB Layout

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

6.10.4   Printer 5 Volt Power Supply (BRD42PVCB1)

27 volts DC is taken from Brigade / PSU Monitor Board and fed to CN1 of the 5volt Printer Power Supply Board. It is this board that drops this voltage from 27volts to 5volts for use by the Printer.
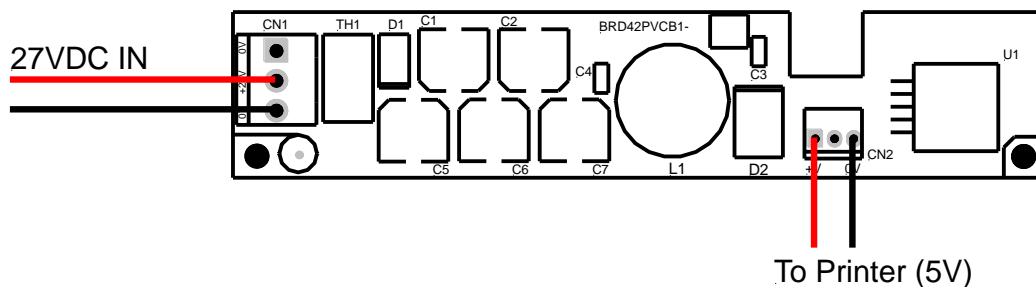
Figure 40: Printer Power Supply Board Layout

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 Board (302-7250)

The Controller Interface Card provides 1 X RS232 O/P for High level Interfaces, Graphics etc., 1 X half duplex RS485 O/P for external LED Mimic Boards and an option to allow for multiple Controller interconnection.
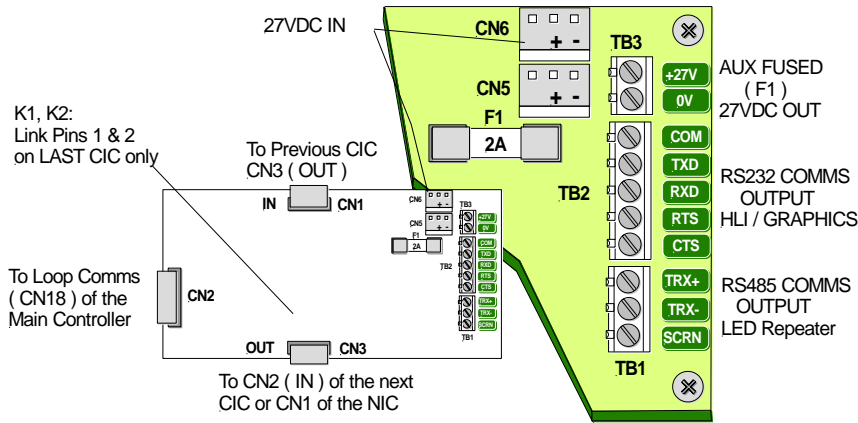
Figure 41: Controller Interface Card Layout

7.2 Communications: Controller Interface Board (302-7240)

The Network Interface Card provides two communication buses, RS232 and RS422, to allow the networking of multiple panels in different combinations, e.g. 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 I/O Controller (BRD85CPU) with NIC software to control the flow of communications in and out of the NIC.

The RS422 is used to communicate with any LCD Repeater Panels that may be on the system. This output is available at TB2 terminals 1 to 7. Maximum distances between Panels is 1.2Km. RS232 is also available from TB1 terminals 1 to 5
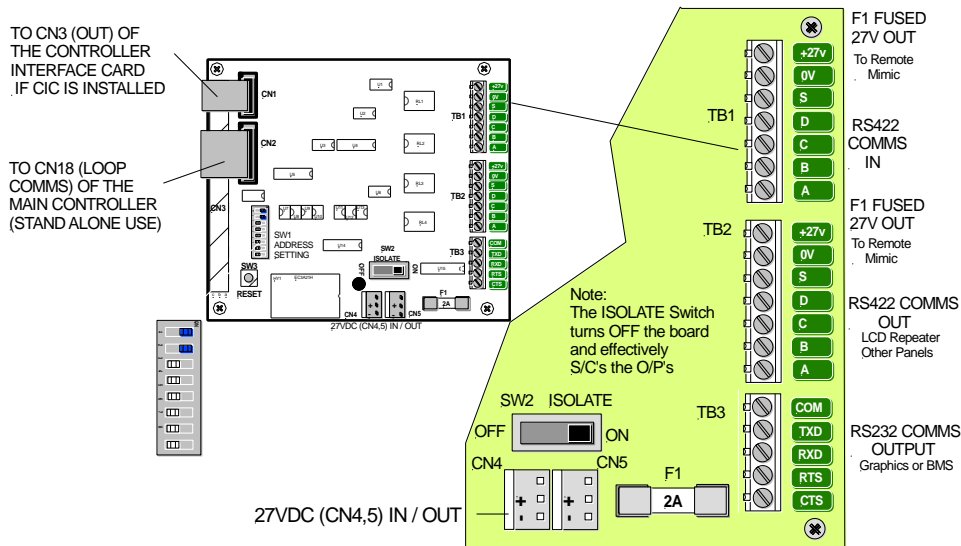
Figure 42: Network Interface Card Layout & Connections

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

Connections

CN1	To Main Connection Board
CN2	Slave CPU 2
CN3	Slave CPU 3
CN4	Slave CPU 4
CN5	On board Slave CPU
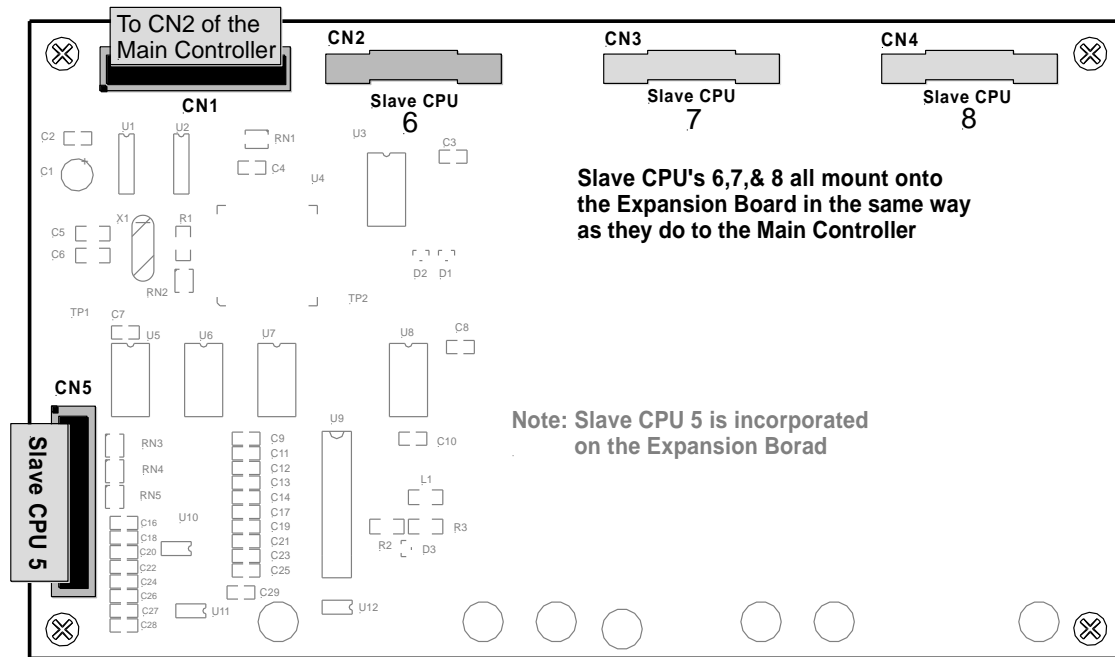
Figure 43: Board Overlay

7.4   Expansion Controller (159-0077)

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 a 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 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 Communications Extender Board for *SmartTerminal's* and/or LED Mimic. Adding a Serial to Parallel Board to the Communications Extender Board allows for the addition of HLI, EV3000, Remote Serial Printer or *SmartGraphics* facilities.

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 44: Example of Networking Configurations

NOTES:
MAXIMUM DISTANCES BETWEEN PANELS = 1.2KM
IF GREATER DISTANCE ARE REQUIRED A RS422 REPEATER
(BLACK BOX 352A or 352A-F) TO BE FITTED EVERY 1.2KM
AFTER THE FIRST 1.2KM
CABLE TO BE USED = BELDEN 8132 OR 9842 TWO PAIR SHIELDED.

FIREFINDER
PANEL No1

CONTROLLER

16 WAY RIBBON

NETWORK INTERFACE CARD
(NIC) 302 - 724

27VDC POWER

COMMS IN

COMMS OUT

OPTIONAL RS232
(AVAILABLE FOR
HIGH LEVEL INTERFACE OR
GRAPHICS OR
REMOTE SERIAL PRINTER)

REMOTE LCD REPEATER
302 - 720

COMMS IN

COMMS OUT

RS422 COMMS LOOP
TWO PAIR SHIELDED
BELDEN 8132 OR 9842

OPTIONAL RS232
(AVAILABLE FOR
HIGH LEVEL INTERFACE OR
GRAPHICS OR
REMOTE SERIAL PRINTER)

TOP LAYER

FIREFINDER
PANEL No2

CONTROLLER

16 WAY RIBBON

NETWORK INTERFACE CARD
(NIC) 302 - 724

27VDC POWER

COMMS IN

COMMS OUT

OUT

IN

TO OTHER LCD REPEATER PANELS
IF INSTALLED

OPTIONAL RS232 (AVAILABLE FOR HIGH LEVEL INTERFACE OR
GRAPHICS OR REMOTE SERIAL PRINTER)

Figure 45: Example of Networking 2 Panels with LCD Repeaters

FIREFINDER
PANEL No1

CONTROLLER
302-669
302-674
302-675

16 WAY RIBBON

CONTROLLER INTERFACE CARD
(CIC) 302-7250

10 WAY RIBBON

NETWORK INTERFACE CARD
(NIC) 302-7240

27VDC POWER

COMMS IN

COMMS OUT

RS232
NOT AVAILABLE

NOTE:
ONLY RS485 OR RS422
NOT BOTH

RS485 MULTIDROP
(SINGLE PAIR SHIELDED)
CABLE TYPE BELDEN 9841

CIC 27V OUTPUT OR
EXTERNAL POWER SUPPLY

REMOTE LED REPEATER 302-715

FIREFINDER
PANEL No2

CONTROLLER
302-669
302-674
302-675

16 WAY RIBBON

NETWORK INTERFACE
CARD (NIC) 302-7240

27VDC POWER

COMMS IN

COMMS OUT

2 PAIR SHIELDED
CABLE TYPE
BELDEN 8132
OR 9842

RS422 COMMS LOOP

OPTIONAL RS232
(AVAILABLE FOR HIGH LEVEL INTERFACE
OR GRAPHICS OR REMOTE SERIAL PRINTER)

NOTES:
MAXIMUM DISTANCE BETWEEN PANELS = 1.2KM
IF GREATER DISTANCE ARE REQUIRED A RS485
REPEATER (BLACK BOX IC155A) TO BE FITTED
EVERY 1.2KM AFTER THE FIRST 1.2KM.
CABLE TO BE USED = BELDEN 9841
SINGLE PAIR SHIELDED.
CABLE TO BE USED = BELDEN 8132 OR 9842
TWO PAIR SHIELDED.

POWER REQUIREMENTS
27VDC CAN BE DERIVED FROM THE FIREFINDER OR
AN EXTERNAL APPROVED 27VDC SUPPLY CAN BE USED.
AND WIRED INTO TB1 + AND - TERMINALS

DEPENDING ON CONFIGURATION OF PANEL SOME
COMMUNICATIONS CHANNELS MAY NOT BE AVAILABLE

Figure 46: Example of Networking 2 Panels and LED Mimic

7.6   Led Mimic Board (302-7150)

The LED Mimic Board has been designed to communicate with the Main Panel using RS485 protocol so as it can remotely mimic that panel's LED's and switches. The Mimic therefore can display the status of 32 Zones, 5 specific common outputs (Alarm, Pre-alarm, DBA, Fault, Normal) and can be configured to have 5 input switches (Mimic Reset, Lamp Test, Buzzer Mute, Bell Isolate, Evacuate), 1 remote Buzzer output as well as 1 software configurable 1A relay output and 1 voltage free driven input. On board switches are,

SW1: turns off the LED's

SW3: resets the CPU

SW4: resets the LED's

SW5: tests the LED's

SW2 1-5: sets the board address

SW2 6: configures for FireFinder

SW2 7: sets the LED's to flash or be steady

SW6: mute the Buzzer

The Remote LED Mimic board connects to the external RS485 Communication bus via the Controller Interface Card (C.I.C). Up to 31 of these boards may be connected together. The comms is NOT a redundant bus.
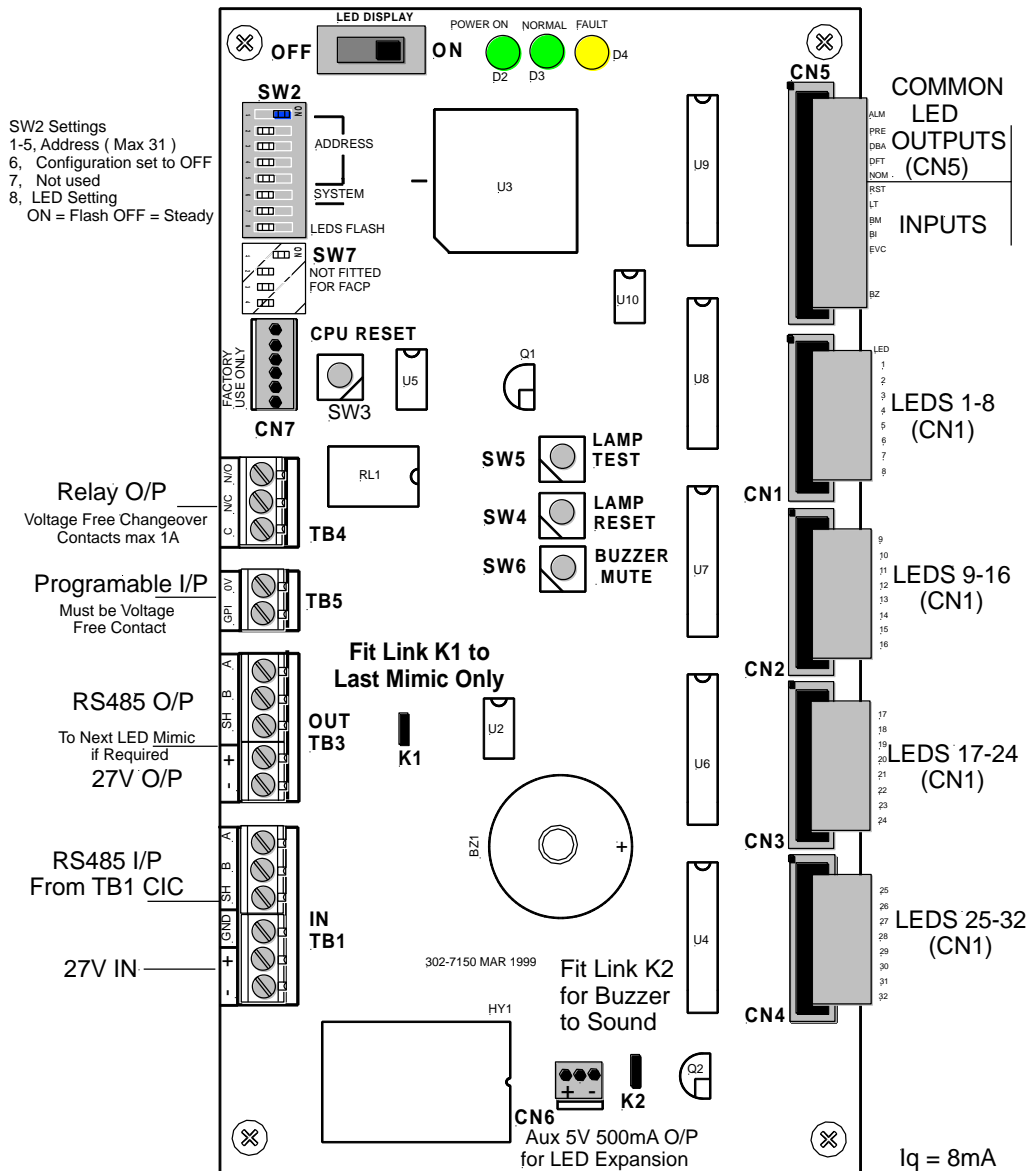
Figure 47: Remote LED Mimic Board
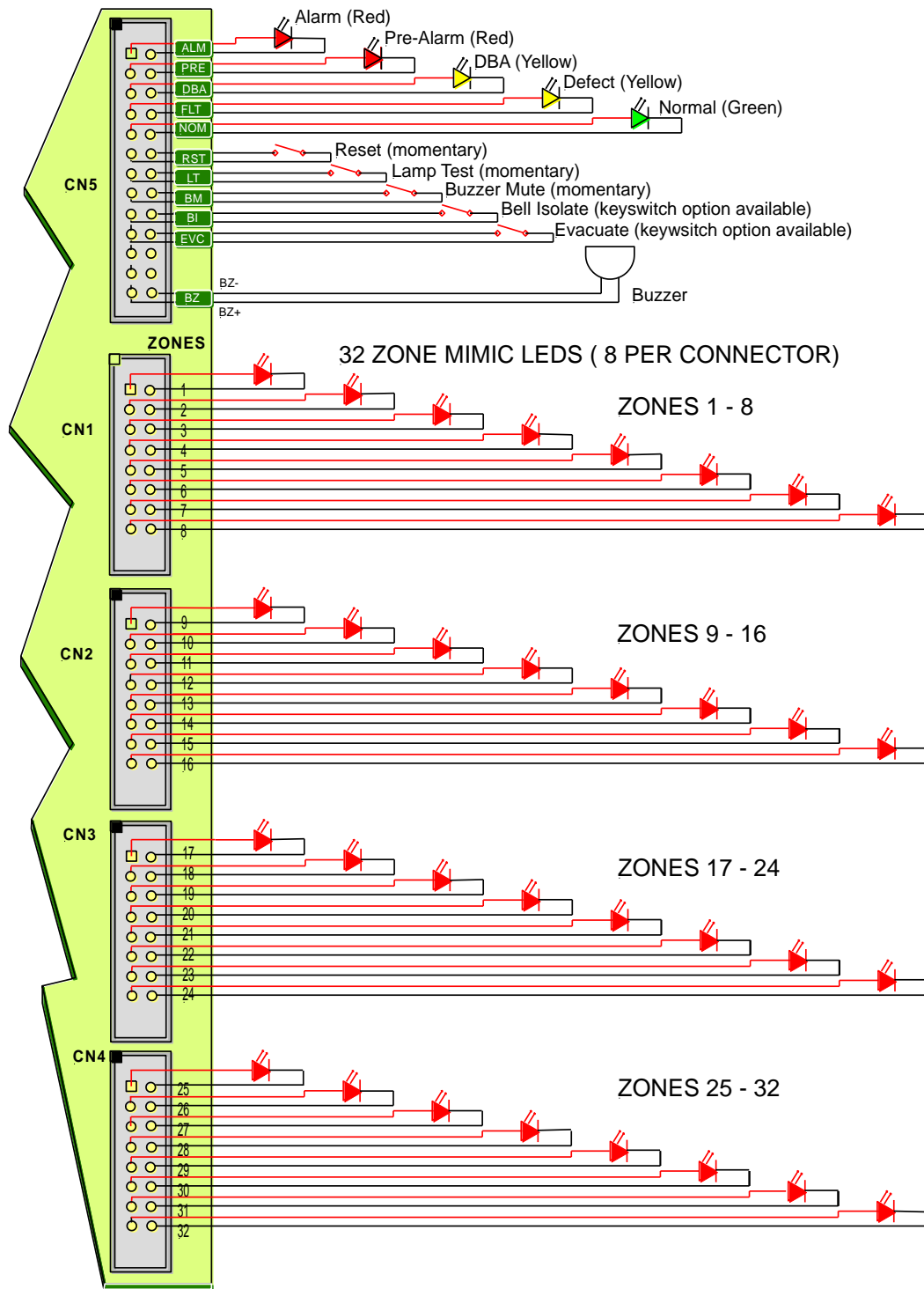
Figure 48: Control and LED Indication Internal connections

7.7   Liquid Crystal Display Repeater Panel (302-7200)

The LCDR Repeater displays information as 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.
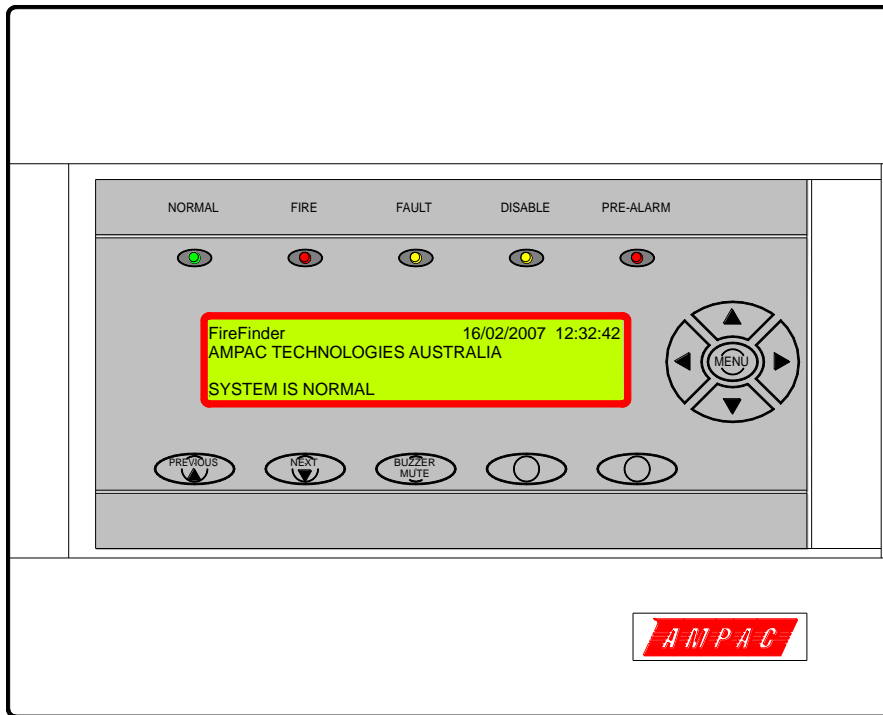
Figure 49: Liquid Crystal Display Repeater Panel
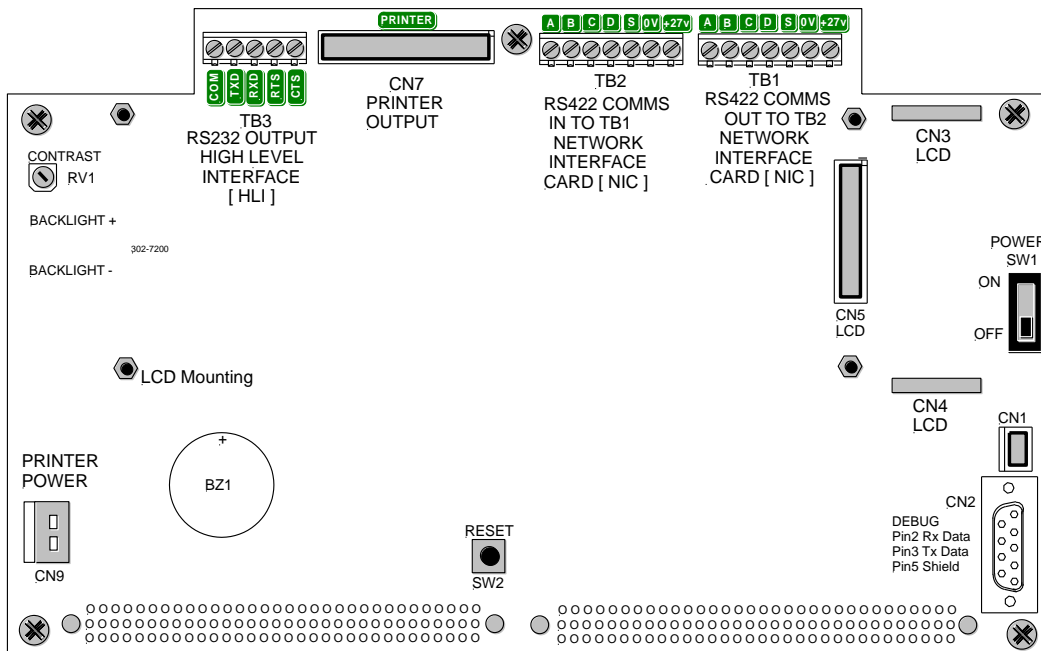
Figure 50: Liquid Crystal Display Repeater Panel

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 e.g. 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   FireFinder Operation

8.1   The Control Panel
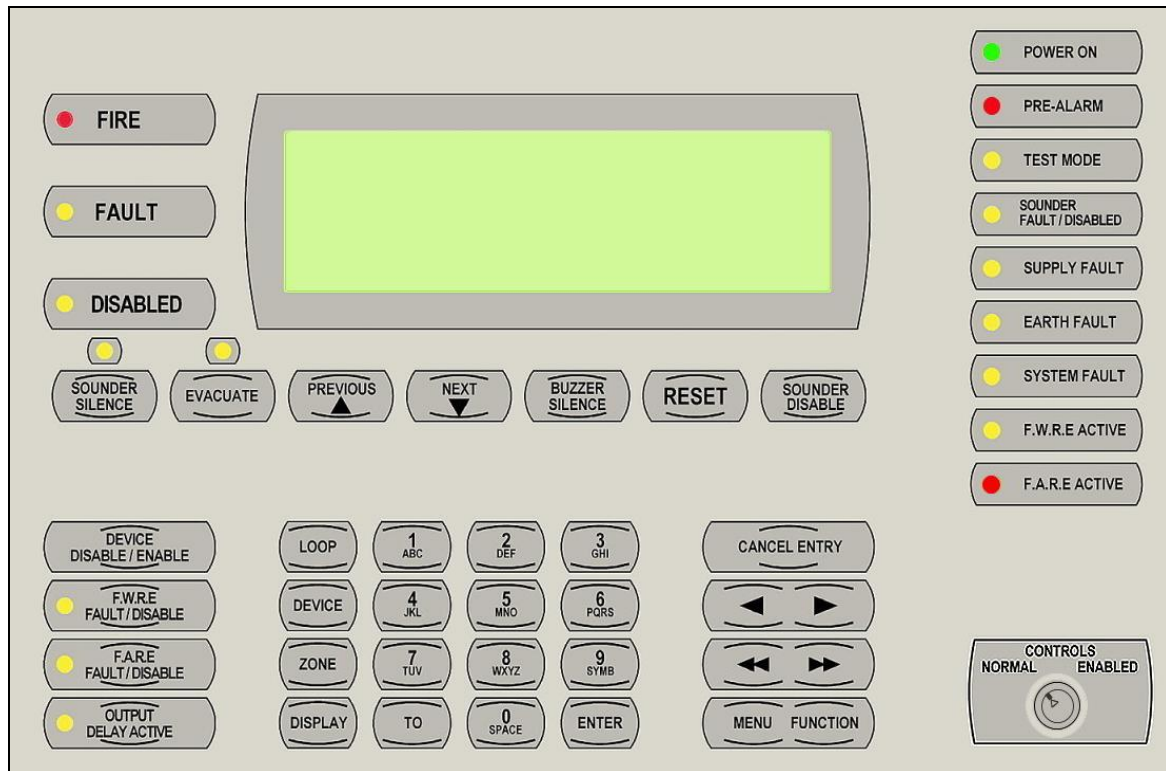
Figure 51: The SP1M FireFinder Control Panel

FIRE FIRE (Red) – This LED will be illuminated steady if any fire alarms are present on the system.

FAULT FAULT (Yellow) – This LED will be illuminated steady if there are any faults on the system, whether they are loop faults, module faults, device faults etc.

DISABLED DISABLED (Yellow) – The LED will light steady if any detectors, devices or zones in the system have been disabled or if an output relay has been de-activated. The display will show the conditions as per EN54 9.2 and 9.4.2.

SOUNDER SILENCE SOUNDER SILENCE – Pressing this button will silence any Bells or Sounders (activated either by a fire alarm, a manual evacuation or a manual alert) that are connected to the fire panel. If the bells or sounders are silenced the LED just above the button will be illuminated steady indicating that the sounders have been silenced and a sounder resound is available. If a manual evacuate or manual alert condition is present when the Sounder Silence button is pressed, these conditions will remain visible indicating the conditions are still present for resounding. A new Fire Alarm, manual evacuate or manual alert will resound all the previously silenced Bells and Sounders. Pressing Sounder Silence a second time while the Sounder Silence LED is illuminated, will also re-sound the Bells and Sounders.

EVACUATE EVACUATE – Pressing this button will activate the Sounders and Bells that have been programmed for manual evacuation and the LED just above the button will be illuminated steady. If the sounders have been previously silenced the LED above the Sounder Silence button will turn off and the Sounders and Bells that were previously silenced will resound. This manual evacuate condition can only be cleared by a Reset and will override a manual "Alert" condition.

PREVIOUS ▲ PREVIOUS – This button is used for scrolling backwards through fire alarms, faults, or disablement's displayed on the LCD.

NEXT ▼ NEXT – This button is used for scrolling forwards through fire alarms, faults, or disables displayed on the LCD.

BUZZER SILENCE BUZZER SILENCE – Pressing this button will silence the panel buzzer, which sounds whenever there is a fire alarm or fault. The sound for a fire alarm is a steady sound where as for a fault it is intermittent.

RESET RESET – Pressing this button will reset the panel, clearing any fire alarms and taking the LCD display back to its default screen, unless there are any un-cleared faults or disabled devices, these will continue to be displayed. Pressing reset will also clear the manual evacuate, the manual alert condition and the sounder silence condition.

☞ **Note:** *Pressing reset will not clear any disablements including Sounder Disable.*

SOUNDER DISABLE SOUNDER DISABLE – This button is used to disable the Bells or Sounders. A new fire alarm, manual evacuate or manual alert will not activate the Bells or Sounders while they are disabled. If a fire alarm, manual evacuate or manual alert condition existed prior to the Sounder Disable button being pressed, the conditions will remain present but the associated Bells and Sounders will turn off. These Bells and Sounders will reactivate when the Sounder Disable button is pressed a second time for re-enablement.

● POWER ON POWER ON (Green) – This LED will be illuminated when power is connected to the FACP and switched on.

● PRE-ALARM PRE-ALARM (Red) – This LED will be illuminated when a sensor/detector is in the pre-alarm state.

● TEST MODE TEST MODE (Yellow) – This LED will be illuminated when the panel is in any of the test modes.

● SOUNDER FAULT / DISABLED SOUNDER FAULT / DISABLE (Yellow) – This LED will flash when there is a fault on the external sounder output. The LED will go steady if the sounder is disabled. If the sounder is both in fault and disabled the LED will flash and then go steady in a cycle.

● SUPPLY FAULT SUPPLY FAULT (Yellow) – This LED will be illuminated when there is a supply fault. The following conditions constitute a fault.

➢ Mains power is not available.

➢ The output voltage is too low.

➢ The output voltage is too high.

➢ The battery is not connected properly or has failed.

● EARTH FAULT EARTH FAULT (Yellow) – This LED will be illuminated if there is an earth fault (+ or -) on any of the signal cables of the system.
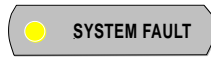
● SYSTEM FAULT SYSTEM FAULT (Yellow) – This LED will be illuminated if the main system CPU is in fault.

● F.W.R.E. ACTIVE F.W.R.E (Fault Warning Routing Equipment) ACTIVE (Yellow) – This LED will be illuminated when the FWRE output is active.

F.A.R.E. ACTIVE   F.A.R.E (Fire Alarm Routing Equipment) ACTIVE (Red) –
This LED will be illuminated when the FARE output is active.

DEVICE DISABLE / ENABLE   DEVICE DISABLE / ENABLE – This button is used to disable or re-enable selected individual or groups of detectors, devices or zones.

F.W.R.E. FAULT / DISABLE   F.W.R.E FAULT / DISABLE – Pressing this button will disable the FWRE output relay on the Output board. If disabled the associated LED will be illuminated. Pressing the button again will re-enable the FWRE relay. The LED will also be illuminated if the FWRE is in fault.

F.A.R.E. FAULT / DISABLE   F.A.R.E FAULT / DISABLE – Pressing this button will disable the FARE output relay on the Output board. If disabled the associated LED will be illuminated. Pressing the button again will re-enable the FARE relay. The LED will also be illuminated if the FARE is in fault.

OUTPUT DELAY ACTIVE   OUTPUT DELAY ACTIVE – Future option, not yet available.

LOOP   LOOP – Press this button followed by a number to select the loop you wish to access, e.g. LOOP 4.

DEVICE   DEVICE – After selecting the Loop number using the LOOP button, press the DEVICE button to enter the sensor number for the device you wish to interrogate.

ZONE   ZONE – Press this button followed by a number e.g. ZONE 4 to select the required zone.

DISPLAY   DISPLAY – Press this button after selecting the Zone number or the Loop and Sensor numbers to display the status of the device.

8 WXYZ   THE ALPHA/NUMERIC BUTTONS – These buttons are used to navigate around the panel's menus and enter data. If you are entering a description, or some other data that contains characters as well as numbers, pressing the buttons multiple times will scroll through the available letters written on the button, in sequence.
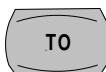
TO   TO – Use this button to access a range of devices. E.g. **2 DEF** **TO** **7 TUV** .
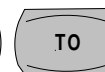
ENTER   ENTER – Press the ENTER button when prompted to enter data.

CANCEL ENTRY   CANCEL – The CANCEL ENTRY button is used to delete any data in the current field or return to the previously displayed menu.
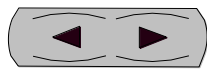
◄ ►   SINGLE ARROW BUTTONS – These move the cursor on the LCD back and forth when entering data into a field.
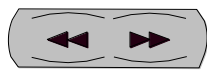
◄◄ ►►   DOUBLE ARROW BUTTONS – These are used to move between fields when entering data.

MENU FUNCTION   MENU / FUNCTION – Pressing the MENU button will display the main menu on the LCD. Similarly pressing the FUNCTION button will display the function menu on the LCD.

NORMAL – Normal day to day operation.   ENABLED – Access level 2.

☞ **Note:** *the key can only be removed in the NORMAL position.*

LCD DISPLAY –

Customer defined text

AC:1S
= Access Level 1
Sensor Mode

ALM: 000
= Number of
Alarms present

```
FIREFINDER                        16/2/2007   14.31.15
AMPAC EUROPE LTD
PH:  +44  (0)  1302 833 522
SYSTEM IS NORMAL


AC:1S      ALM: 000      PALM: 000      FAULT: 000      DIS: 000
```
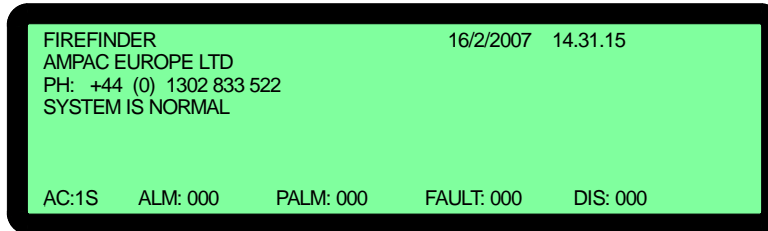
PALM: 000
= Number of
Pre-alarms present
FAULT: 000
= Number of
Faults present
DIS: 000
= Number of
Disables present

Figure 52: LCD Default Screen

This screen can be configured with the servicing companies' name and phone number. It also displays the current date, time and if the system is normal (no faults and fire alarms).

If there are any faults or fire alarms the LCD will display the device/s in question and the time of the 1st fire alarm.

IMPORTANT NOTE:

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

9   Functions And Menus

9.1   The Default LCD Display

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

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.

9.2   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 FACP .*

MENU FUNCTION 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.

9.3   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 26)

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**.**

9.3.1   Forgotten Passwords

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

Entering 9999 into the password field;

Take note of the 4 digit password number displayed on the screen; then

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.*

10   The Main Menu

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

```
MAIN MENU
0: ALARMS   1 :PREALARMS    2: FAULTS   3: DISABLES
4:STATUS      5 :TEST    6: SOUNDERS      7: PRINTER:
SELECT NO.


AC: 2S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
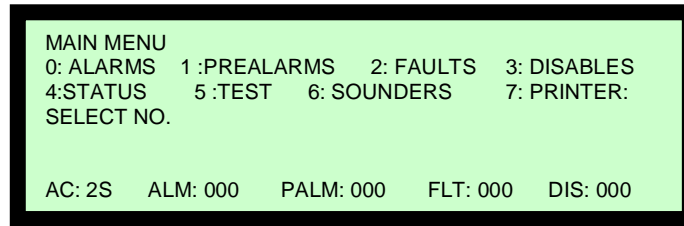
Figure 53: The Main Menu

While in the MAIN MENU press the appropriate number on the keypad to view any;

❽   FIRE ALARMS,

❶   PRE-ALARMS,

❷   **FAULTS;** Pressing ❷ brings up a sub-menu from which a more detailed description of a fault can be displayed. Select a field 0 – 7.

☞ **Note:** *Comms will only be available for a networked panel.*

Zones Sensors ⓪	Loops ①	Modules ②	Comms ③	Power Supply ④	Brigade ⑤	Test Failures ⑥	Sounders ⑦

❸   DISABLES on the system.

If there are no fire alarms, pre-alarms, faults or disables, a message to that effect will be displayed for approximately 1 to 2 seconds and then the display will return to the Main menu.

10.1   Status Menu

```
STATUS MENU
0: LOOPS              1 :MODULES        2: I/O
3 :SYSTEM            4: AVALUES

SELECT NO.

AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
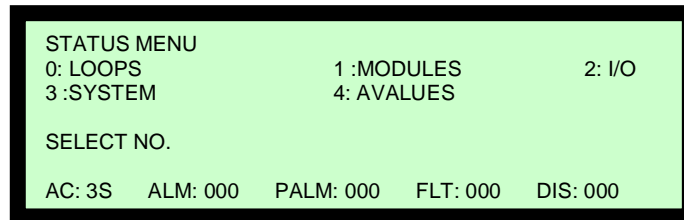
Figure 54: The Status Menu (Non networked Panel)

❹ Is pressed to access the STATUS MENU.

From the STATUS MENU the status of all of the system components and settings listed below can be interrogated.

Press;

⓪   **Loops:** Enter the loop number and it will display its status.

①   **Modules:** If pressed the following sub-menu will be displayed.

Slave ⓪	Power Supply ①	Brigade (Outputs) ②	External LED Mimic ③

E.g. Pressing **Power Supply** ①**:** This menu item will display the charger voltage, whether or not the power supply is in fault, if Mains is available and if the battery is correctly fitted.

②   **I/O:** The LCD will display the status of an input or output in a panel or a loop.

Enter (i) the I/O controller number then the input or output on that controller or, (ii) the loop and sensor number and the output on that device.

Once entered the LCD will then display a description of what that input or output does and its current state.

Networked Panel – *ONLY*

```
DISPLAY NETWORK STATUS
0: NETWORK POINTS   1: REMOTE SLAVE MODULES
2: REMOTE EXTERNAL LED MIMIC MODULES
SELECT NO.



AC: 2S   ALM: 000      PALM: 000      FLT: 000      DIS:
```
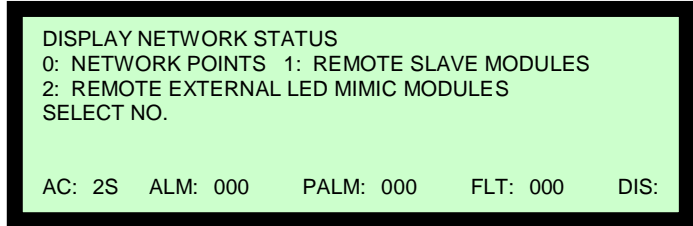
Figure 55: Display Network Status)

③   Is pressed to access NETWORK STATUS.

```
DISPLAY NETWORK POINTS
0: STATUS    1: POWER SUPPLY    2: BRIGADE

SELECT NO.



AC: 2S    ALM: 000     PALM: 000     FLT: 000    DIS: 000
```
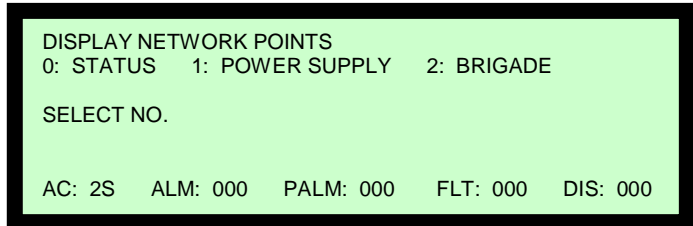
Figure 56: Display Network Points

⓪ Network Points:

Network LCD Screens are:

***Press* ⓿ Status**	*or* ❶ **Power Supply**	*or* ❷ **Brigade**
Select network point	Charger volts	Operational
E.g. Loop number	Battery Detected	Non- Op
	Mains OK	

① Remote Slave Modules:

Select from Network Status, Remote Slave Modules then Module No then **ENTER** .

```
Apollo Loop 1
TYPE: APOLLO     LOOP NO: 1     VER: 6.1
NP: 1   MOD: 4   STAT:  NORMAL
REMOTE MODULE  STATUS


AC: 2S   ALM: 000   PALM: 000    FLT: 000    DIS:  000
```
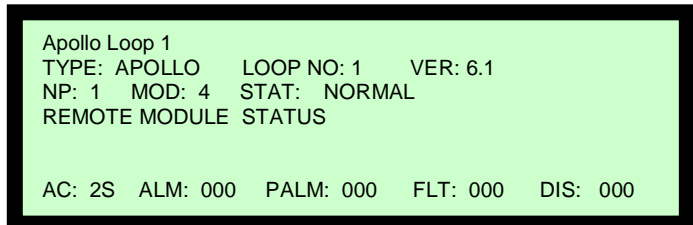
Figure 57: Display Remote Slave Modules

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** .

System:

③ Is pressed to access SYSTEM STATUS - ④ *for a network panel*

```
SYSTEM STATUS
ALARMS: 0000      PRE-ALARMS: 0000     DISABLES: 0000
DEVICE FAULTS: 0000      MOD FAULTS: 00     WDG: 00
LOOP FAULTS: 00                     VERSION:  6.1   EN54


AC: 2S   ALM: 000   PALM: 000   FLT: 000    DIS:  000
```
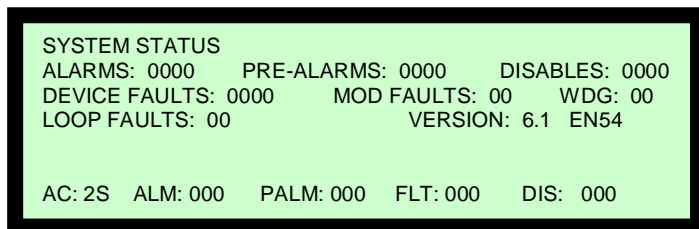
Figure 58: Display System Status

A values:

④, ⑤ for a network panel is pressed to access AVALUES. Enter the Loop number then **ENTER** then Sensor number then **ENTER** .

```
Loop 1    sensor  1
L1   S1   Z2   STAT: NORMAL
AVALUE: 25      MODE: 0      I: 000      O:: 000


AC: 2S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
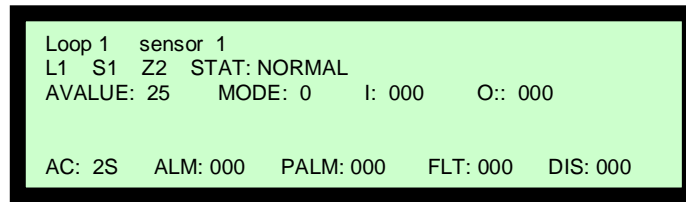
Figure 59: Analogue Values

10.2 Testing Menu

⑤ Is pressed to access the TESTING MENU. From here the following can be tested:

```
TESTING MENU
0: ALARM           1: FAULT           2:  LAMP

SELECT NO.


AC:3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
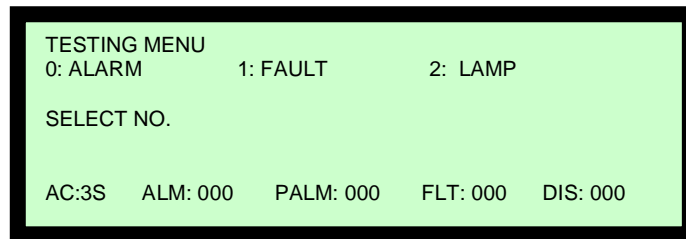
Figure 60: The Testing Menu

Alarm Test

⓪ Alarm tests either a selected zone or a sensor or a range of zones or sensors.

(This test will force a sensor to go into Alarm or a conventional zone to a simulated Alarm State)

Fault Test

① Fault tests either a zone or a sensor or a range of zones or sensors.

(This test will force a sensor to go to the Fault State or a conventional zone to a simulated Fault State)

Once the above tests have been completed the TEST COMPLETE screen will appear. Each ALARM and FAULT that was detected can be viewed by scrolling through them using the NEXT and PREVIOUS buttons.

Lamp Test

② Will flash the LED's in sequence on the front panel and illuminate the various segments on the LCD display.

10.3 Sounders

Press

❻   To select Sounders then ⓪ to enable / disable as required.

Printer Menu

Press

❼ To select the panel printer (if installed) then ⓪ to forces it to Go ON or OFF Line while ① Sets the printer to an alarm mode operation only.

11   Main Functions

```
LEVEL III MAIN FUNCTIONS
0: DATE          1: TIME        2: DAY/NIGHT     3: LOGS
4: TESTS         5: I/O         5: PASSWORD      6: PROG
SELECT NO.


AC: 3S     ALM: 000     PALM: 000     FLT: 000     DIS: 000
```
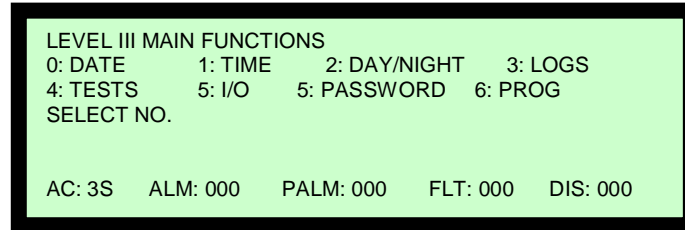
Figure 61: The Level III Functions Menu

11.1   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 **PASSWORD** and press ENTER.

Press

❶ To select the set **DATE SCREEN**. The prompt will ask for the date to be entered in this format, DD/MM/YYYY (EG 16/02/2007), key in and press ENTER. The screen will then return to the **MAIN FUNCTIONS MENU**.

11.2   Setting the Function Time Facility

Press

❶ Then in the following format key in the time, **HH:MM** using the 24 hour mode. Press ENTER and the screen will return to the **MAIN FUNCTIONS MENU**.

11.3   Setting the Function Daynight Facility

Press

❷ The **DAY-NIGHT SETTINGS** screen will appear.

Press

⓪ To enter the DAY ON time then ENTER and,

① To enter the NIGHT ON time then ENTER.

To enter this mode the function must be **ENABLED**, press ② Re-pressing ② will **DISABLE** the DAYNIGHT function.

11.4   Function Logs Facility

Press

❸ And the **EVENT LOG MENU** will appear.

The **LOGS MENU** function allows the operator to select and view the events of all;

Press

⓪   **ALARMS**

①   **FAULTS**

②   **DISABLES**

The date and time of the ALARM, FAULT or DISABLE as well as the device information will be displayed. This screen also allows the operator to select two other facilities;

Press

⓪   **PRINT ENTRY** If a printer is installed pressing will print out the displayed information, or

①   **SHOW OPTIONS** by pressing

This screen allows the operator to view the Logs by pressing ⓪ to **VIEW BY ENTRY NUMBER** or by pressing ① to **VIEW BY DATE**. In each case the screen will ask for the appropriate information (ENTRY NUMBER or DATE) to be entered before anything can be displayed.

☞ **Note:** *it is possible to scroll through the Logs by using* [PREVIOUS ▲] *and / or* [NEXT ▼]

11.5 The Function Test Facility

Press

❹

The resulting screen is the TESTING MENU and prompts the operator to select the type of test they wish to perform, ⓪ for the **WALK** test (also known as the Single Person Operational Test [SPOT]) and ① for the **LOOP** test.

Press

⓪   **WALK TEST;** again the operator will be prompted to select either a

ZONE (press ⓪) or **SENSOR** (press ①) **TEST**.

⓪   **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** and 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.

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 LED's 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.

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

11.6   Function Manual I/O Control

Press

❺ To display the Manual I/O Control menu

```
MANUAL I/O CONTROL
0: INPUT      1 :OUTPUT
2: REMOVE ALL MANUAL CONTROL
SELECT NO.


AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
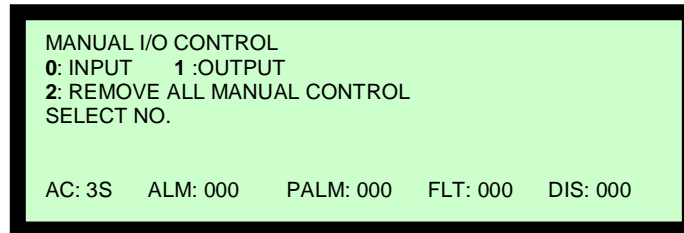
Figure 62: The Manual I/O Control Menu

MANUAL I/O CONTROL

Press

⓪   Input Selected:

Press

⓪   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.

11.7   Function Passwords

Press

❻ While in the Main Functions menu (if your password gives you access) to display the Password Menu.

```
PASSWORD MENU
0: ADD PASSWORD   1 :DELETE PASSWORD
2: DELETE ALL PASSWORDS
SELECT NO.


AC: 4S   ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
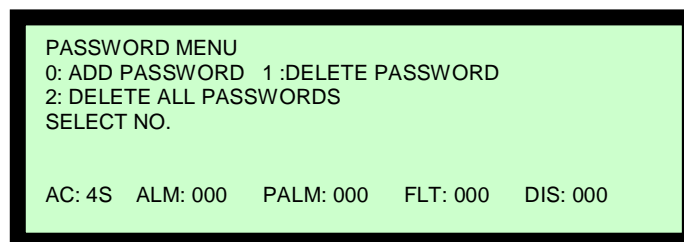
Figure 63: The Password Menu

Press

⓪   **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.

11.7.1 Forgotten Passwords

If you have forgotten your password,

1.   enter 9999 into the password field;

2.   Take note of the 4 digit password button displayed on the screen;

3.   contact the AMPAC head office and quote this number;

4.   a temporary password will be issued to allow access to the level 3 functions

5.   A new password can now be programmed.

☞ **Note:** *The temporary password will become invalid if 9999 is entered again or if the panel is re-powered.*

11.8   Function Programming

Press

❼ To display the Programming Menu.

```
ON SITE PROGRAMMING MENU
0: CONV ZONE    1 :DEVICE    2:INPUT    3: OUTPUT
4: PANEL BASED MCP
SELECT NO.


AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
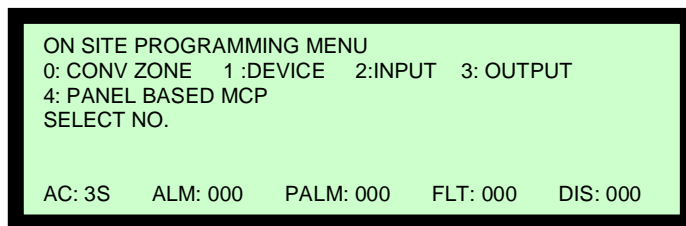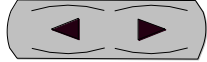
Figure 64: The Programming Menu

11.8.1 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 the ◀ ▶ buttons to move the flashing underline or cursor.

```
EDIT Zx DESC AND TYPE STRINGS
DESC  < ZONE >
TYPE<
ALPHA KEYS ARE ACTIVE


AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
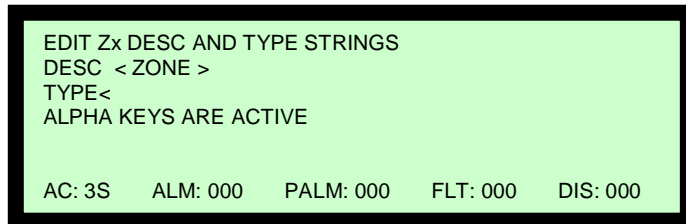
Figure 65: Zone Descriptions & Type Programming

▶▶   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 be accessed to show the Output options. Press to step through these fields

```
EDIT ZX BRIGADE OPTIONS AND CONFIG
ALRM: Y/N    BELL: Y/N    AUX: Y/N    SPRK: Y/N    AIF: Y/N
ALARM LED: Y/N    CONFIG: LATCHING
Use < or > to change setting


AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
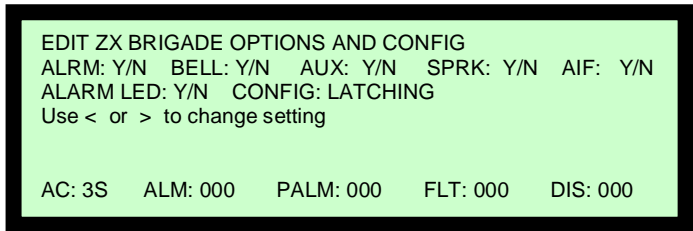
Figure 66: Brigade Options
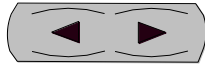
These keys are used to set the Y/N field that is the selected Zone that will activate the Brigade options ALRM, bell etc. and Config.

```
EDIT Z CONFIGURATION
CONFIG: LATCHING

Use < or > to change alarm setting


AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
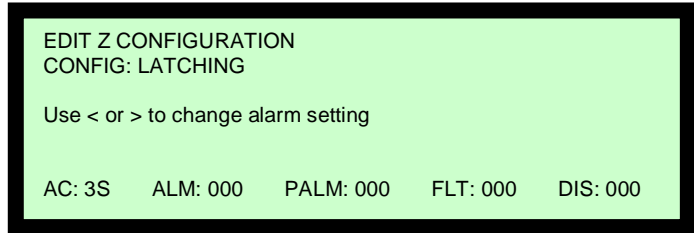
Figure 67: Zone Configuration Latching / Non-Latching

Configuration settings are latching, Non-Latching, AVF and Self Reset (0 to 99 seconds).

Use ◀ or ▶ to change the latching setting

After setting the Configuration the ZONE, I/O GROUPS are then programmed.

```
EDIT Z I/O GROUPS
GROUP1:            GROUP2:            GROUP3:
GROUP4:            GROUP5:            GROUP6:
Enter GROUP  NO.


AC: 3S    ALM: 000    PALM: 000    FLT: 000    DIS: 000
```
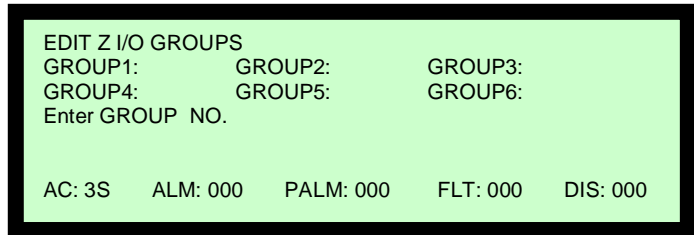
Figure 68: Zone I/O Groups

After scrolling through the groups and entering what I/O GROUPS will be turned on by WHAT MODULE OR DEVICE IN A ZONE the operator is prompted to press **ENTER** to confirm the entries and / or changes.

11.8.2 Device Programming

Press

① **DEVICE:**

Use these keys to **EDIT** and move through wording & numbering.
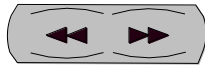
Use these keys to MOVE between fields i.e.: DESC &   TYPE and NEXT PARAMETER SETTING.

Screen:

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

Press   or   Press

⓪ To EDIT   or   ① to DELETE

EDIT LxSx DESCRIPTION AND TYPE STRING.   After each step press

e.g.:   **DESC   DETECTOR 1**   ►►

TYPE   SMOKE

6. Allocate / Edit the Sensor to a Zone and set the device type

7. e.g.: XP95 Photo, XP95 Heat etc.

8. Set /edit and displays the Output Configurations or options.

9. e.g.: Latching, AVF, Non-latching etc

10. Set / edits and enables / disables the day/night settings.

11. Allocates / edits the Loop and Sensors Groups.

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

11.8.3 Input Programming

Press

② **INPUT:**

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

Screen: PROGRAM MENU SELECTING AN INPUT

⓪ IN A PANEL	① **ON A LOOP**
i) PANEL, LOOP OR REMOVE	**i) LOOP**
Select one of the above	Select LOOP NO. then ENTER
ii) I/O MODULE	**ii) SENSOR**
Select I/O MODULE NO. then ENTER	Select SENSOR NO. then ENTER
iii) IINPUT	**iii) INPUT**
Select I/P NO then ENTER	Select INPUT NO. then ENTER key
iv) EDIT / DELETE DESC	**iv) EDIT LxSxI/Px DESC STRING**
ALPHA KEYS ARE ACTIVE	DESC

11.8.4 Output Programming

Press

③ **OUTPUT:** By following the screen prompts in the same as previously Add, Edit or Delete an output in a panel or on a loop.

11.8.5 Watchdog

Press

④ To view the number of resets and or press ⓪ to reset the Watchdog counter

11.9   Extra Devices Detected

If Self Learn is enabled and *FireFinder*™ detects extra modules or devices, that is devices or modules that have been added or there has been a change of description or type, the *FireFinder*™ LCD will indicate this by displaying the screen below.

```
FIREFINDER                26/2/2007            08:05:45
EXTRA DEVICES DETECTED
GOTO PROGRAMMING MENU TO RESOLVE
SYSTEM IS NOT NORMAL



AC: 3S     ALM: 000     PALM: 000     FLT: 000     DIS: 000
```
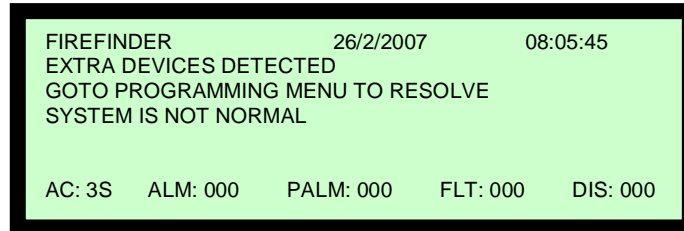
Figure 69: Resolving Extra Modules and Devices

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

```
PROGRAMMING MENU
0: RESOLVE EXTRA MODULES AND DEVICES
1: ON SITE PROGRAMMING
SELECT NO.



AC: 3S     ALM: 000     PALM: 000     FLT: 000     DIS: 000
```
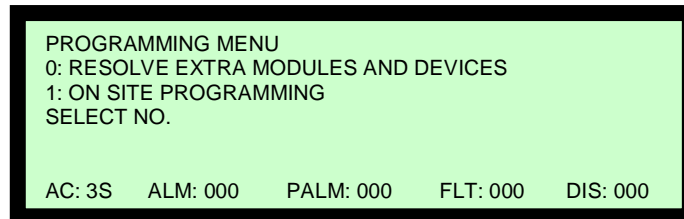
Figure 70: Added Module or Device

Example: Pressing ❶ (Entering ❶ presents the PROGRAMMING MENU)

Select the appropriate programming screen from those listed on the screen (as seen below) and select enter to accept the changes or skip to resolve the changes manually.

```
0: ADD EXTRA MODULES           1: ADD EXTRA DEVICES
2: DEVICE TYPE MISMATCH        3: MODE MISMATCH
SELECT NO.



AC: 3S     ALM: 000     PALM: 000     FLT: 000     DIS: 000
```
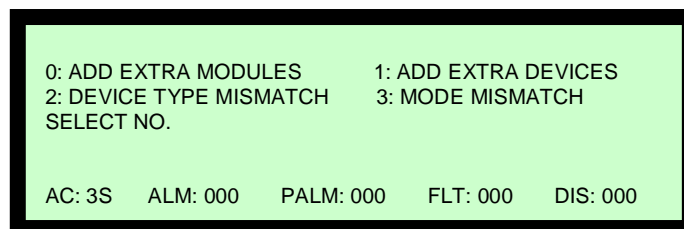
Figure 71: Resolving Extra Modules or Devices

12   *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 previous and next keys. After 30 seconds if no key is pressed the top section of the display will revert to displaying the first zone in alarm.

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

```
DETECTOR 1                              SMOKE
L1 S1 Z17 ALARM
17/9/2002 15:12: 10
SENSOR ALARMS 1 OF 5
***************CURRENT ALARM*****************
DETECTOR 5
L1 S5 Z17 ALARM17/9/2001 15:12:10
AC: 1     ALM: 005     PALM: 000     FLT: 000     DIS: 000
```
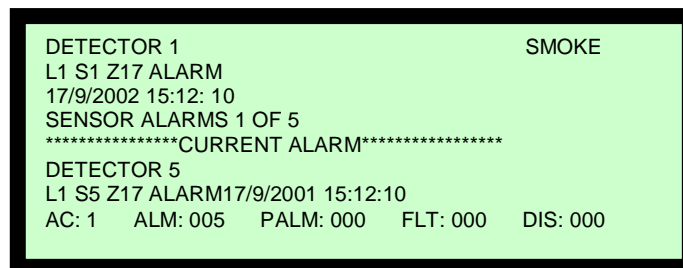
If a fault or a fire alarm condition exists and the buzzer is sounding, press the BUZZER SILENCE to silence.

13   *Accessing a Loop, Sensor or Zone*

LOOP OR SENSOR

12. From the default display, press LOOP

13. Enter the loop number you wish to interrogate then press SENSOR.

14. Press the button for the sensor number.

15. Press the TO button if you wish to access a range of sensors on the loop,

16. Press the DISPLAY button if you wish to display the status of a sensor,

17. Press the DEVICE DISABLE / ENABLE button if you wish to disable a sensor

18. Press the DEVICE DISABLE / ENABLE button again to enable a sensor.
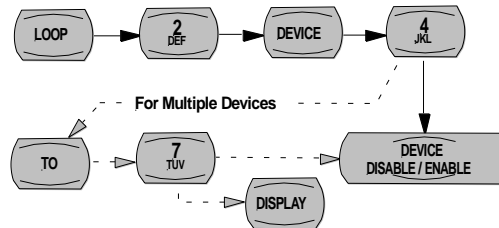
Figure 72 : LCD Screen with 4 Devices in Alarm:

ZONE

19. From the default display, press ZONE

20. Press the button for the zone number.

21. Press the TO button if you wish to access a range of zones,

22. Press the DISPLAY button if you wish to display the status of a zone,

23. Press the DEVICE DISABLE / ENABLE button if you wish to disable a zone

24. Press the DEVICE DISABLE / ENABLE button again to enable a sensor.

14   *List Of Compatible Detectors*

Conventional Detectors

The following range of conventional detectors has approval to be used with the *FireFinder*™ conventional zone board (302-6710).

Apollo Actuating Device	MAX No Of Devices
Apollo Series 60, 55000-100 grade 1 heat (60deg Celsius)	32
Apollo Series 60, 55000-101 grade 2 heat (65deg Celsius)	32
Apollo Series 60, 55000-102 grade 3 heat (75deg Celsius)	32
Apollo Series 60, 55000-103 range 1 heat (80deg Celsius)	32
Apollo Series 60, 55000-104 range 2 heat (100deg Celsius)	32
Apollo Base 45681-200 (for above detectors)	
Apollo Series 60, 55000-200 Ionisation Smoke	32
Apollo Series 60, 55000-300 Photoelectric Smoke	32
Apollo Series 60, 53546-014 Duct Sampling Unit	32
Apollo Base 45681-205 (for above detectors)	

Apollo / Ampac Addressable Devices

The following range of addressable detectors has approval to be used with the *FireFinder*™ addressable Loop Board (302-7350).

Device Type	Part Number
Apollo XP95 Ionisation Smoke Monitor	55000-520
Apollo XP95 Optical Smoke Monitor	55000-620
Apollo XP95 Temperature Monitor (STANDARD)	55000-420
Apollo XP95 Temperature Monitor (HIGH)	
Apollo Discovery Ion Smoke Monitor	58000-500
Apollo Discovery Optical Smoke Monitor	58000-600
Apollo Discovery Heat	58000-400
Apollo Discovery Multi - sensor	58000-700
Apollo XP95 Base	45681-210
Apollo XP95 Isolator	55000-700
Apollo XP95 Isolator Base	45681-211
Apollo XP95 Manual Call Point	55000-905
Apollo Discovery Manual Call Point	58000-910
Input/Output Unit	55000-818
Switch Monitor Plus	55000-809
Mini Switch Monitor	55000-833
Sounder Control Unit	55000-823
Apollo XP95 Intrinsically Safe Protocol Translator	55000-855
Zone Monitor	55000-813
Loop Sounder	55000-261
Ampac 3-IOD 3 Input / 3 Output Device	*Consult your local*
Ampac SID Single Input Device	*Ampac*
Ampac Zone Interface Device	*Distributor*

Hochiki Conventional Detectors

Heat Detectors

Hochiki Model DCA-B-6OR MKV Heat Detector Type A	
Hochiki Model DFE-60B Heat Detector Type B	
Hochiki DCA-B-90R MK 1 Heat Detector Type E C	
Hochiki DFE-90D Heat Detector Type D	
Hochiki DCC-A Type A Heat	
Hochiki DCC-C Type C Heat	
Hochiki DCD-A Type A Heat	
Hochiki DFJ-60B Type B Heat	
Hochiki DCD-C Type C Heat	
Hochiki DFJ-90D Type D Heat	

Smoke Detectors

AMPAC Fireray 2000 Beam Detector	

Hochiki SIH-AM Ionisation Smoke Detector	
Hochiki SIH-AMB Ionisation Smoke Detector	
Hochiki SIJ-AS Ionisation Smoke Detector	
Hochiki SIJ-ASN Ionisation Smoke Detector	
Hochiki SLK-A Photoelectric Smoke Detector	
Hochiki SLR-AS Photoelectric Smoke Detector	

Flame Detectors

Hochiki HF-24A MK 1 Ultra-Violet Flame Detector	
Flame Master MK IV B Ultra-Violet Detector	

15   *Certification Information*

The *FireFinder*™ is designed and manufactured by:

AMPAC TECHNOLOGIES PTY LTD

       7 Ledgar Rd

       Balcatta

       WA 6021

       Western Australia

PH: 61-8-9242 3333

FAX: 61-8-9242 3334

Manufactured to: _____

Certificate of Compliance Number: _____

Equipment Serial Number: _____

Date of Manufacture: _____

16   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

17   *Address Setting*

BINARY ADDRESS SETTING (APOLLO)

SERIES XP95 - ADDRESS DATA

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

Addr	1234567	Addr	1234567	Addr	1234567	Addr	1234567	Addr	1234567
1	1000000	26	0101100	51	1100110	76	0011001	101	1010011
2	0100000	27	1101100	52	0010110	77	1011001	102	0110011
3	1100000	28	0011100	53	1010110	78	0111001	103	1110011
4	0010000	29	1011100	54	0110110	79	1111001	104	0001011
5	1010000	30	0111100	55	1110110	80	0000101	105	1001011
6	0110000	31	1111100	56	0001110	81	1000101	106	0101011
7	1110000	32	0000010	57	1001110	82	0100101	107	1101011
8	0001000	33	1000010	58	0101110	83	1100101	108	0011011
9	1001000	34	0100010	59	1101110	84	0010101	109	1011011
10	0101000	35	1100010	60	0011110	85	1010101	110	0111011
11	1101000	36	0010010	61	1011110	86	0110101	111	1111011
12	0011000	37	1010010	62	0111110	87	1110101	112	0000111
13	1011000	38	0110010	63	1111110	88	0001101	113	1000111
14	0111000	39	1110010	64	0000001	89	1001101	114	0100111
15	1111000	40	0001010	65	1000001	90	0101101	115	1100111
16	0000100	41	1001010	66	0100001	91	1101101	116	0010111
17	1000100	42	0101010	67	1100001	92	0011101	117	1010111
18	0100100	43	1101010	68	0010001	93	1011101	118	0110111
19	1100100	44	0011010	69	1010001	94	0111101	119	1110111
20	0010100	45	1011010	70	0110001	95	1111101	120	0001111
21	1010100	46	0111010	71	1110001	96	0000011	121	1001111
22	0110100	47	1111010	72	0001001	97	1000011	122	0101111
23	1110100	48	0000110	73	1001001	98	0100011	123	1101111
24	0001100	49	1000110	74	0101001	99	1100011	124	0011111
25	1001100	50	0100110	75	1101001	100	0010011	125	1011111
								126	0111111
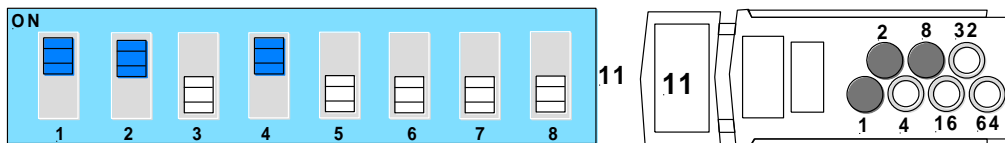
Figure 73: Switch and Tab Set to 11

18   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

19   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.

20   Qick Reference Guides

The following guides;

1. Prompt / assist an experienced operator to move through the Menu and Function facilities of the FACP without having to consult the main body this manual; and

2. provide a proforma for Brigade response to an alarm

MAIN MENU OPTIONS   *FireFinder ™   Quick Reference*

MENU KEY / FUNCTION KEY
(TO ENTER MENU / TO FUNCTION MENU)

ALARMS (DISPLAY ALARMS)

PREALARMS (DISPLAY PRE-ALARMS)

FAULTS (DISPLAY FAULTS OF SELECTED FIELDS)

ZONES/SENSORS
LOOPS
MODULES
COMMS   (FAULT FIELDS)
P/SUPPLY
BRIGADE
TEST FAILURES
SOUNDER

DISABLES (DISPLAY ALL SYSTEM DISABLES)

STATUS (DISPLAY STATUS OF SELECTED FIELDS)

LOOPS (LOOP / SENSOR No)
MODULES (MODULE No)
   SLAVE
   P/SUPPLY
   BRIGADE (BRIGADE O/PS)
   EXT LED MIMIC
I/O   (STATUS FIELDS)
   OUTPUTS (OUTPUT No)
   ("0" IN A PANEL "1" ON A LOOP)
   INPUT (INPUT No)

SYSTEM
AVALUES
(ANALOGUE VALUE OF DET)
SELECT LOOP NO. THEN ENTER
INCREMENT THE NUMBERING BY ONE IF THE PANEL IS NETWORKED

MENU KEY / FUNCTION KEY
(TO ENTER MENU / TO FUNCTION MENU)

TEST (TESTING THE SELECTED TEST FIELDS)

ALARM (TEST ALARM FIELDS)
   ZONE (ZONE No)
   SENSOR
   (LOOP/SENSOR No)
FAULT (TEST FAULT FIELDS)   (TEST FIELDS)
   ZONE (ZONE No)
   SENSOR
   (LOOP/SENSOR No)
LAMP

SOUNDERS
   ENABLE / DISABLE
PRINTER
   GO OFF LINE
   ALARM ONLY MODE

APPLIES IF A PANEL IS NETWORKED

NETWORK
   NETWORK POINTS
   REMOTE SLAVE MODULES
   REMOTE EXT LED MIMIC MODULES

FireFinder ™ Quick Reference

AMPAC

LEVEL 2 FUNCTION / LEVEL 3 FUNCTION

MENU FUNCTION

FUNCTION KEY (TO ENTER FUNCTION FIELD (ENTER PASSWORD))

- ACCESS LEVEL 3 (ENTER LEVEL 3 PASSWORD)
- PASSWORDS (EDIT PASSWORD FIELDS)
  - ADD PASSWORD (ADD PASSWORD (MAX 4 CHAR), LEVEL No)
  - DELETE PASSWORD (DELETE SELECTED PASSWORD)
  - DELETE ALL PASSWORDS (DELETE ALL PASSWORDS)
- MODE (ZONE / SENSOR)
- PROG (PROGRAMMING FIELDS)
  - ZONE (EDIT ZONE NUMBER, DESCRIPTION)
  - DEVICE (ENTER LOOP / SENSOR)
    - EDIT (DESCRIPTION, ZONE No, DEVICE TYPE, BRIGADE OPTIONS, CONFIGURATION, GROUP No)
    - DELETE (LOOP / SENSOR)
  - INPUT (EDIT INPUT FIELDS)
    - IN A PANEL (SELECT INPUT CONTROL No AND INPUT No)
      - EDIT (EDIT DESCRIPTION)
      - DELETE (DELETE DESCRIPTION)
    - ON A LOOP (LOOP / SENSOR No)
      - EDIT (EDIT DESCRIPTION)
      - DELETE (DELETE DESCRIPTION)
  - OUTPUT (EDIT OUTPUT FIELDS)
    - IN A PANEL (SELECT OUTPUT CONTROL No AND OUTPUT No)
      - AS FOR INPUT
    - ON A LOOP (LOOP / SENSOR No)
      - AS FOR INPUT
  - SUB ADDRESS (EDIT / DELETE)
  - WATCHDOG RESET

DISABLED IF FACP IS NETWORKED

LEVEL 3 FUNCTIONS

MENU FUNCTION

FUNCTION KEY (TO ENTER FUNCTION FIELD (ENTER PASSWORD))

- I/O (MANUAL INPUT / OUTPUT CONTROL FIELDS)
  - INPUT (INPUT FIELDS)
    - IN A PANEL (SELECT I/O CONTROL NUMBER AND INPUT No)
      - OFF (TURN INPUT OFF)
      - ON (TURN INPUT ON)
      - REMOVE MANUAL CONTROL (RETURN INPUT TO ORIGINAL STATE)
    - ON A LOOP (SELECT LOOP No, SENSOR No, INPUT No)
      - OFF (TURN INPUT OFF)
      - ON (TURN INPUT ON)
      - REMOVE MANUAL CONTROL (RETURN INPUT TO ORIGINAL STATE)
    - REMOVE ALL MANUAL INPUT CONTROL (RETURN ALL MANUAL INPUTS TO ORIGINAL STATE)
  - OUTPUT (OUTPUT FIELDS)
    - IN A PANEL (SELECT I/O CONTROL NUMBER AND OUTPUT No)
      - OFF (TURN OUTPUT OFF)
      - ON (TURN OUTPUT ON)
      - REMOVE MANUAL CONTROL (RETURN OUTPUT TO ORIGINAL STATE)
    - ON A LOOP (SELECT LOOP No, SENSOR No, OUTPUT No)
      - OFF (TURN OUTPUT OFF)
      - ON (TURN OUTPUT ON)
      - REMOVE MANUAL CONTROL (RETURN OUTPUT TO ORIGINAL STATE)
    - REMOVE ALL MANUAL OUTPUT CONTROL (RETURN ALL MANUAL OPS TO ORIGINAL STATE)
  - REMOVE ALL MANUAL I/O CONTROL (RETURN ALL MANUAL INPUTS AND OUTPUTS TO ORIGINAL STATE)

FUNCTION MENU OPTIONS

LEVEL 3 FUNCTIONS

MENU FUNCTION

FUNCTION KEY (TO ENTER FUNCTION FIELD (ENTER PASSWORD))

- DATE (DD/MM/YYYY)
- TIME (HH:MM)
- DAY/NIGHT SETTINGS (SET ON/OFF FIELDS)
  - DAY TIME (HH:MM)
  - NIGHT TIME (HH:MM)
  - ENABLE
- LOGS
  - ALARM (ALARM LOG)
    - PRINT ENTRY (PRINT TO PANEL PRINTER (IF FITTED))
    - SHOW OPTIONS
      - VIEW BY ENTRY No.
      - VIEW BY DATE
  - FAULT (FAULT LOG)
    - PRINT ENTRY (PRINT TO PANEL PRINTER (IF FITTED))
    - SHOW OPTIONS
      - VIEW BY ENTRY No.
      - VIEW BY DATE
  - DISABLE (DISABLE LOG)
    - PRINT ENTRY (PRINT TO PANEL PRINTER (IF FITTED))
    - SHOW OPTIONS
      - VIEW BY ENTRY No.
      - VIEW BY DATE
- TESTS (TEST SPECIFIED FIELD)
  - WALK (ZONES OR SENSORS)
    - ZONE (ENTER ZONE No)
    - SENSOR (ENTER LOOP / SENSOR No)
      - LOOP (ENTER LOOP No)

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