AMPAC

ADVANCED WARNING SYSTEMS

FireFinder™

Fire Alarm Control Panel (NZS 4512-2003)

Installation, Commissioning & Operation

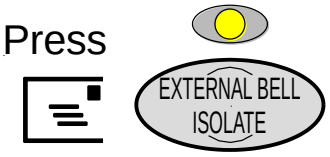
MAN 2335-5

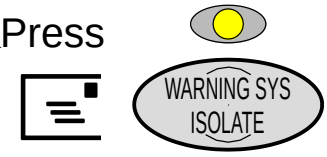
WORLD LEADER OF INNOVATIVE SOLUTIONS
IN FIRE DETECTION AND ALARM SYSTEMS

Responding To An Alarm

1. **Indicators** -**Alarm** Indicator Flashing.
-**Location** of Alarm on LCD Display.
-**First** Alarm Displayed.

2. **Isolate External Bell Isolate Warning System**

Press 

Press 

3. **Acknowledge Alarm**

Press 

4. **Isolate Alarm**

Press 

Press 

ACKNOWLEDGE to confirm
ISOLATE"

5. **If multiple alarms exist repeat 3 and 4 for second alarm and so on.**

6. **To Reset Panel**

Press 

Press 

ACKNOWLEDGE to confirm
RESET

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1 Non Disclosure Agreement

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

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

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

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

1. The Trader shall hold in trust and confidence, and not disclose to any person outside its organisation, any Proprietary information which is disclosed to the Trader by AMPAC under this Agreement. Proprietary Information disclosed under this Agreement may be used by the Trader only for the purpose of carrying out work on or with AMPAC supplied equipment and may not be used for any other purpose whatsoever.

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 :

    1. Is disclosed in a printed publication available to the public, is described in patent anywhere in the world, or is otherwise in the public domain at the time of disclosure;

    2. Is generally disclosed to third parties by AMPAC without restriction on such third parties;

    3. Is shown by the Trader to have been in its possession prior to the receipt thereof from AMPAC;

    4. Is approved for release by written authorisation of AMPAC; or

    5. Is not designated by AMPAC in writing or by appropriate stamp or legend to be of a secret, confidential or proprietary nature.

4. This Agreement will be binding upon and inure to the benefit of the parties hereto, and their respective successors and assigns.

5. This Agreement, and all rights and obligations hereunder, shall expire on the 10th anniversary of the date of issue of this document.

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

2 About This Manual

2.1 Purpose

The purpose of this manual is to assist the technician in the installation, commissioning and operation of the ***FireFinder***™ FACP.

2.2 Scope

The information within this manual is only available to and for the use of personnel engaged in the installation and operation of the ***FireFinder***™ FACP.

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

1. be qualified and trained for the task they undertake;

2. observe anti-static pre-cautions at all times;

3. 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; and

2.3 References

FireFinder™ **Technical Manual**
AMPAC Product Data Sheets
New Zealand Standard: NZS4512 2003

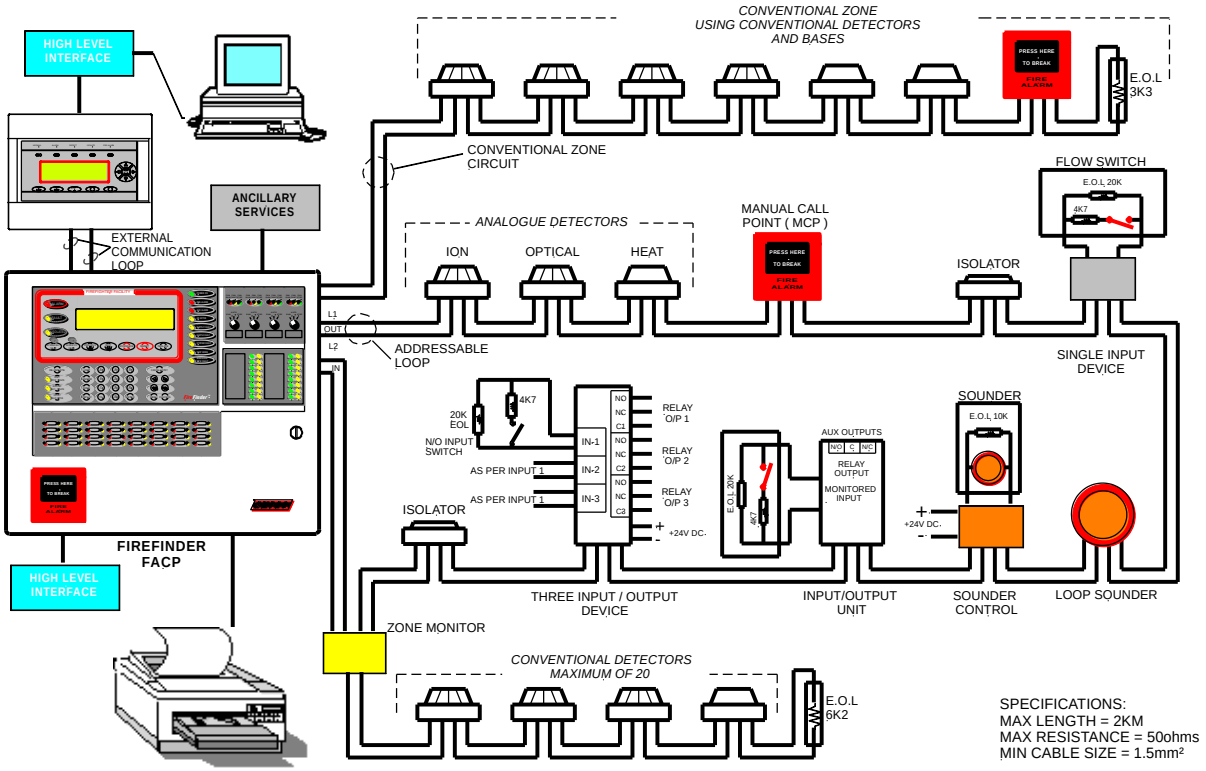


Figure 1: A Typical Application

3 System Overview

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

- © Apollo Discovery XP95 Intelligent Detectors as well as a selected range of Hochiki Conventional Detectors.
- © Addressable Initiating Devices: Modules that monitor any conventional normally open contact such as supervisory switches and flow switches.
- © Conventional two wire zone detector circuits
- © Multiple input/outputs
- © High Level Interfaces
- © Graphical Interfaces
- © Remote LCD Repeaters
- © Remote LCDA Annunciators
- © Remote LED Mimics
- © Peer to Peer networking
- © Master Slave (Main - Sub) networking
- © Main panel plus Data Gathering Panels networking

and; is built to comply with the following standards:

- © New Zealand Standard: NZS4512 2003
- © Australian Standard: AS1603.4 & AS4428.1
- © European Standard: EN54
- © Malaysian Standard: MS1404
- © Singapore Standard: CP10

Configuration Examples

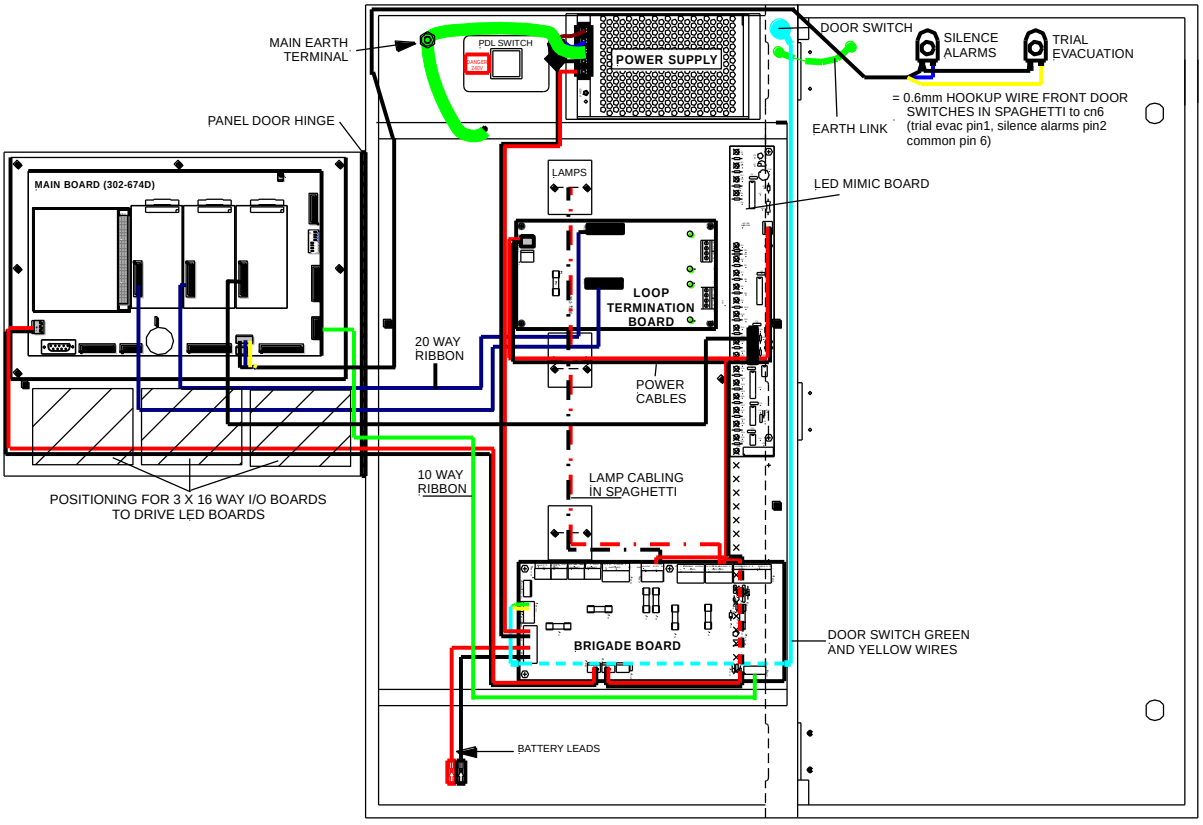


Figure 2: Internal Layout of the Basic SP8 FACP

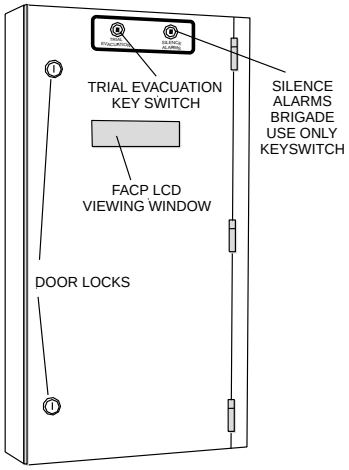


Figure 3: SP8 Rear Service - Rear View

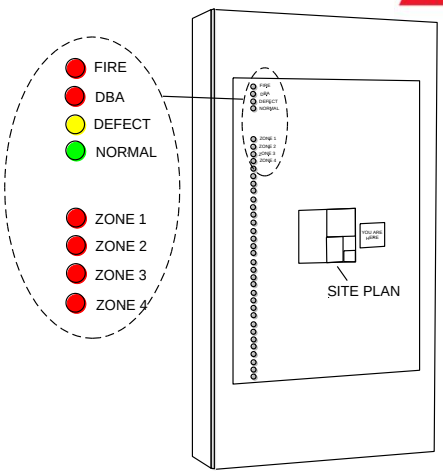


Figure 4:SP8 Rear Service – Front View

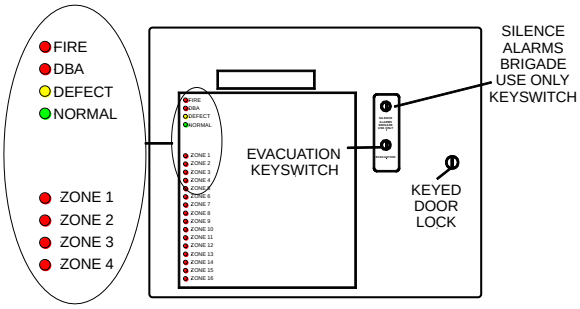


Figure 5: SP2 / 4 Front View

4 *FireFinder™ Description*

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

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

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

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

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

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

FireFinder™ has another serial interface that connects to, 32 Zone Mimic Board/s (159-0018), Pump Indicator Board/s (159-0047), Valve Indicator Board/s (159-0048) and Serial Relay Board/s (159-0072)

A combination of up to eight (8) Fan Control Module/s (159-0020) and Fan Termination Board/s (159-0078) operating in conjunction with a slave CPU (159-0046) can also be designed into a system to control / monitor field plant and equipment.

Where a system design exceeds the capability of one ***FireFinder***™ then other ***FireFinder***™ panels can be networked together to provide an expanded system containing multiple modules 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 Annunciator
- LCD Repeater Panels (LCDR)
- ***SmartGraphics***

A Network ***FireFinder***™ System supports a combination 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 are one or more FACP's configured as local panels and each report the status of their associated zones/devices to a MFACP. There is no control between SFACP's as the MFACP is structured to have full control of the entire system.

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

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

LCD Annunciator: provide the user with the ability to monitor the status of programmed "Fire, Defect and Isolate" conditions that have been recognized by the FACP.

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

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

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

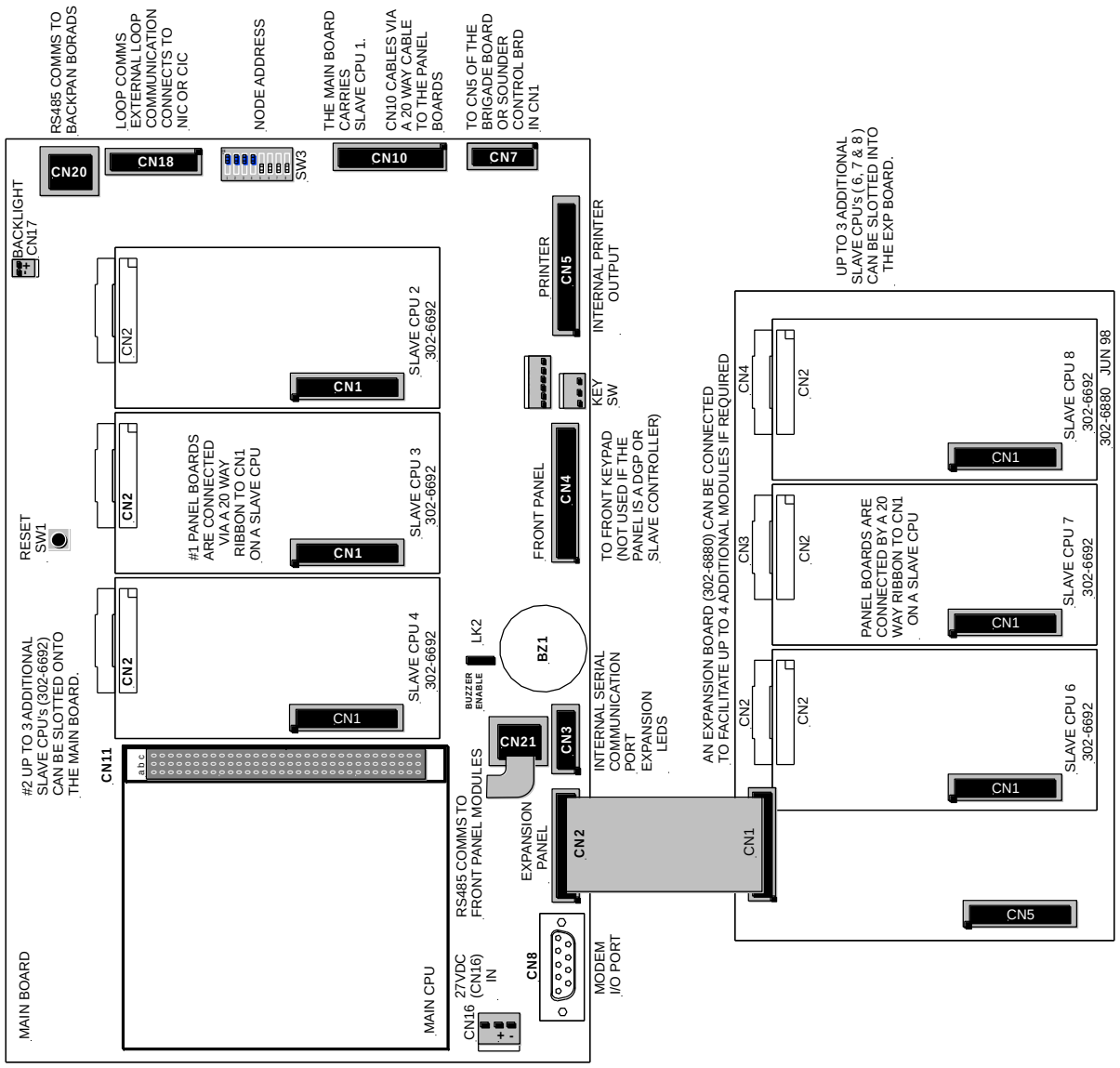


Figure 6: Single Controller Board with Expansion Board

4.1 Ancillary Services

FireFinder ™ 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 / control devices.

Examples of these services are:

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

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

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

5 Placing The System Into Operation

5.1 Unpacking

Carefully unpack the ***FireFinder***™.
The package should include:

- © ***FireFinder***™Fire 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.

5.3 Working On The System

Prior to unplugging any connector, connecting or disconnecting any wiring, removing or replacing any module or board both the Mains and Batteries must be 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 though other colours are available on request.
- ® The Main cabinet has been engineered with a removable backpan to provide ease-of-mounting.
- ® 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. Remove Inner Backpan. Use the keyhole mounting holes in the top corners and in the 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.

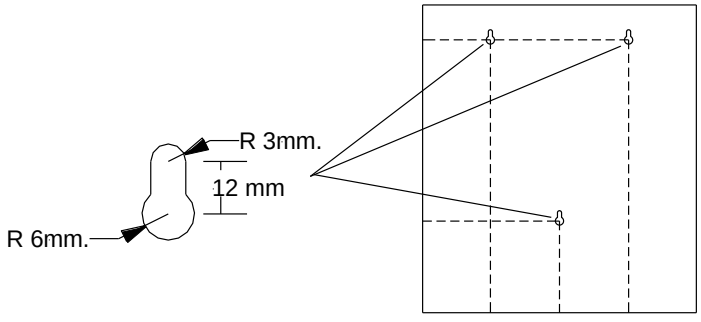


Figure 7: Backpan Mounting Hole Details

Figure 8: Typical Locations

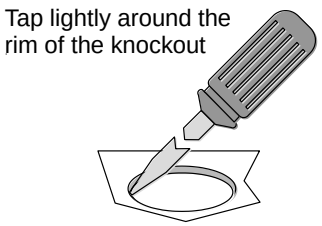


Figure 9: Removing Knockouts

5.6 Operational Parameters

Temperature:	-5ºC to + 55ºC
Humidity:	25% to 75%
Cable Loop Characteristics:	2 core 1.5mm²
Maximum Number of Devices per Conventional Zone:	40
Maximum Number of Devices per Loop:	126
Power Supply Output Voltage:	27V
Power Supply Output Current:	2A or 5.6A
Power Supply Input:	85 - 240V AC
Panel Current Draw:	450 mA (min)
Battery Type and Capacity:	2 x 12V sealed lead-acid batteries (capacity is determined by the installation configuration).
Minimum Operating Voltage:	19.2 V

5.7 Cabling Recommendations

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

Analogue Loop
Two core cable. The minimum cable size is 0.75mm^2, the maximum loop resistance is 50 ohms at full loop load and the maximum loop distance is 1.2km.

RS 422 Loop
Two pair screened twisted pair (4 core) cable originating from FACP extending through the protected areas and returning to the FACP.

Cable Specifications
Capacitance of 100 picofarads per metre or less
Resistance of 100 milliohms per metre or less
Impedance of loop typical 100 to 120 ohms

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

Recommended cable type
Belden 8132 or 9842 (non fire rated)
Radox FR Communication 0.75mm 1 pair (fire rated) x 2

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

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

LED Mimic
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.

5.8 RS 232 Modem / Debug Interfacing

The modem I/O port is a DB9 connector CN8 situated on the lower left hand corner of the Main Board (302-674). This port is normally used for programming of the ***FireFinder***™.

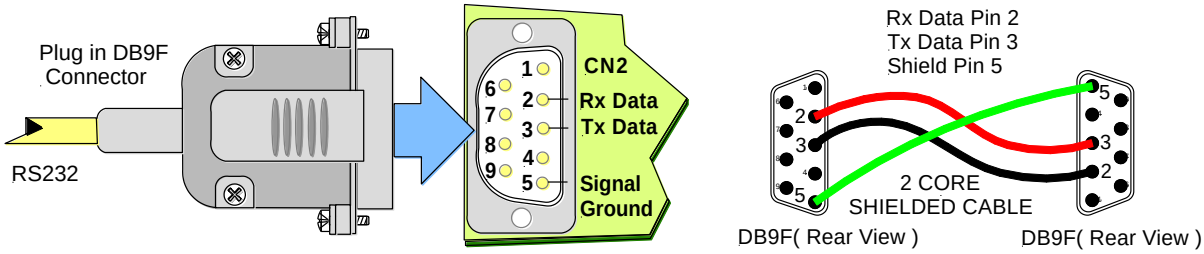


Figure 10: Programming / Debug Connector and Cabling

5.9 AC Mains Installation

AC Mains will be connected to either a 2 Amp or 5 Amp 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.

5.10 Connecting the Power

Common Power Supply Features

- ® High efficiency, low working temp.
- ® Universal AC input/ full range
- ® Short circuit/ over load
- ® Built in EMI Filter and PFC Circuit
- ® Over voltage protection
- ® High efficiency; low ripple noise
- ® Soft start with limiting AC surge current
- ® 100% full load burn-in test
- ® Remote control on/off (option)
- ® Over temp. protection (option)

Common Common Power Supply Specifications

®	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%

2 & 5 Amp 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%	250mV	84%

Connecting the Mains Earth

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

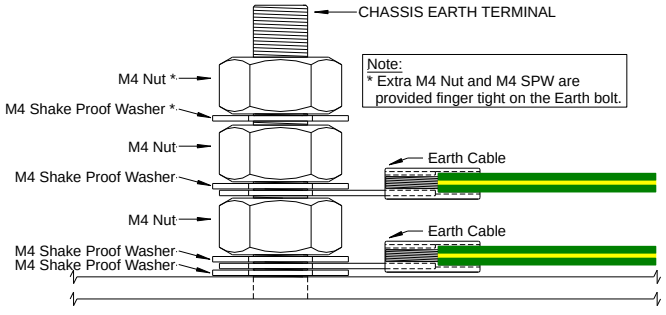
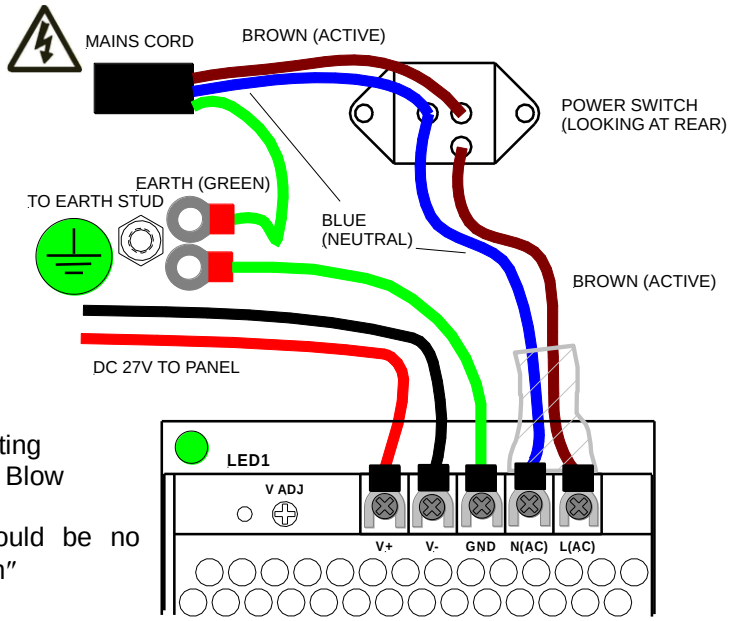


Figure 11: Panel Earthing

Connecting the Mains to the 2 Amp Power Supply

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

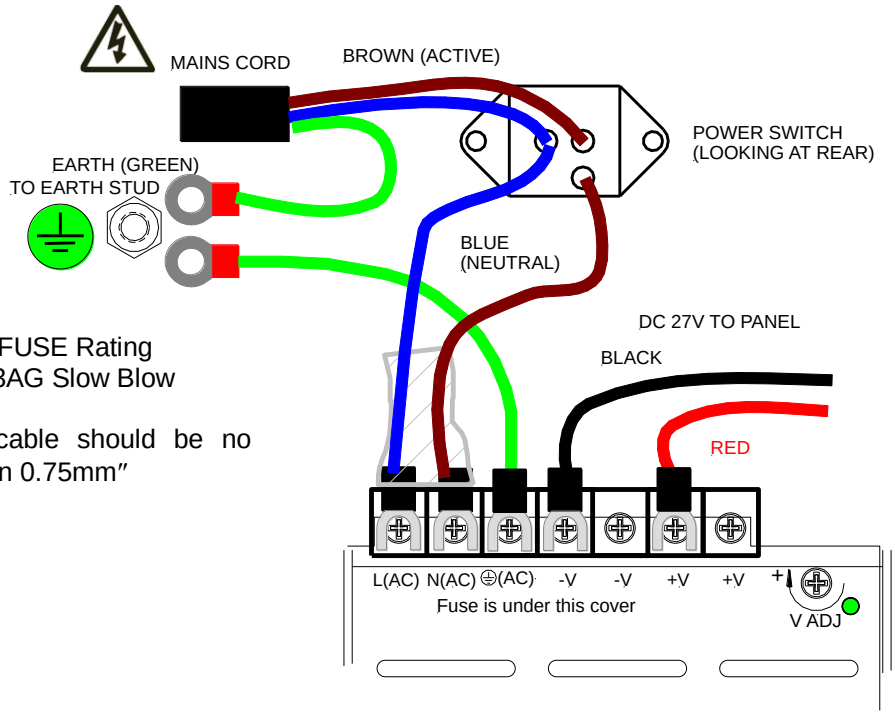


NOTE: FUSE Rating
1 Amp 3AG Slow Blow

Mains cable should be no less than 0.75mm″

Figure 12: Mains Power Connection to the 2 Amp Power Supply

CONNECTING THE MAINS to the 5 AMP POWER SUPPLY



NOTE: FUSE Rating
2 Amp 3AG Slow Blow

Mains cable should be no less than 0.75mm″

Figure 13: Mains Power Connection to the 5 Amp Power Supply

5.11 Main Board BRD85MBA

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

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

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

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

U21 provides the real time clock for the panel.

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

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

RV1 – LCD contrast adjust

Supply and Current = 27VDc @ 120mA

Connections

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

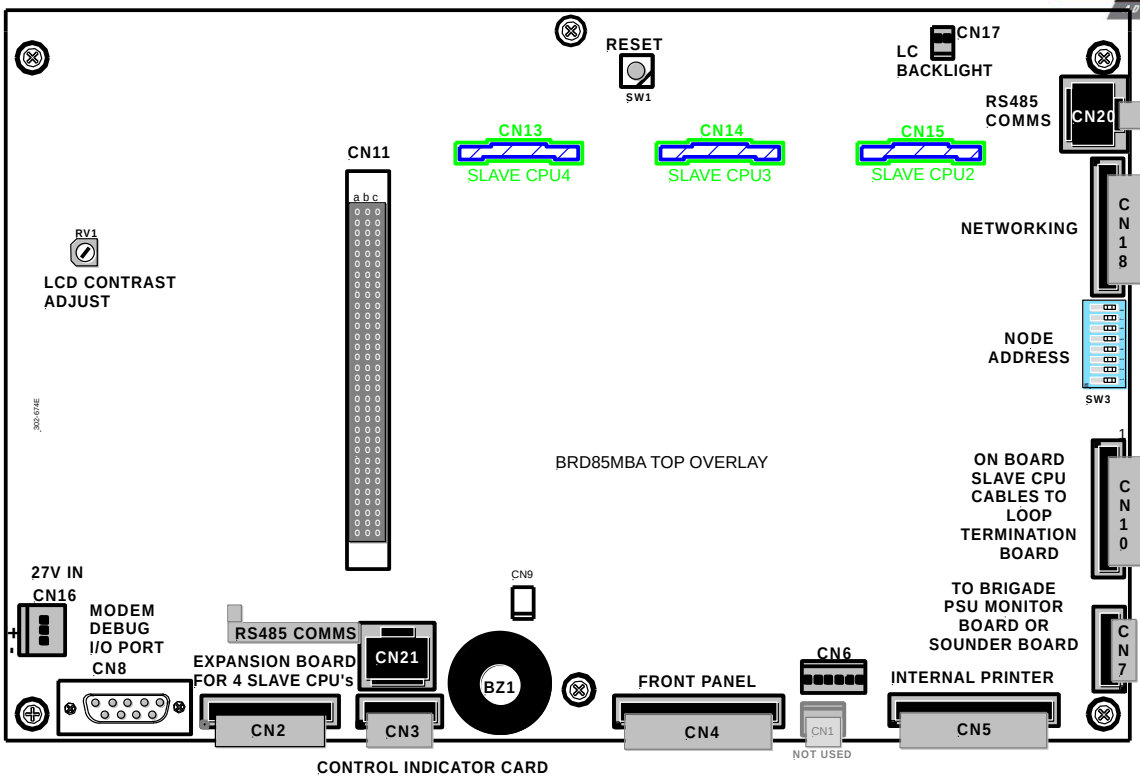


Figure 14: Main Board Layout with no Main CPU or Slave CPU's

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.

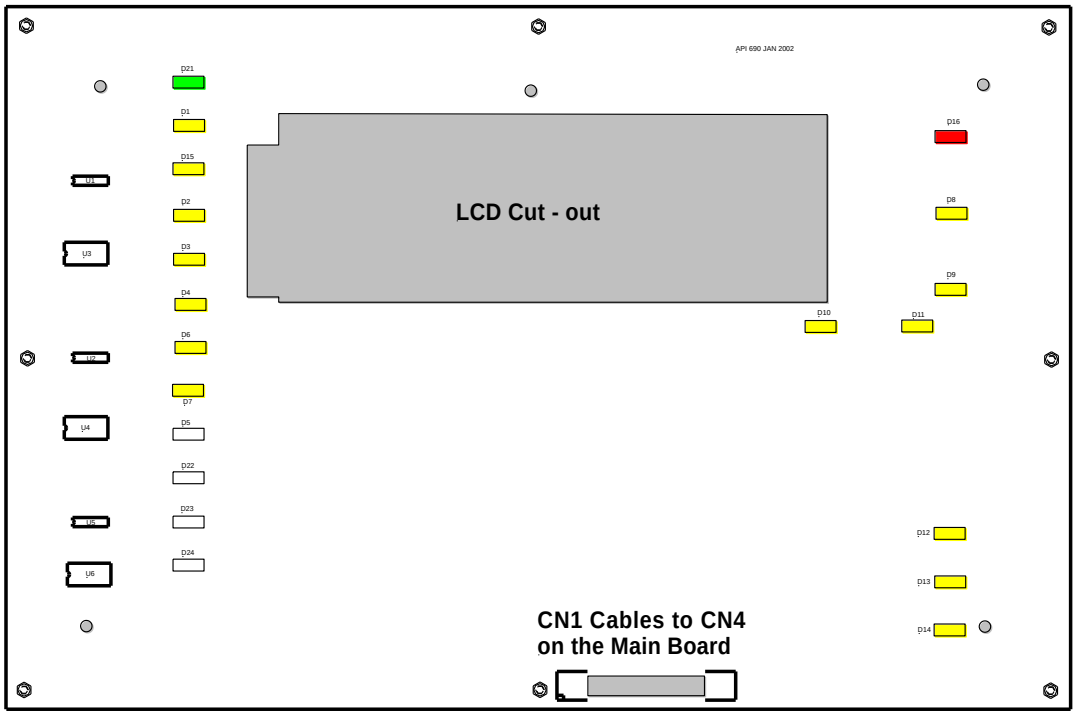


Figure 15: Front Panel Board

5.13 Main CPU

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

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

Connections

CONNECTOR	CONNECTS TO
CN2	The Main Board BRDMBA CN11

Board Overlay

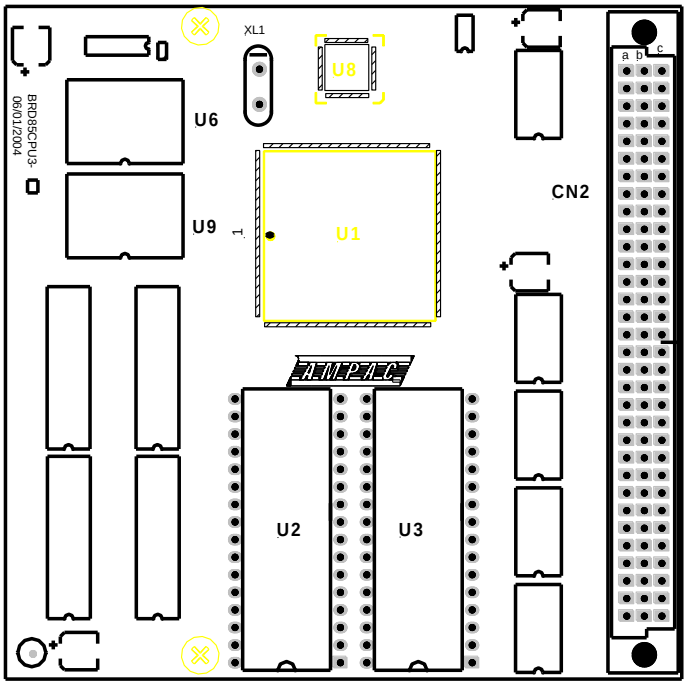


Figure 16: The Main CPU Board PCB Layout

5.14 Slave CPU

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

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

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

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

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

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

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

Connections

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

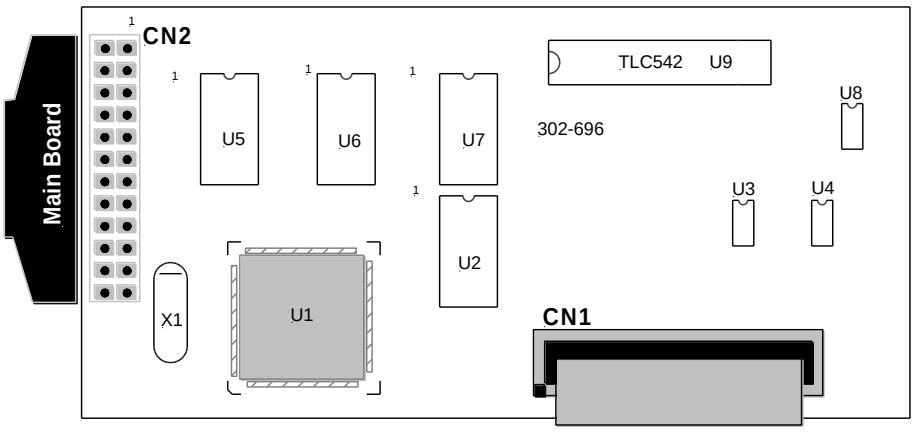


Figure 17: Slave CPU Board

5.15 Brigade / PSU Monitor Board

The Brigade / PSU Monitor Board (302 – 673), referred to in the following as the Brigade Board, monitors and controls the power supply, battery charging, monitored / un-monitored inputs, outputs and the 7 relay outputs.

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

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

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

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

OUTPUT RATINGS

TB	Function	Type of Output	Fuse	Relay
3	Bell 1	2 Amp Fused	F2	RL 1
	Bell 2	2 Amp Fused	F3	RL 1
4	Plant (Aux) Monitored	1 Amp Fused	F4	
	Plant (Aux) Non-Monitored	1 Amp Voltage Free Contacts		RL2
5	Warn Sys (Evac) Monitored	1 Amp Fused	F5	
	Warn Sys (Evac) Un-Monitored	1 Amp Voltage Free Contacts		RL3
6	Fault Monitored	1 Amp Fused	F6	
	Fault Non-Monitored	1 Amp Voltage Free Contacts		RL 4
7	Isolate	1 Amp Voltage Free Contacts		RL6
8	Alarm	1 Amp Voltage Free Contacts		RL 5
9	Valve Monitor	1 Amp Voltage Free Contacts		RL 8
10	Batt Fail	1 Amp Voltage Free Contacts		RL 7
1	Battery Output	Thermistor Protected		
2	Aux Power Output	1 Amp Fused Not Monitored	F7	
	Aux Power Output	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 also be considered when connecting any control devices to the outputs be they in close or remote proximity to the FACP.***

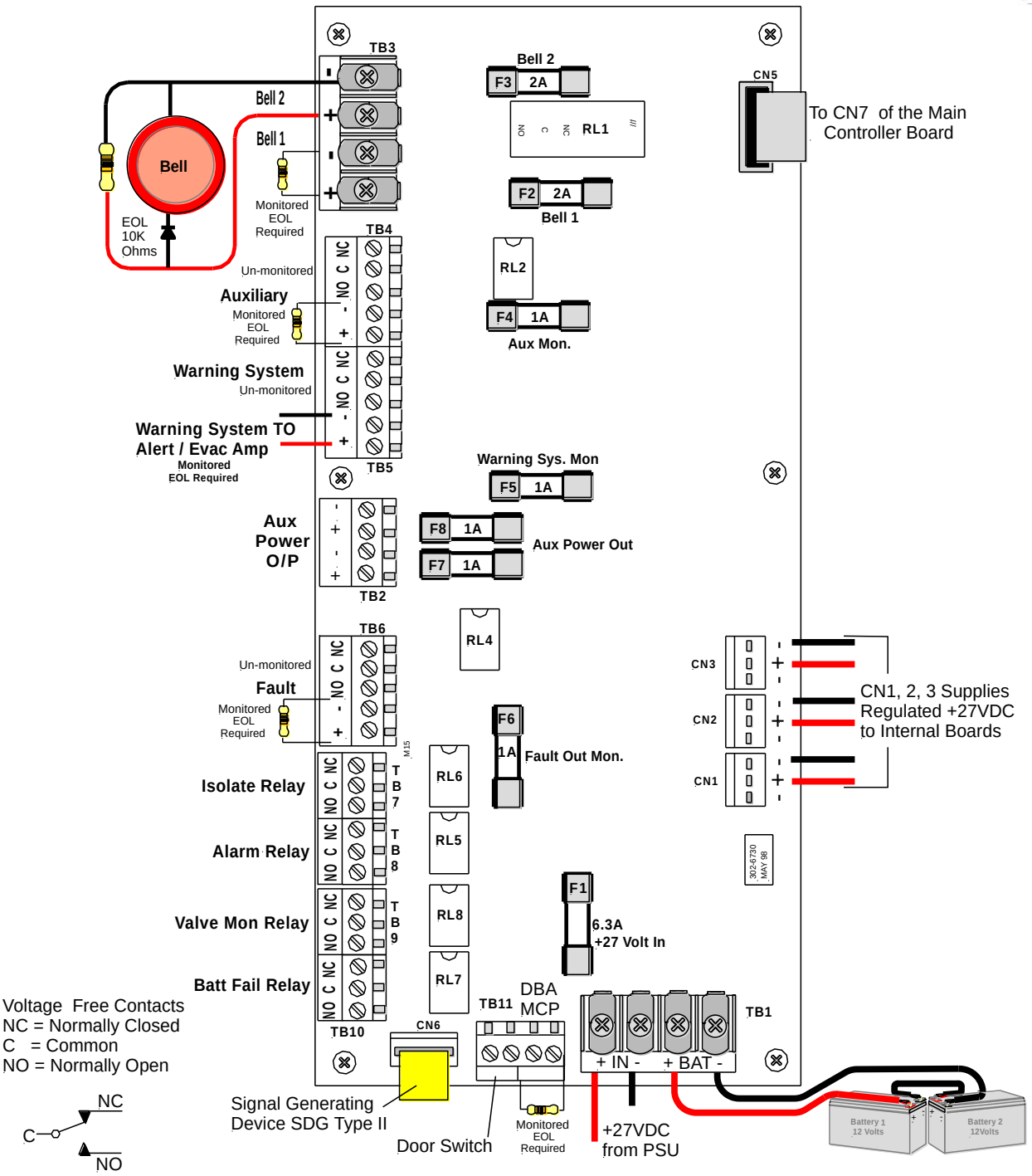


Figure 18: Brigade / PSU Monitor Board Layout

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

5.15.1 Brigade Board & Battery Connections

A ***FireFinder™*** requires two (2) 12 volt batteries in series which are placed in the bottom right hand side of the cabinet. A red and black lead from TB1 on the Brigade Board is connected to the batteries red to positive and black to negative once the system is operating on Mains supply.

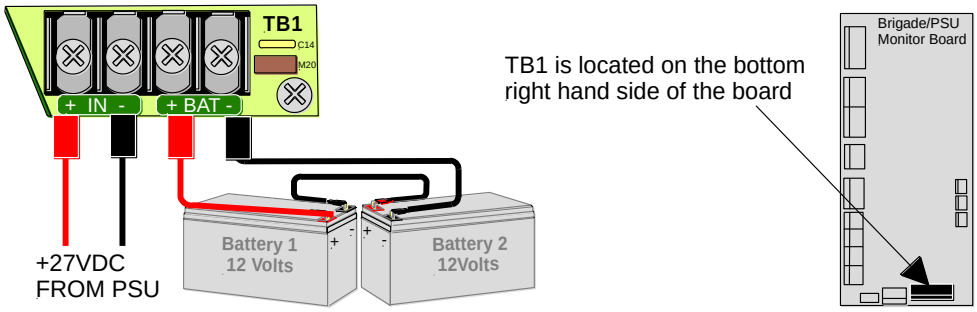


Figure 19: Battery Connection to The Brigade Board

5.15.2 Brigade Board Auxiliary 27 Volt Power

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

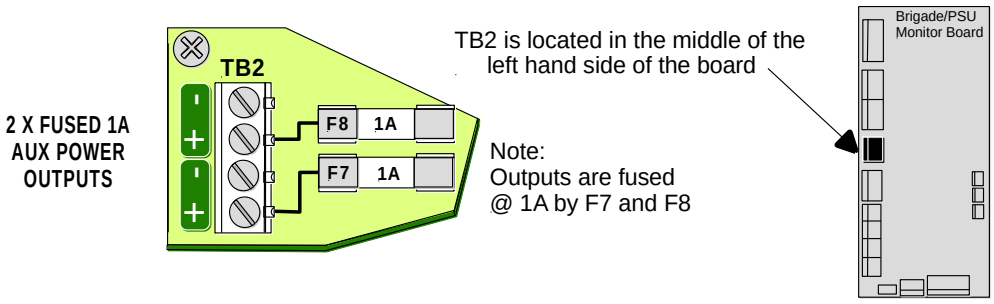


Figure 20: Auxiliary 27v Power Output

5.15.3 Connecting a Bell or Sounder to the Brigade Board

Sounders are connected to the Brigade PSU Monitor Board (302- 673) as shown. If more sounders are required, the Sounder / Bell Control Board (302-742) must be used.

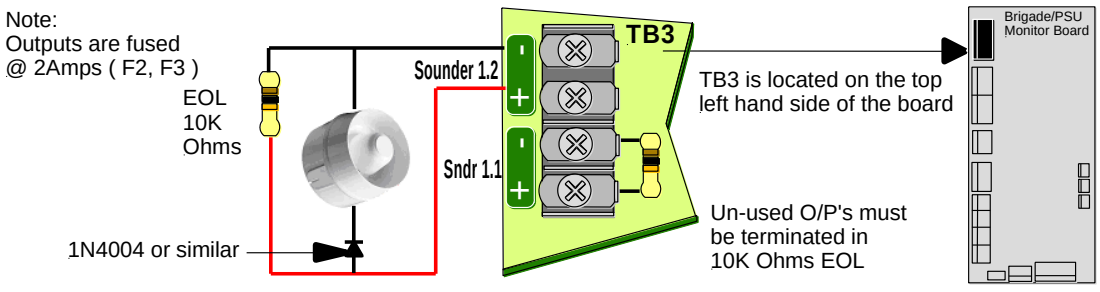


Figure 21: Sounder / Bell Wiring TB3

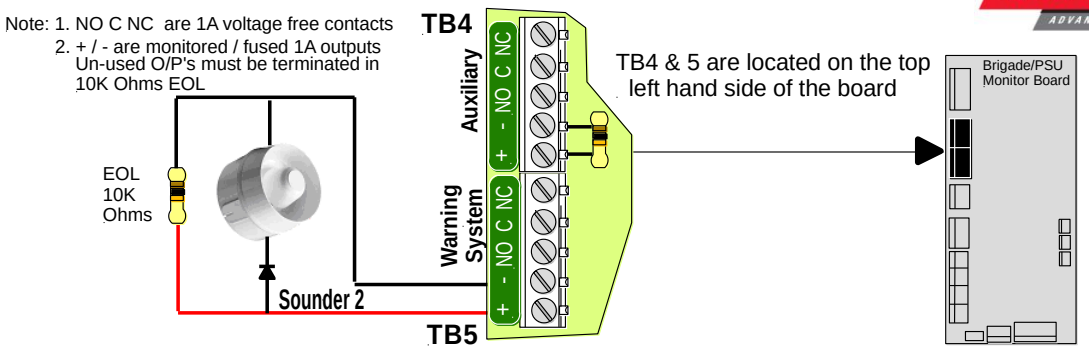


Figure 22: Sounder / Bell Wiring TB5

5.15.4 Connecting the Alert / Evacuation Amplifier

Overview:

The **EVAC50W24V** is a 100VRMS-Line Amplifier whose features include;

- ✓ the generation of the 'Alert' and 'Evacuation' tones with verbal messages as specified by NZS4512:2003.
- ✓ driving up to 50W (with a 27.4VDC supply) into 100V PA loud speakers,
- ✓ the 100Vrms output line is overload and short-circuit protected and is monitored by the amplifier circuit with the status transmitted to the panel.
- ✓ control through a set of signal (BELL) inputs. Multiple amplifiers can be daisy chained together (BELL IN – BELL OUT) or individually zone operated if connected to a Bell Sounder Control Board.
- ✓ the ability to be powered directly from the panel battery or from a separate DC source.
- ✓ low current draw - when not active (100V line monitoring only) the amplifier draws less than 35mA.
- ✓ an optional microphone input board is available which can be used for public address (PA) or 'Fire Microphone' operation.

Specifications:

Board Dimensions:	97mm x 150mm. Height 50mm from bottom of PCB
Mounting Dimensions:	89mm x 130mm.
Operating Voltage:	20 - 29Vdc, nominal 27.4Vdc
Quiescent Current:	30mA RS485: <30mA @ 27.4Vdc
Operating Current:	2.5A @ 27.4Vdc nominal with 50W load.
Power Output:	50W @ 100V line: 27.4Vdc supply – overload and short-circuit protected
Tone:	Evacuation tone and verbal message, compliant to NZS4512:2003. Programmed using the LED base address dials and program-jumpers.
Monitoring:	Fully monitored for open, short circuit or overload (10kΩ, 1W EOL resistor)

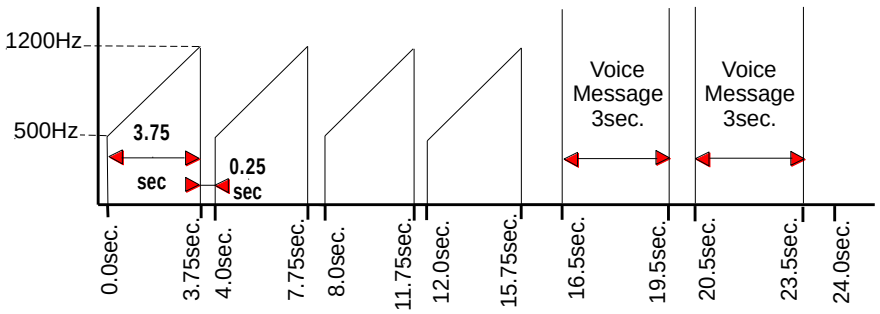


Figure 23: NZS4512 Evacuation Signal with Voice Messaging

Operation:

The Amplifier is connected to the FACP Warning System output as shown in the connection diagrams. The '+' and '-' terminals are connected to the corresponding '+' and '-' terminals on the amplifier.

In the 'Normal' state, the FACP monitors the 100V line 10K 1W EOL resistor by applying an inverted voltage to the amplifier input terminals. In this state the amplifier connects the 10K 1W EOL line resistor to the Bell input. A 10K 1W EOL resistor must be used across the 100Vrms line for correct operation of the amplifier monitoring circuit.

In the 'Alarm' state, the FACP reverses the bell voltage causing the amplifier to activate and output a repeating 'Evacuation Tone followed by a voiced Evacuation Message' onto the 100Vrms loudspeaker circuit. The amplifier is NOT monitored during the 'Alarm' state.

If the amplifier output is overloaded, or the supply voltage becomes 'Off-Normal', the amplifier will signal a defect by turning on the Defect/Fault LED (refer *Table 1*).

Fault LED	ON LED	Defect Description
Off	Off	Amplifier inactive
Off	Steady	Amplifier active
Steady	Flashing	Supply Voltage below 10V or above 15V
Flashing	Steady	Amplifier output is overloaded

Table 1

The 100Vrms Line may have a maximum of three spurs. For these configurations an EOL resistor of the appropriate value must be installed at the end of each spur. (See *Table 2*).

Number Of Spurs	Number Of Spurs
1	1 x 10K 1W
2	1 x 22K 1W on each spur
3	1 x 33K 1W on each spur

Table 2

Installation Criteria

- ✓ Capacitively-coupled 100Vrms PA Speakers must be used with the 50W Amplifier. The capacitor must be bipolar and able to withstand 250V peak line voltage. The value should be around 1uF per watt of power for each speaker.
- ✓ 100Vrms speaker wiring must be separated from ELV (Extra Low Voltage) wiring.
- ✓ Loading of the 100Vrms line must not exceed 50W.
- ✓ An excessive load will cause the Amplifier to current limit and shutdown. The symptoms for this may be interruptions in the audio output and two or more amplifiers broadcasting out of synchronization.
- ✓ Loading of the bell output must not exceed the maximum fuse (FACP Bell Circuit Fuse 4 = 2A) or relay (50W Amplifier Line Relay maximum contact current = 3A) rating.

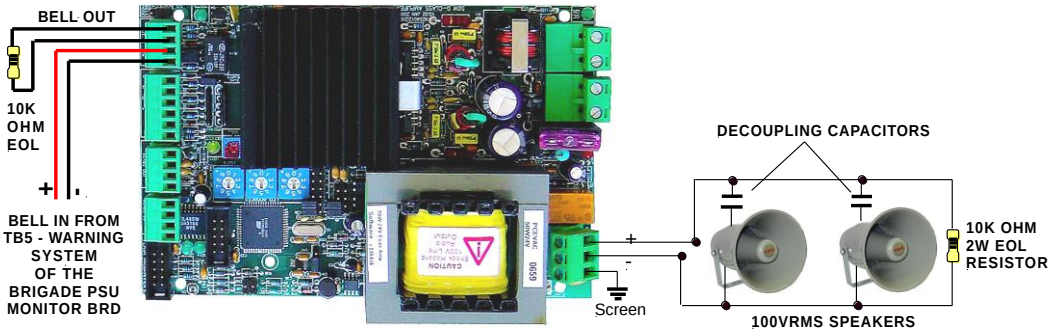


Figure 24: *Basic Connection Diagram*

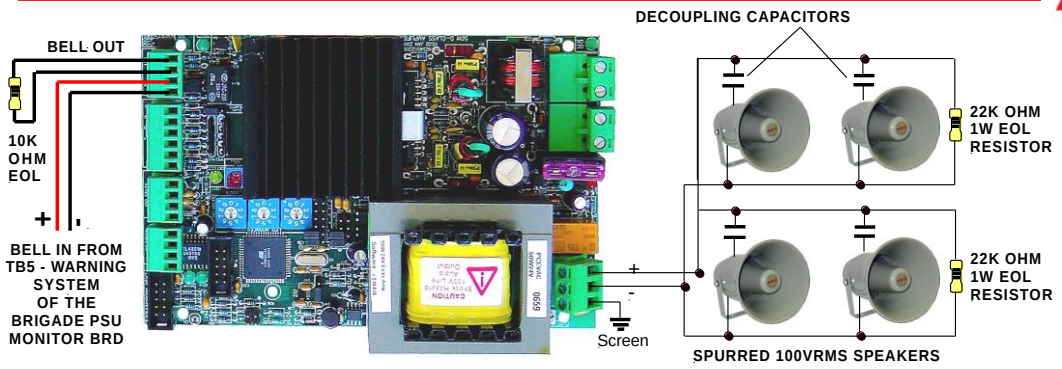


Figure 25: Spurred Speaker Wiring Diagram

5.15.5 Brigade Board Relay Output Connections

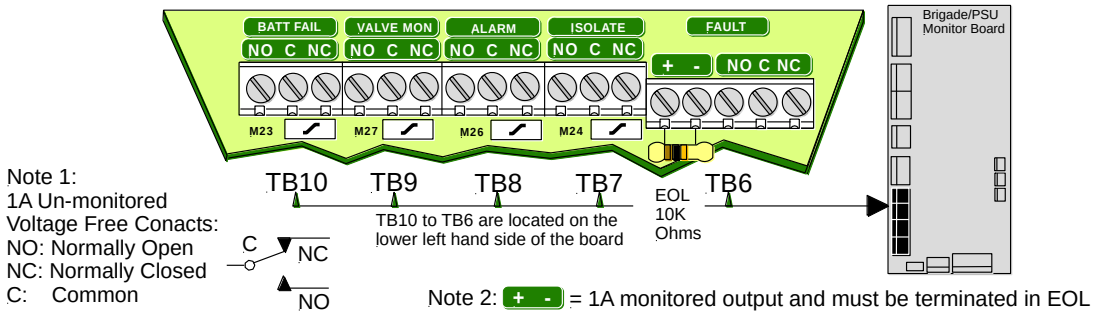


Figure 26: Relay Outputs

5.15.6 Signal Generating Device

The SGD (302-678) interfaces the FACP Brigade / PSU Monitoring Board to a line transmitter to facilitate monitoring by a Fire Brigade or monitoring service.

Interconnection is from the SGD (CN2) to the Brigade / PSU Monitoring Board CN6.

Test of the FACP and SDG monitoring should be carried out in accordance with the LTX SDG Input Interface Specifications.

To comply with the latest standards the software has been upgraded to Version 3.

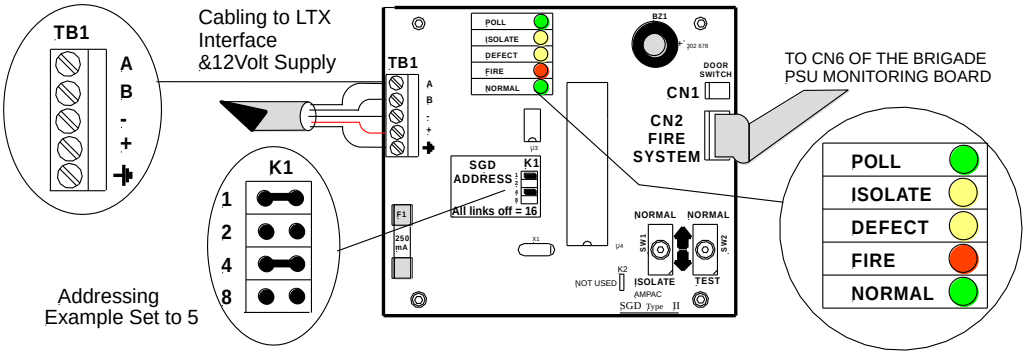


Figure 27: SGD Layout

6 Compatible FireFinder™ Modules

ⓘ Numbers in *Italic* are *Fast Fit Kit Part Numbers*

Module / Board	Part Number	Max Number
• Slave CPU	(302-6690) *(159-0007)*	8 per Controller # 1
• Conventional Zone Board	(302-6710) *(159-0005)*	8 per Controller
• Apollo Loop Termination Board	(302-7350) *(159-0003)*	8 per Controller
• 16/16 Input / Output Board	(302-6720) *(159-0008)*	8 per Slave CPU
• 8 Way Relay Board	(302-6760) *(159-0012)*	16 per Slave CPU
• 16 Way Input Board	(302-6770) *(159-0010)*	8 per Slave CPU
• Serial Relay Board	(302-7320) *(159-0072)*	8 per Controller
• Fan Control Module	(302-6800) *(159-0020)*	8 per Slave CPU
• Fan Termination Board	(302-7820 (159-0078)	Depends on 302-6800
• Expansion Board	(302-6880) *(159-0045)*	1 per Controller
• Brigade / Power Supply Unit Monitor Board	(302-6730)	1 per Panel
• Alert Evac Amplifier	(TBA)	Configuration dependant
• Signal Generating Device	302-6780	1 per Panel
• Valve Display Module	(302-7160) *(159-0048)*	8 per Slave CPU
• Pump Display Module	(302-7170) *(159-0047)*	10 per Slave CPU
• Zone Display	(302-7000) *(159-0018)*	4 per Slave CPU
• Sounder/Bell Controller Board 1A per Circuit	(302-7420) *(159-0071)*	8 per Controller
• Sounder/Bell Controller Board 4Volt free, 4x1Amp	(302-7421) *(159-0069)*	8 per Controller
• Printer	(TPUP-AT)	1 per Controller
• Agent Release Module / Agent Termination Board	(BRD25ARB-A)	8 per Controller
• Local Control Station (IP40)	(BRD25ARB-B)	4 per Termination Board
• Expansion Board	(302-6880)	1 per Controller
• Expansion Controller	*(SP16X: 159-0077) (Rack: 159-0067)*	3 per Node

Compatible Networking Devices

• Expansion Controller	(302-6740) *(159-0077)*	3 per Node
• Network Interface Card	(302-7240) *(159-0053)*	1 per Controller
• Controller Interface Card	(302-7250) *(159-0054)*	1 per Controller
• LCD Repeater (Main Processor Board)	(302-7200) *(159-0044)*	Note # 2
• LCD Repeater (Keypad)	(302-7210)	Note # 2
• LED Mimic Board	(302-7150)	31 per Controller

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

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

6.1 Conventional Zone Board

The 302-671 Conventional Zone Board provides the interface between the external conventional devices and the *FireFinder*™.
Conventional zones are connected from TB4 to TB1 on the 302-671 16 Zone Conventional Board.

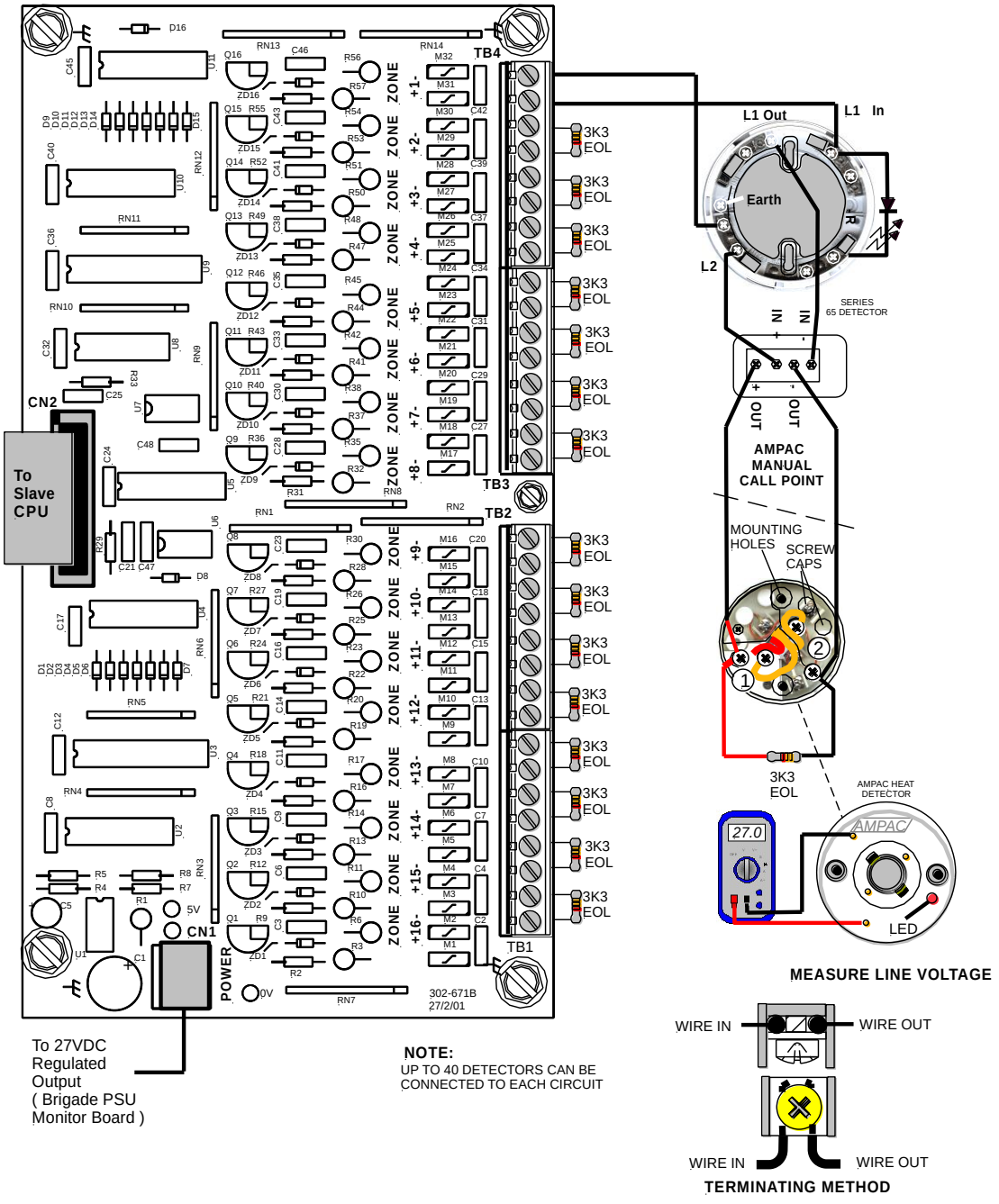


Figure 28: 16 Zone Conventional Board

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.

6.2 Apollo Loop Termination Board

The 302-735 Addressable Loop termination board provides the interface between the external addressable devices and the ***FireFinder***™. Each board provides termination's for two loops. One slave CPU is required per loop. Addressable loops are connected from TB1 to TB2 on the 302-735 Apollo Loop Termination Board.
Note: Apollo devices L2 is +ve (positive), L1 is -ve (negative)

Connect your XP95 / DISCOVERY loop to the panel as shown.

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

Loop Parameters

- 126 Apollo
- 250mA Current Max
- S/C protected

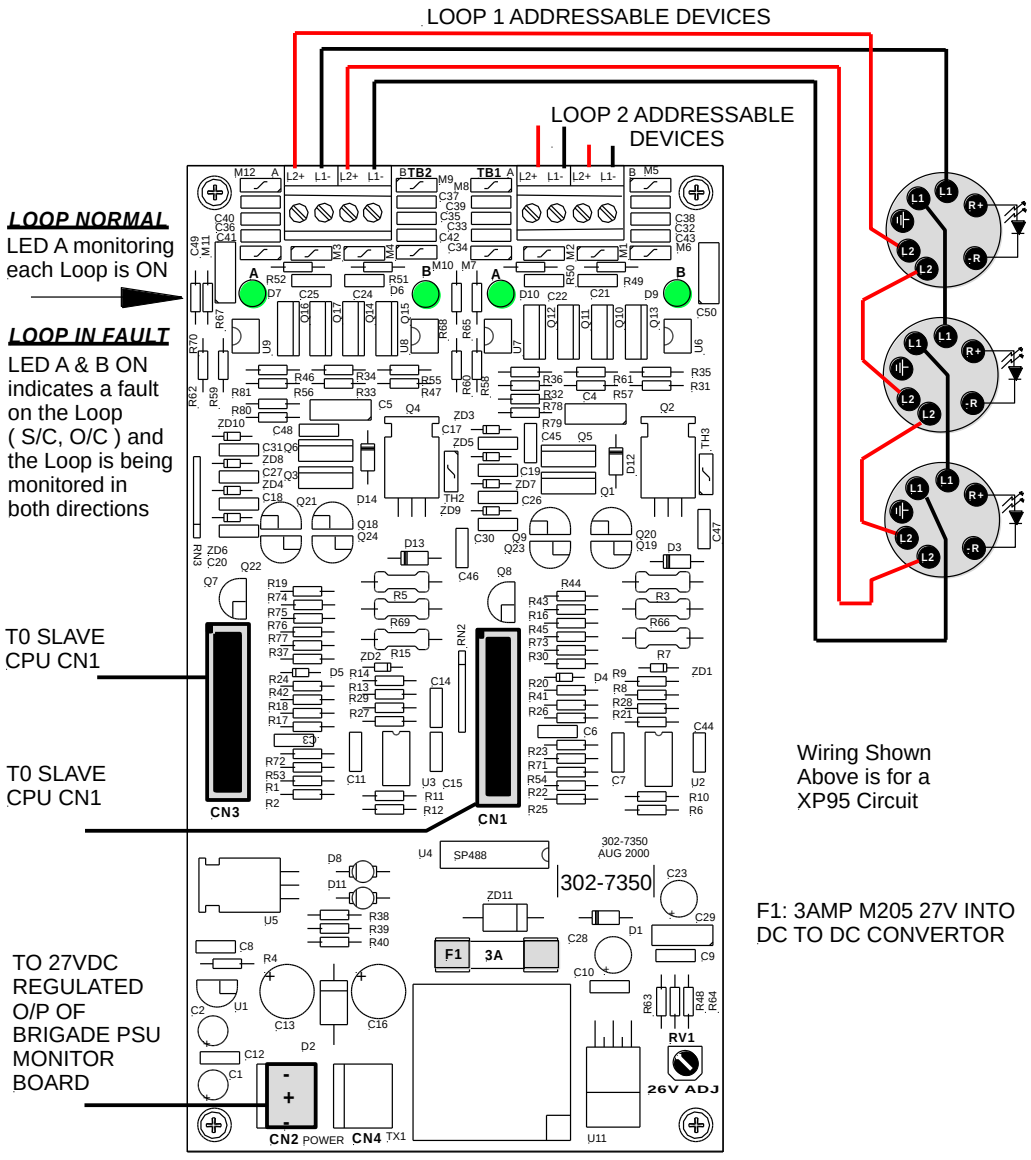


Figure 29: Loop Termination Board

6.3 16/16 Input / Output Board

The 302-672 input / output board provides the interface between the Slave CPU module, 8 way relay board and the 16 Opto input board.

The input / output board is connected to the slave CPU via CN1. A maximum of 8 input / output boards can be daisy chained together. **This is dependant on the panel configuration.**

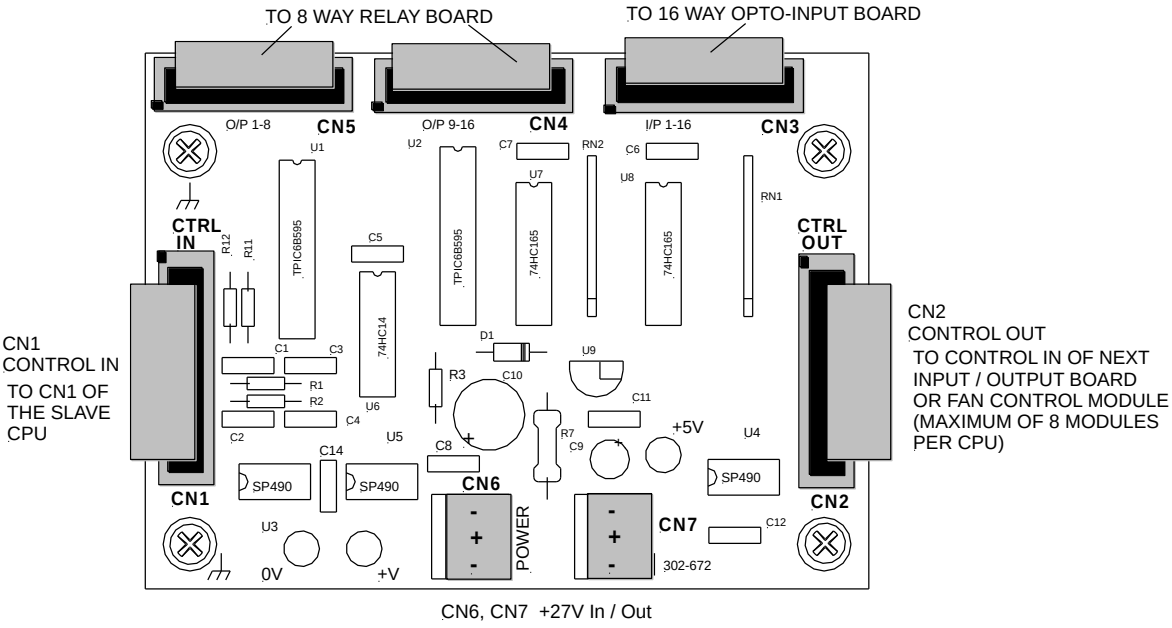


Figure 30: Input Output Board

6.4 8 Way Relay Board

Relay Outputs: The 8 Way Relay Board comes in two versions. The 302-6760 is fitted with eight 1A voltage free contacts while the 302-6761 is fitted with eight 5A relays voltage free contacts.

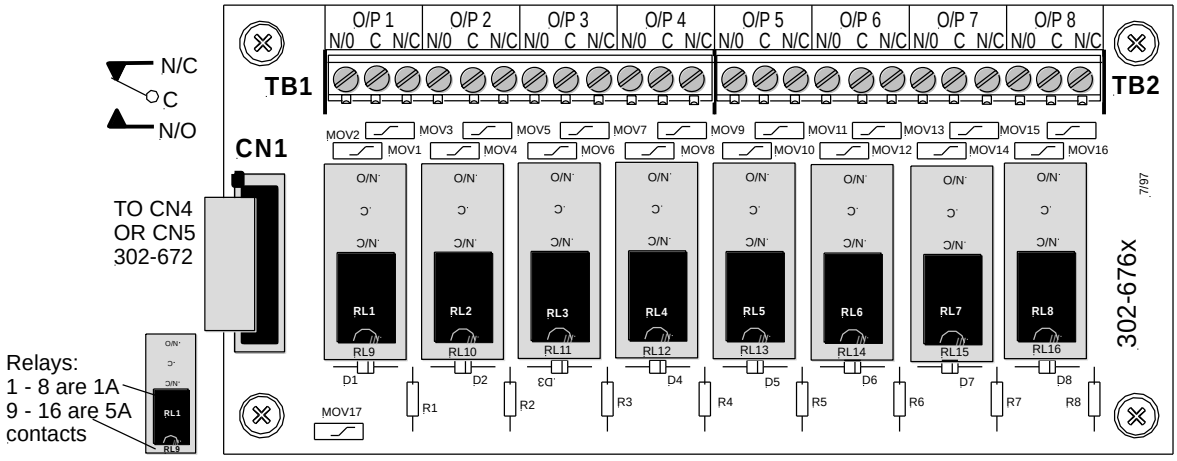


Figure 31: 8 Way Relay Board

6.5 16 Way Input Board

Opto-Inputs: Up to 16 inputs can be connected to the 16 Way Input Board 302-677. These inputs are required to be voltage free contacts.

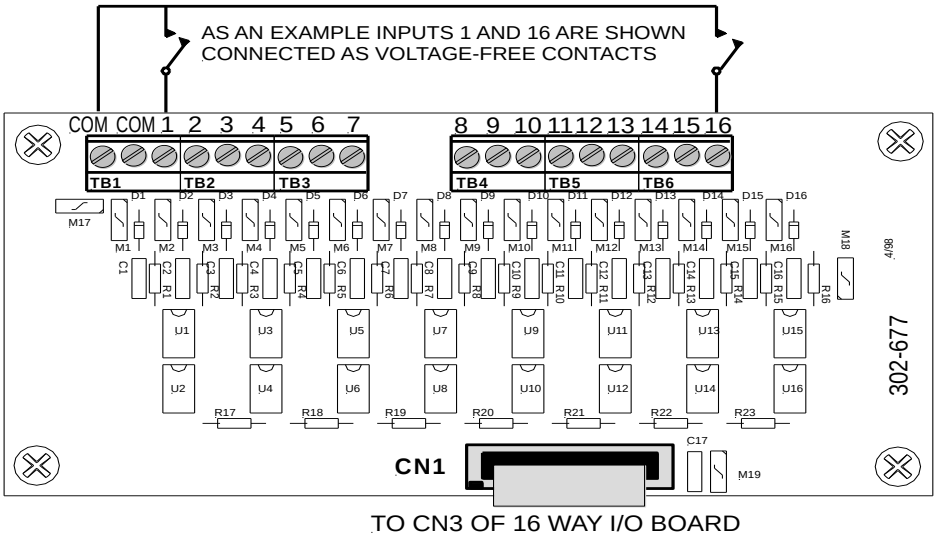


Figure 32: 16 Way Input Board

6.6 Serial Relay Board

Relay Outputs: Each Serial Relay Board 302-732 is fitted with eight 1A relays fitted with voltage free contacts. A maximum of 8 boards can be daisy chained together per controller.

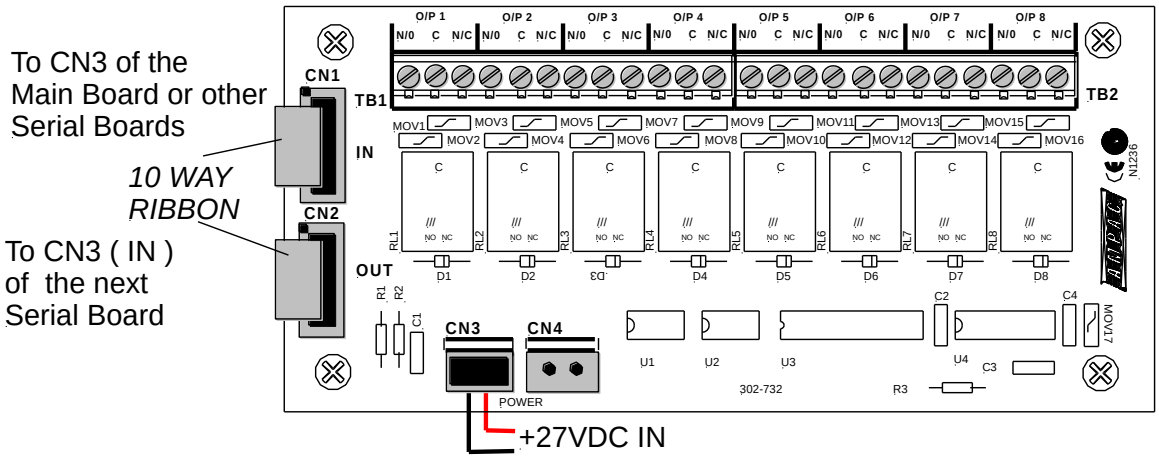


Figure 33: Serial Relay Board

6.7 Fire Fan Module BRD25FCB

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

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

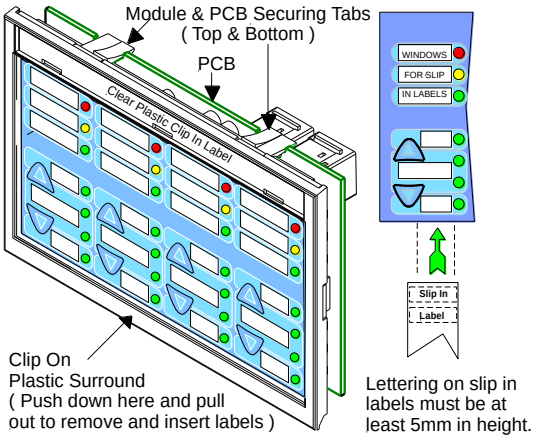


Figure 34: Fire Fan Module Front Panel

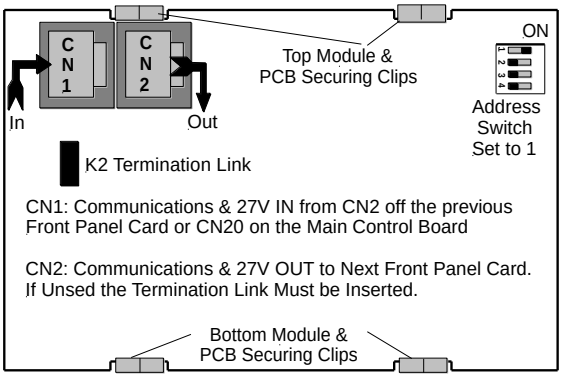


Figure 35: Fire Fan Module PCB Layout

6.8 Fan Termination Board BRD25FTB

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

Connectors

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

Terminal Blocks

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

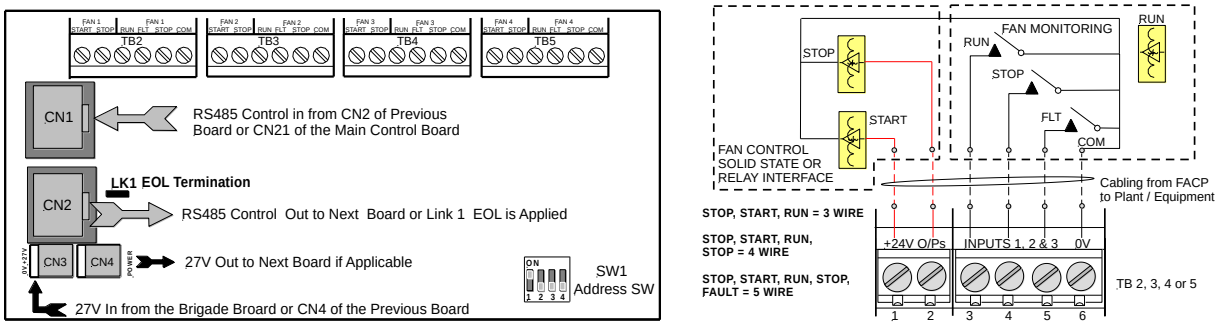


Figure 36: Fan Termination Board Layout and Typical I/O Wiring

6.9 32 Zone LED Mimic Board

The 32 Zone LED mimic board (302-7000) connects to the internal serial communication bus. It provides visual indication of zones in fire alarm and fault (32 fire alarm LED's and 32 fault LED's). A maximum of 4 boards can be daisy chained together (**This is dependant on the panel configuration)**. The Fault indicator will also display if the zone is isolated (steady).

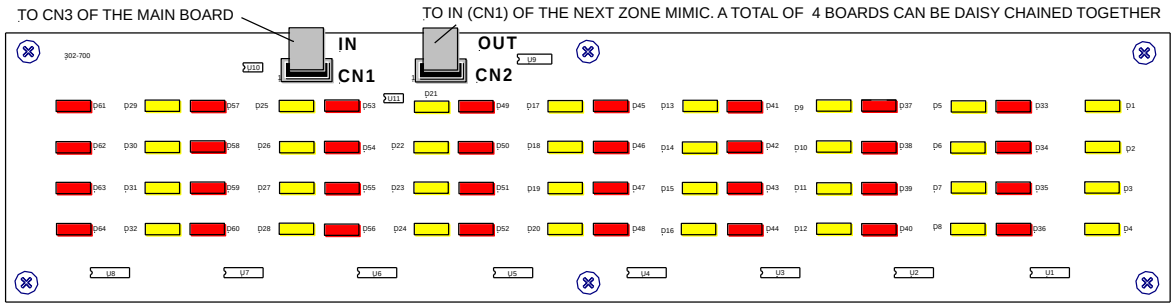


Figure 37: 32 Zone LED Mimic Board

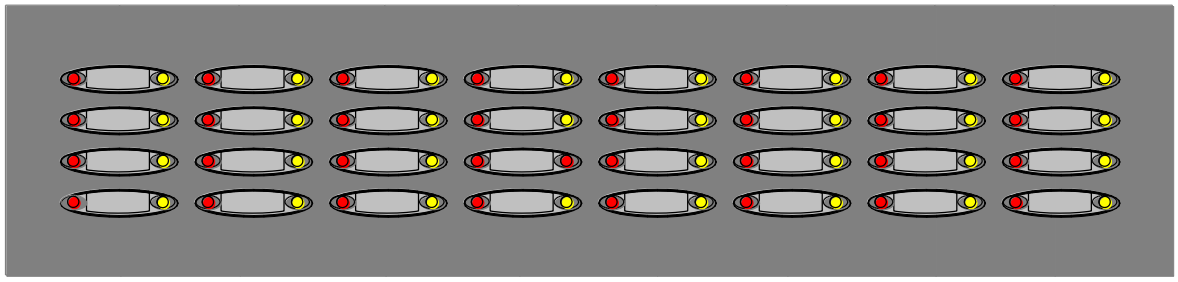


Figure 38: 32 Zone LED Mimic Board Membrane

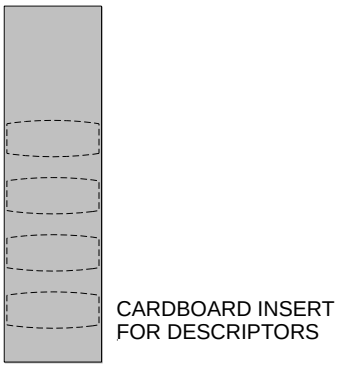


Figure 39: Label For 32 Zone LED Mimic

Note: Label is slotted into slots provided in the front membrane (fitted from the rear).

6.10 Valve Display Module

The Valve Display Module (302-716) connects to the internal serial communication bus. It provides visual indication of the Valve status (16 x Valve open, 16 x Valve closed). A maximum of 8 modules can be daisy chained together per CPU. **This is dependant on the panel configuration.**

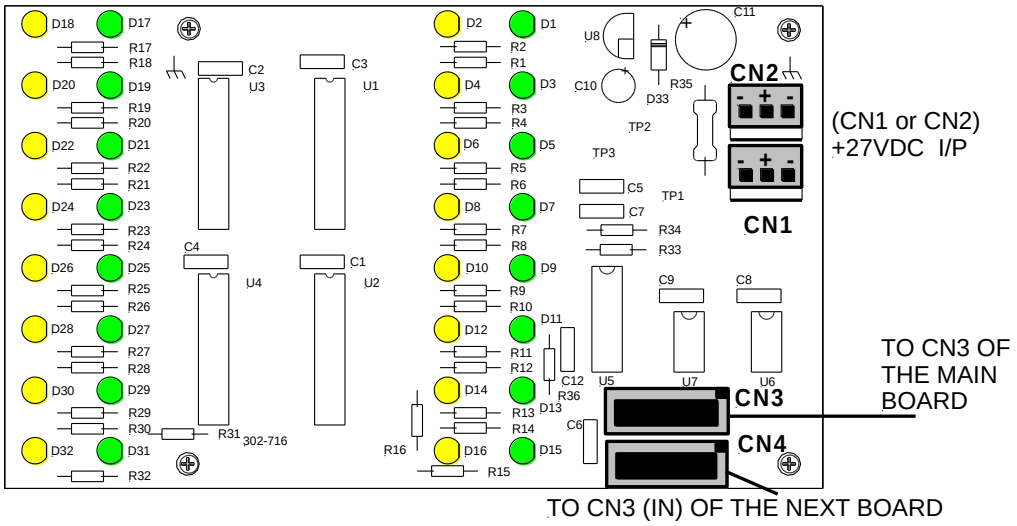


Figure 40: Valve Indicator Board

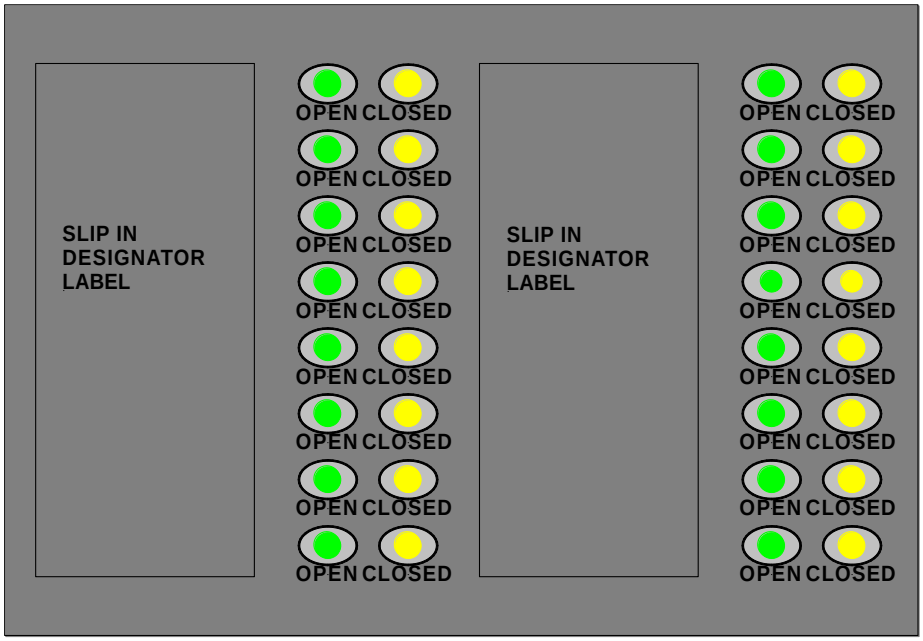


Figure 41: Valve Indicator Membrane

6.11 Pump Display Module

The Pump Display Module connects (302-717) to the internal serial communication bus. It provides visual indication of the Pump status (8 x Supply Healthy, 8 x Pump Running, 8 x Pump Fault). A maximum of 10 modules can be daisy chained together per CPU. **This is dependant on the panel configuration.**

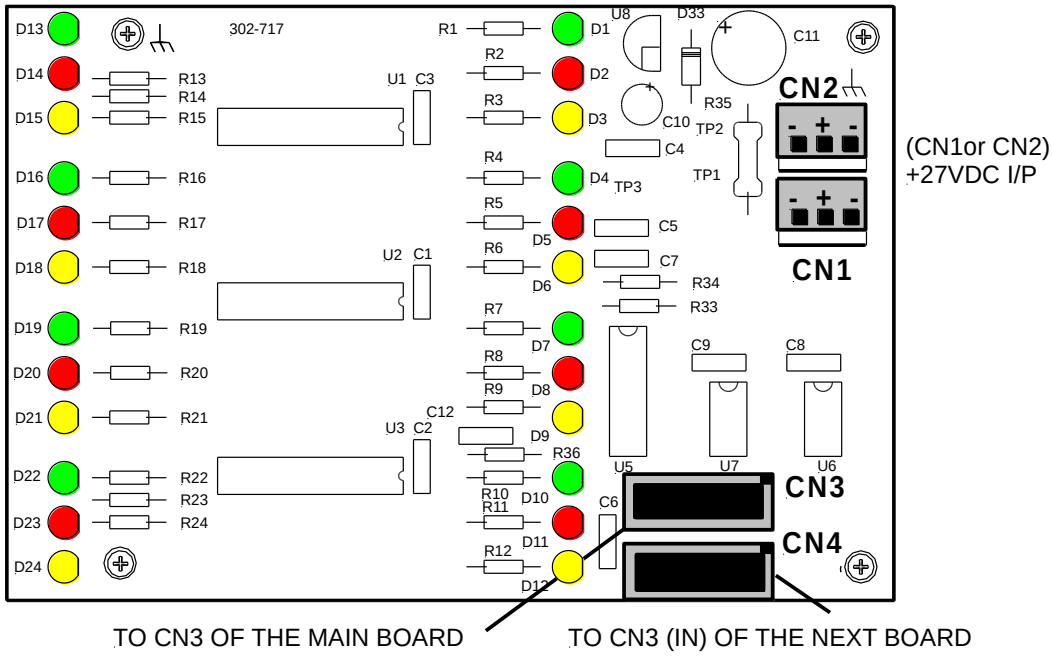


Figure 42: Pump Display Board

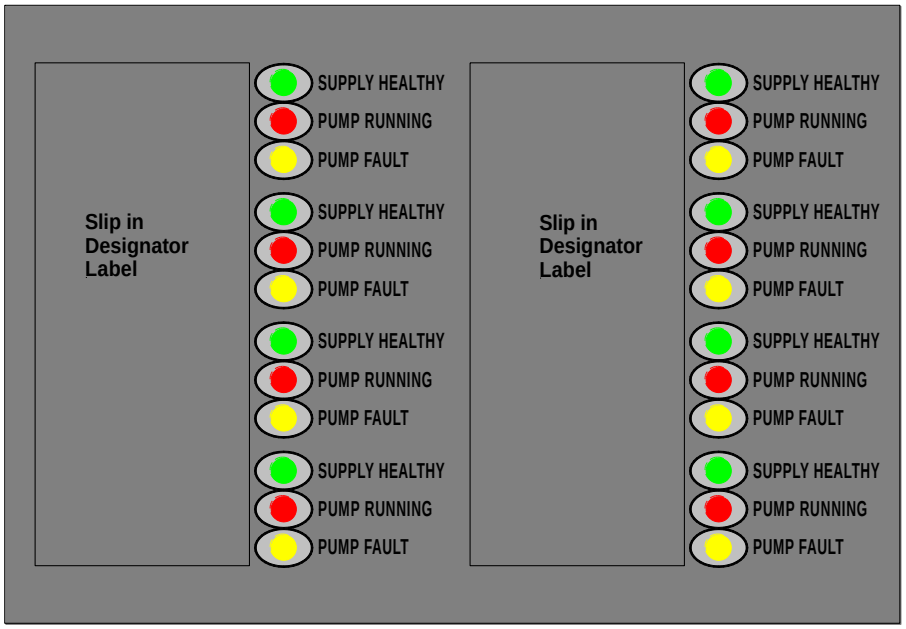


Figure 43: Pump Display Membrane

Note: Labels are fitted to the above two items as per the 302-7000

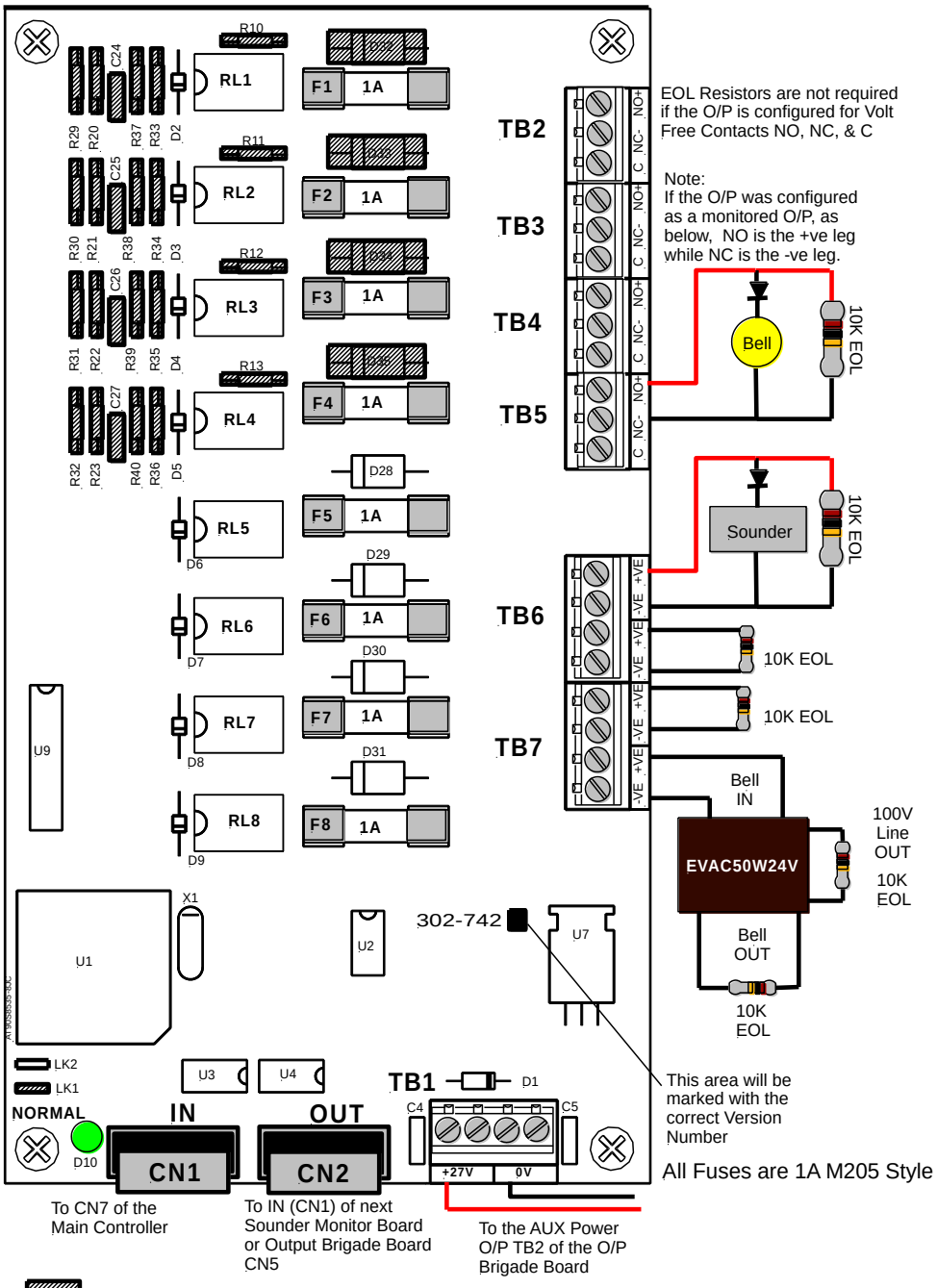
6.12 Sounder / Bell Controller Board

The 302-742 (8 way Bell Monitor Board) options allow a larger number of bells / sounders to be connected to the *FireFinder*™ system and /or Alert / Evac Amplifiers to be configured for zoned operation.

The 302-742 is built in two versions:

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

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. A maximum of 8 boards can be daisy chained together.



= Shaded Components are Not Fitted to 302-7421 Sounder Monitor Brd. Volt-Free Terminals but are Fitted to the 302-7420

Figure 44: Sounder / Bell Controller Board

6.13 Printer

Specifications

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

6.13.1 Indicators and Buttons

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

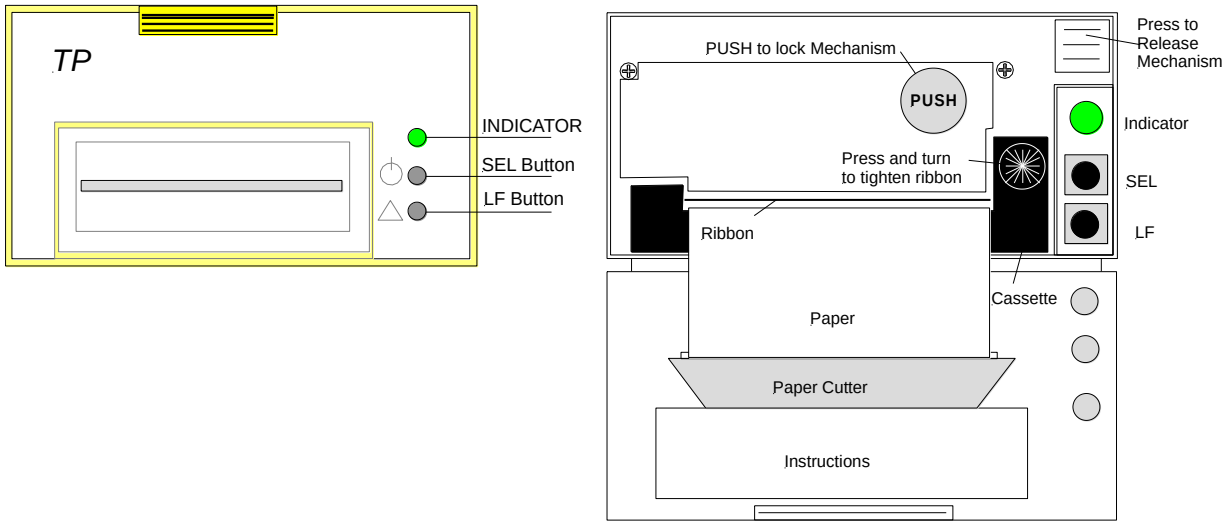


Figure 45: Printer Front Panel Layout (Front Cover Closed / Open)

1. Indicator

When the 3 colour LED indicator is illuminated;

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

2. SEL Button

a) On Line / Off Line State

The printer enters the On Line state automatically when power is applied or on exiting from the Self-Test mode. (LED is green).
Press the SEL button, the LED is turned off and the printer goes Off Line.
Press the SEL button again, the LED turns on and the printer is On Line again.

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

b) Pausing the Printer While It Is Printing.

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

c) Enter the HEX-DUMP mode

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

3. LF Button

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

4. Self-Test Mode

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

5) Exit the Self-Test Mode:

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

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

6.13.2 Maintenance

Installing The Ribbon Cassette

The printer has a factory loaded ink ribbon cassette.

Ribbon Replacement;

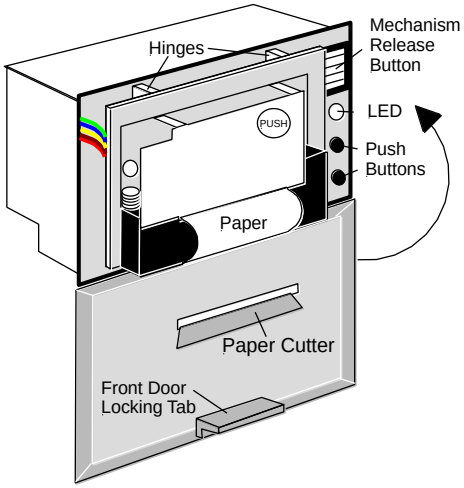


Figure 46: Front Panel

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

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

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

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

Loading the Paper Roll

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

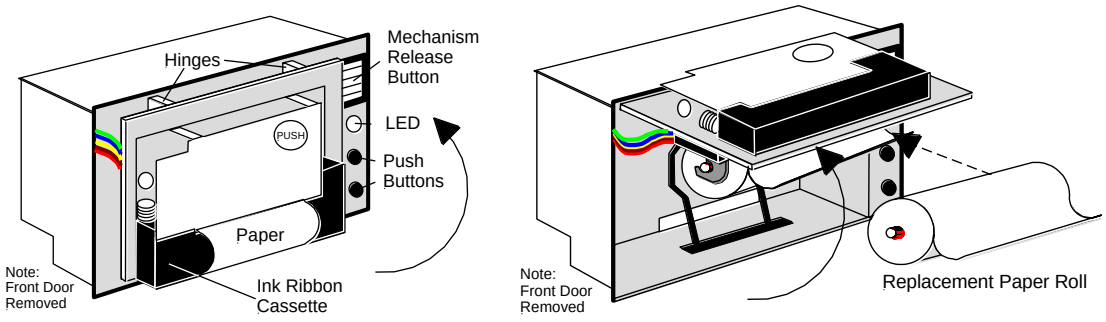


Figure 47: Head Mechanism Rotation and Paper Roll Removal / Insertion

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

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

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

6.13.3 Printer Connections and Jumpering

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

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

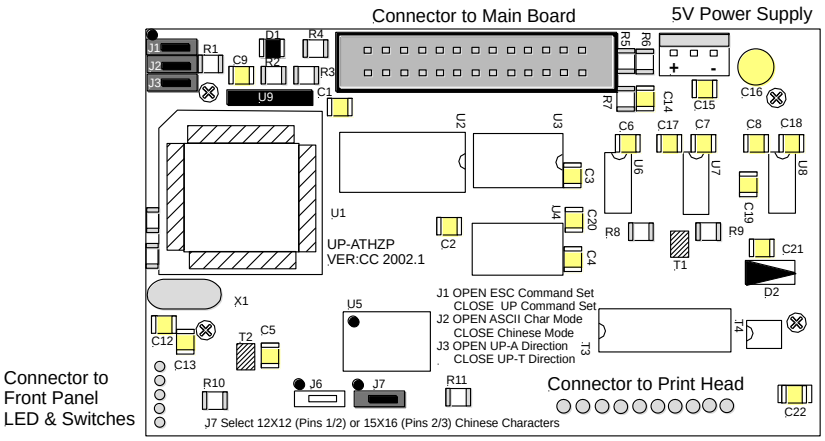


Figure 48: PCB Layout

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

6.13.4 Printer 5 Volt Power Supply (302-713)

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

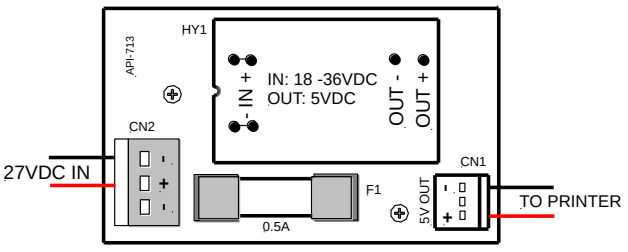


Figure 49: Printer Power Supply Board Layout

7 Agent Release Control

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

7.1 Operation

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

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

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

The " Agent Released " Pressure Switch (PSW) is wired to the PSW input on the Termination Board and is used to confirm that the agent has been released. The circuitry involved in this process can be configured to accept a normally open contact, normally closed contact, or is ignored and is selected via FACP on-site programming.

Manual Mode
When the system is in manual mode, then;

- © The Local Control Station Inhibit indicator is lit at the FACP and all Local Control Station's.
- © The buzzer at all Local Control Stations will sound until the inhibit is released.
- © The System Inoperative output is turned on.
- © The Automatic discharge sequences are prevented from starting.

If a discharge sequence was underway when the inhibit switch was activated the discharge sequence is aborted and the sequence is reset.

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

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

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

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

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

Single Zone Activation**,** the following discharge sequence is executed;

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

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

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

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

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

Service Switch

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

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

+ **Note:** The service switch is overridden by a manual discharge.

Lock-Off Valve

When the manual lock-off valve is operated;

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

Fault Monitoring

Fault conditions are initiated by:

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

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

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

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

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

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

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

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

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

7.2 Agent Release Module BRD25ARB -A

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

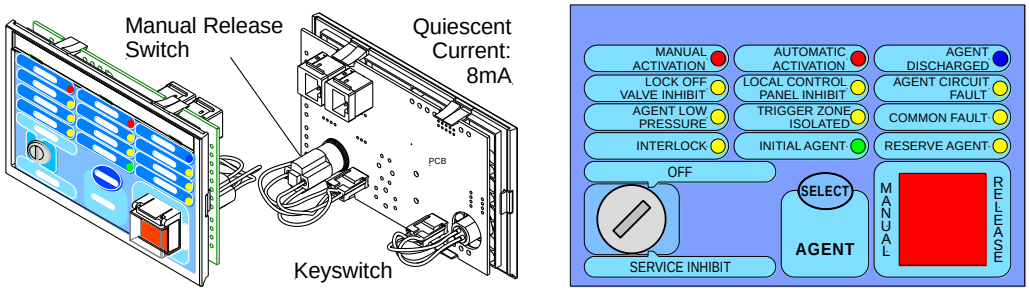
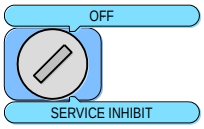


Figure 50: Exploded View of Module and Front Panel Layout

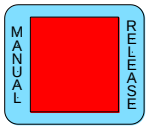
Controlled Access



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

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

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



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

Agent Release Module PCB Layout

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

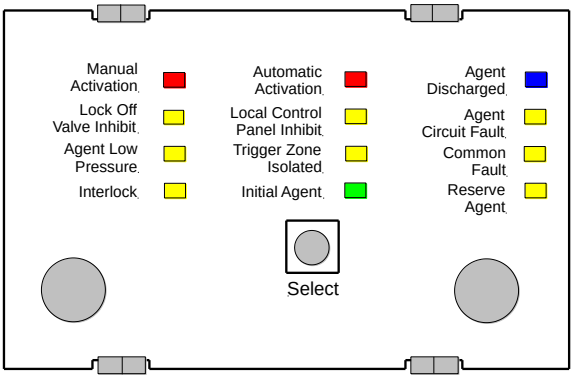


Figure 51: Module PCB Layout

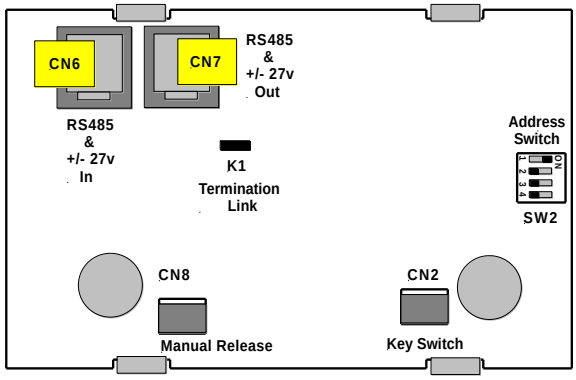


Figure 52: Underside of the Module PCB

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

7.3 Local Control Station (LCS) BRD25ARB -B

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

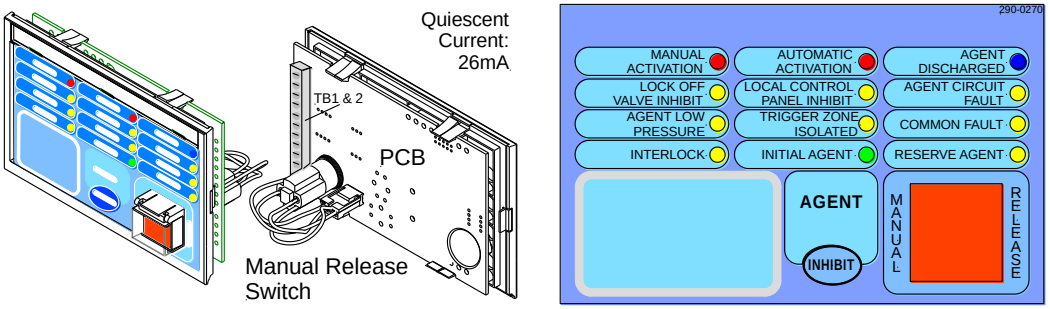
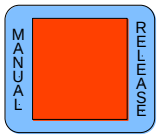


Figure 53: Local Control Station Layout

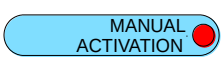


Pressing the push button starts the manual agent release sequence. This two action safety feature prevents any accidental operation of the control and should not be disabled.

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

7.4 Panel Indicators

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



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

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

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

LOCK OFF VALVE INHIBIT – **Yellow** Illuminated when the Lock-Off valve has been physically activated.

LOCAL CONTROL PANEL INHIBIT – **Yellow** Illuminated when the Inhibit switch is activated at any of the LCSs.

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

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

TRIGGER ZONE ISOLATED – **Yellow** Illuminated when any of the programmed trigger zones on the FACP are isolated.

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

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

COMMON FAULT – **Yellow** Illuminated when the;

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

INITIAL AGENT – **Green** Illuminated when the " Main " Agent is selected.

RESERVE AGENT – **Yellow** Illuminated when the " Reserve " Agent is selected.

Buzzer

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

Local Control Station Terminal Blocks TB1 & TB2

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

Local Control Station Layout

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

The Interlock is a monitored input with 10KΩ EOL used to determine if air conditioning dampers and doors are closed. Typically the agent is not discharged until all dampers / doors are closed.

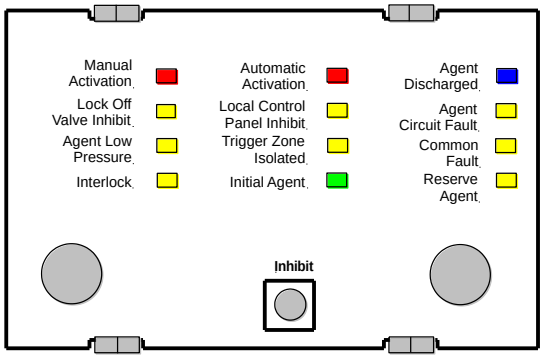


Figure 54: Top PCB Layout

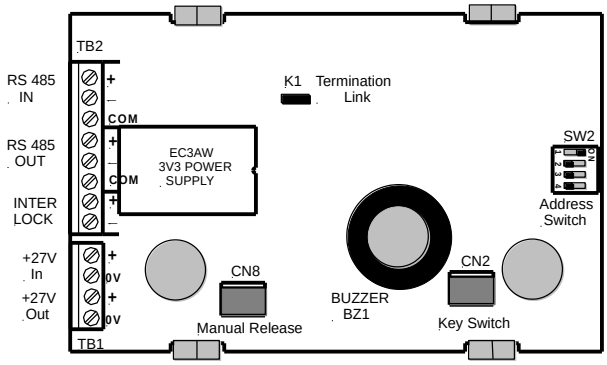


Figure 55: Bottom PCB Layout

7.5 Agent Termination Board BRD25ATB

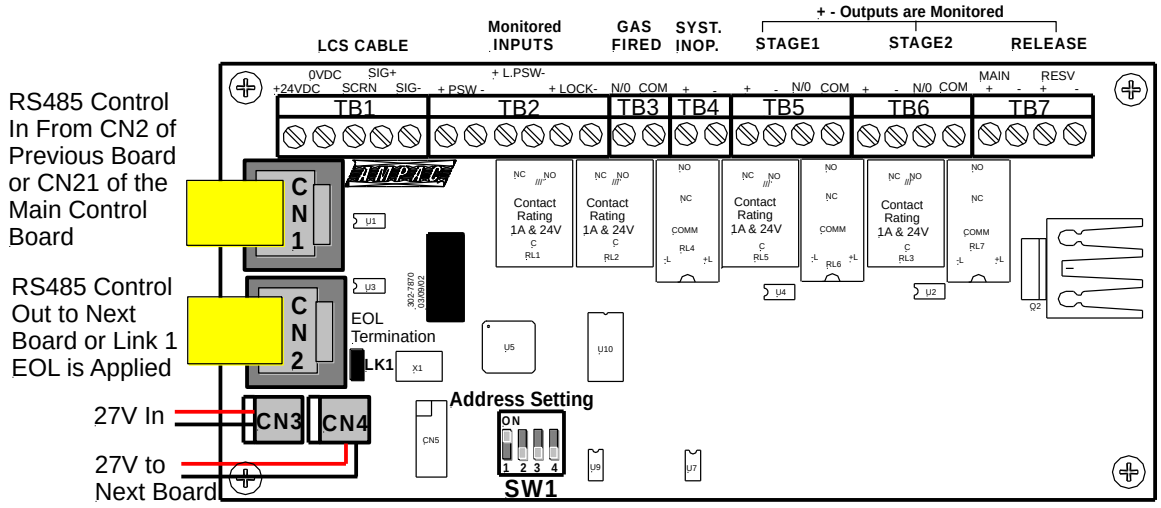


Figure 56: Agent Termination Board PCB Layout

The Agent Termination Board interfaces to;

1. The FACP via CN1, CN2 continuing the RS485 communications bus if required. LK1 is inserted if this is the last backpan board on the bus.

2. LCS's (up to 4) via TB1. LK1 is inserted in the last board in the RS485 Bus

3. **Monitored Inputs:** via TB2. (EOL Resistance 22KΩ, Series Resistance 4K7Ω)
   (a) Pressure Switch (**PSW**) agent released
   (b) Low Pressure Switch (**LPSW**) agent storage cylinder pressure has dropped to a pre-determined level; and
   (c) Inter**lock**, the manual lock-off valve has been operated.

4. **Gas Fired:** Output via RL2 N/O contacts rated at 1A @ 24VDC wired to TB3. Used to indicate to other monitoring devices the agent has been released.

5. **Sys**tem **Inop**erative: via RL1 N/O contacts rated at 1A @ 24VDC wired to TB4. Used to warn by way of signage / audible alarm and/or monitoring that the system is inoperative.

6. **Stage 1:** Output; initiates the visual and audible Fire Alarm and Evacuate warnings.
   (a) Monitored; via RL4 C/O contacts wired to TB5 1 & 2 (EOL required 10KΩ) and
   (b) un-monitored; via RL5 N/O contacts wired to TB5 3 & 4.

7. **Stage 2:** output; initiates the visual and audible Fire Alarm and Do No Enter warnings
   (a) Monitored; via RL6 C/O contacts wired to TB6 1 &2; (EOL required is 10KΩ) and
   (b) Un-monitored; via RL3 N/O contacts wired to TB6 3 & 4

8. **Release: Main** actuating circuit, monitored (10KΩ EOL required) via TB7 1 & 2 (2A current limited),
   Release: Reserve actuating circuit, monitored (10KΩ EOL required) via TB7 3 & 4 (2A current limited)
   (a) To Pyrogen Igniter (max of 10)
   (b) Metron Igniters (max of 10 – a series 2watt 18Ω resister must be added to the circuit)
   (c) Solenoid valve (max current of 2 amps & 27VDC)

7.6 Interface Wiring

Monitored Inputs TB2 1 & 2
Pyrogen,

This input relies on a thermal fuse used in conjunction with 22KΩ EOL and 4K7Ω series resistors. The type of agent release mechanism has to be set in the Programming Menu for the input to function as per the manufacturers specifications and be in accordance with the relevant Standard.

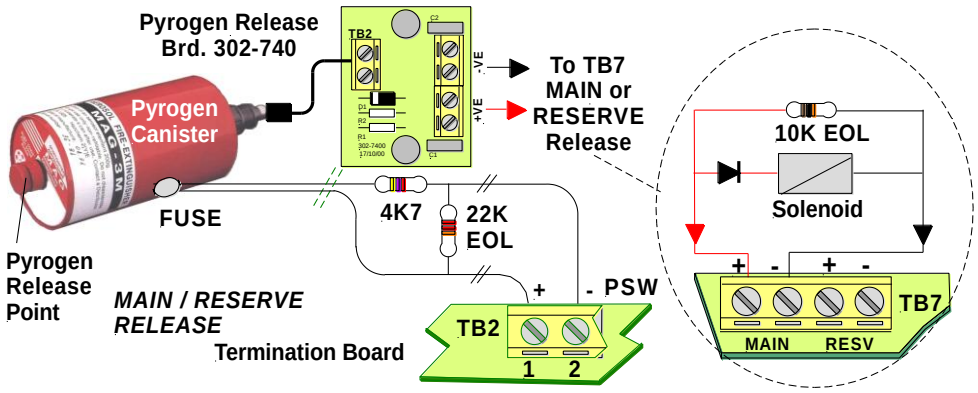


Figure 57: Pyrogen Wiring

Solenoid & Metron

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

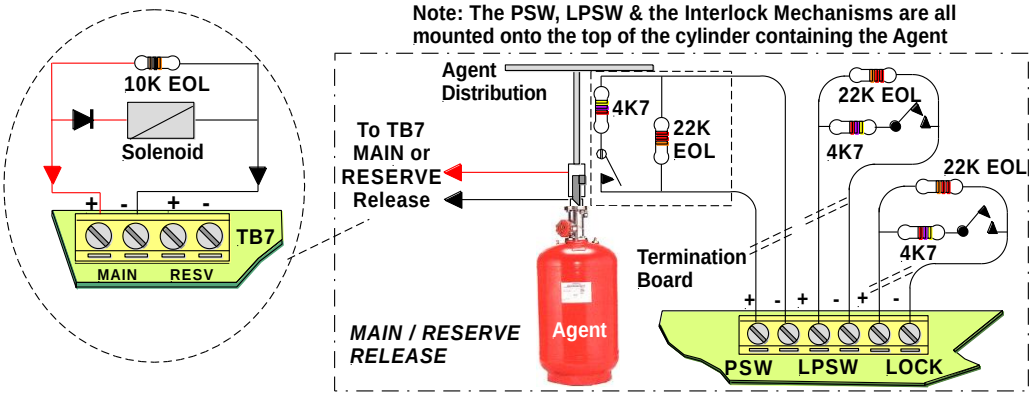


Figure 58: Solenoid, Metron PSW, LPSW and "LOCK" Wiring

LPSW & Lock

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

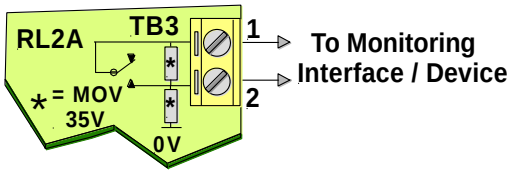


Figure 59: Gas Fired Wiring

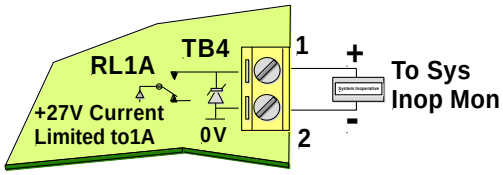


Figure 60: System Inoperative Wiring

As can be seen from above the;

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

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

Stage 1, Stage 2

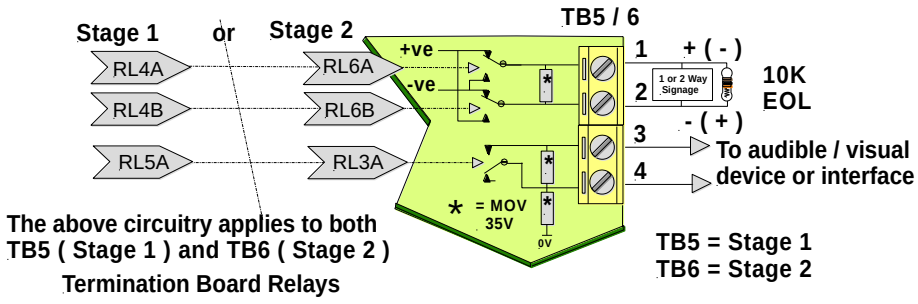
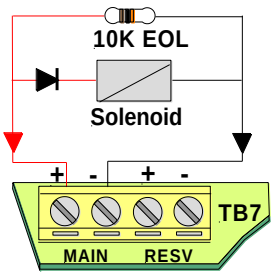


Figure 61: Stage 1 and 2 Wiring



& Main / Reserve Release Wiring

7.7 Warning Signs

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

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

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

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

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

Specifications:

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

Installation

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

Cabling
Term 3 (Buzzer Mute)
BUZZER MUTE Normally Open [N/O] Push Button Switch (Optional)

INPUT

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

Configuration – Jumper Settings

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

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

JP 5 (Enable External Evacuation Device) [*not used*]
1-2 ENABLE EXTERNAL EVACUATION DEVICE *(DEFAULT)* External evacuation device will activate on Stage 1 & 2 with the tone dependent on the input polarity

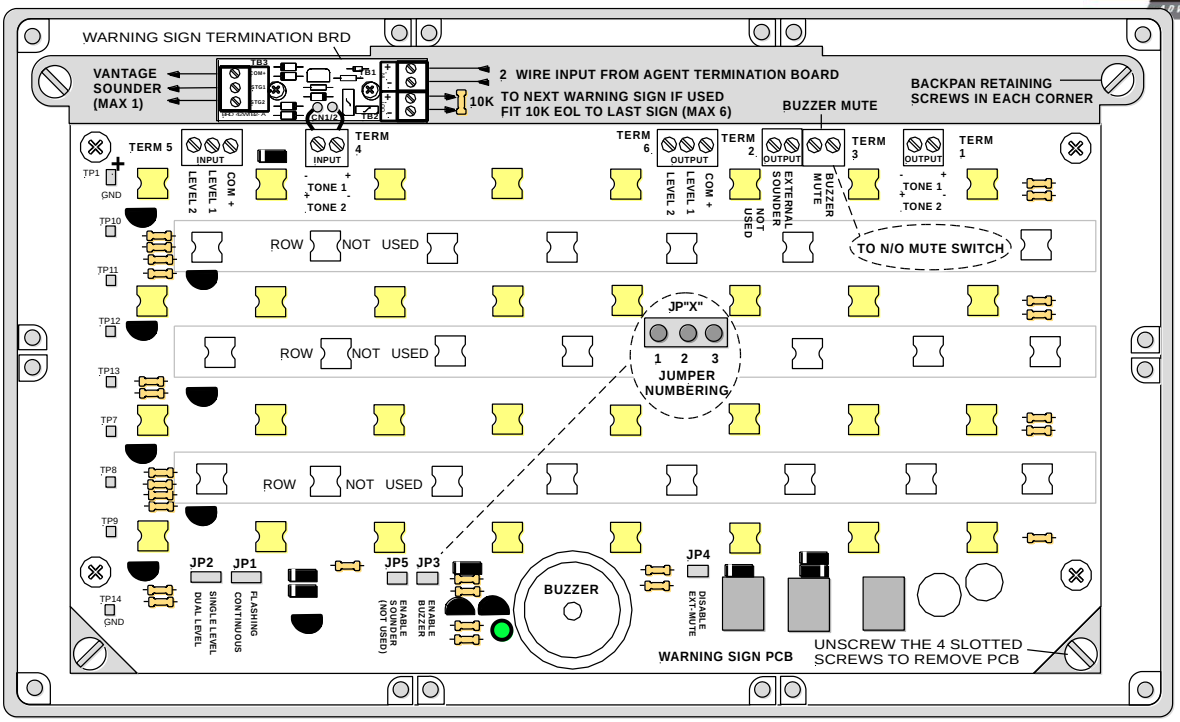


Figure 62: Warning Sign PCB Layout and Cabling

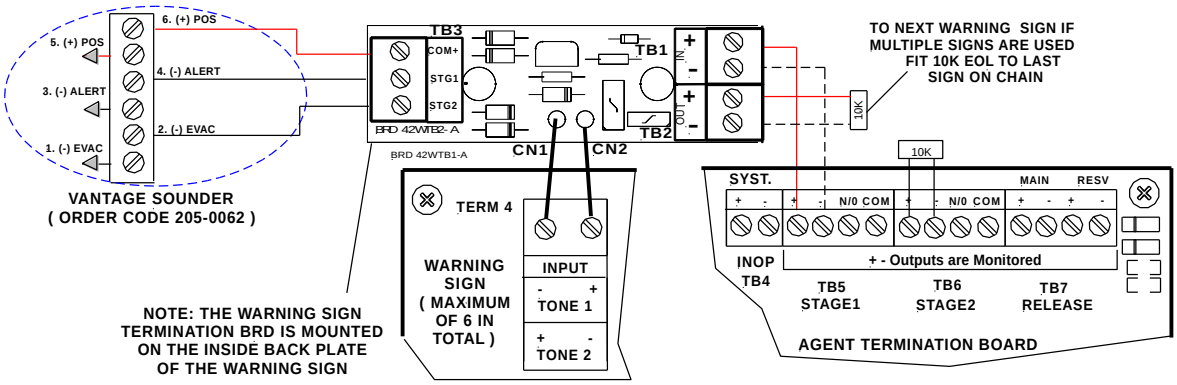


Figure 63: 2 Wire Cabling from the Agent Termination Board to the Warning Sign/s & Evacuation Device/s

8 Expanding the System & 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.

8.1 Expansion Controller

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

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

Networking in this way 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.

8.2 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. 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 via a data loop from Node 1 in the Network.

ⓘ 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.

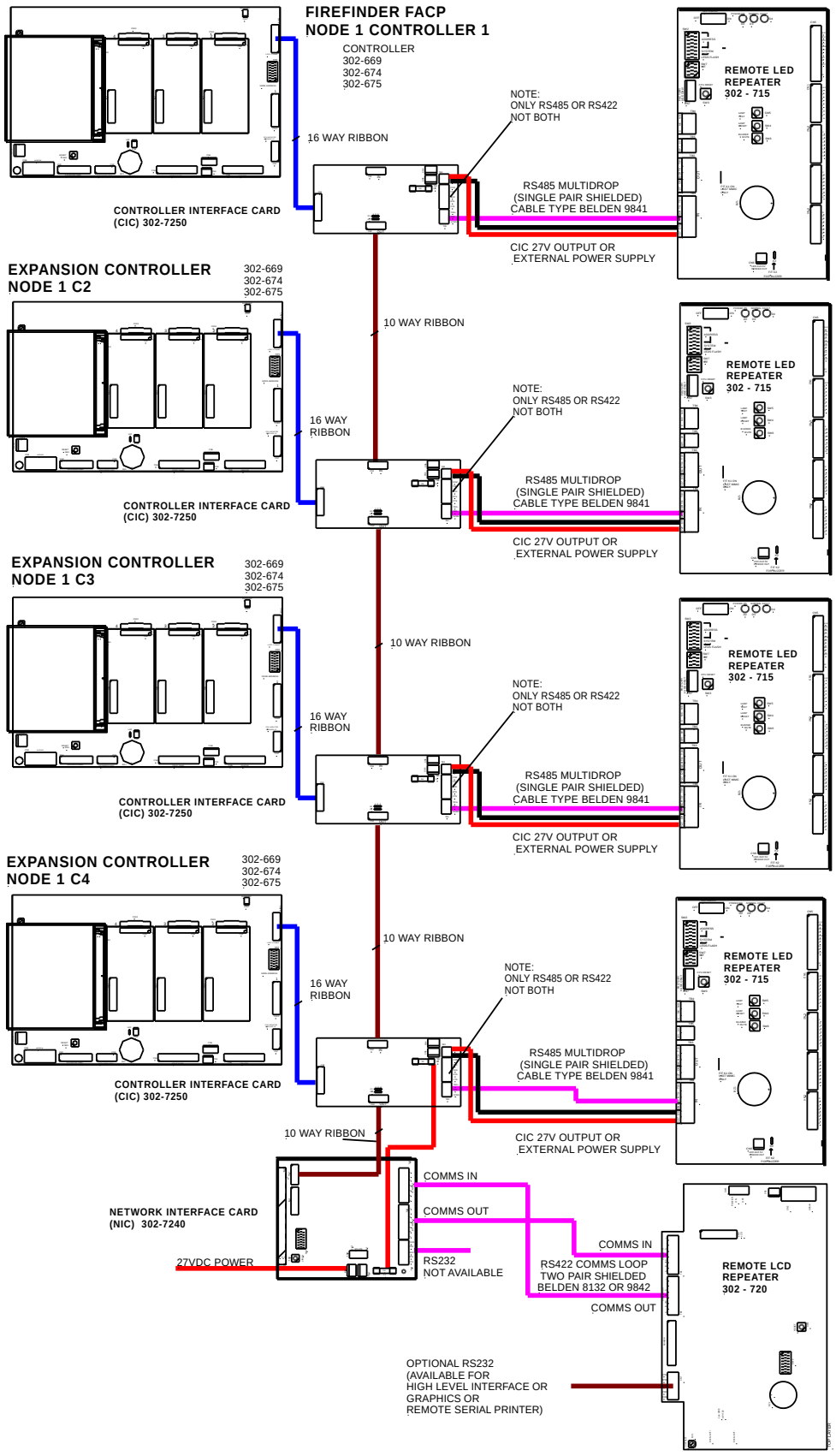


Figure 64: *Example of 3 Expansion Controllers within an FACP*

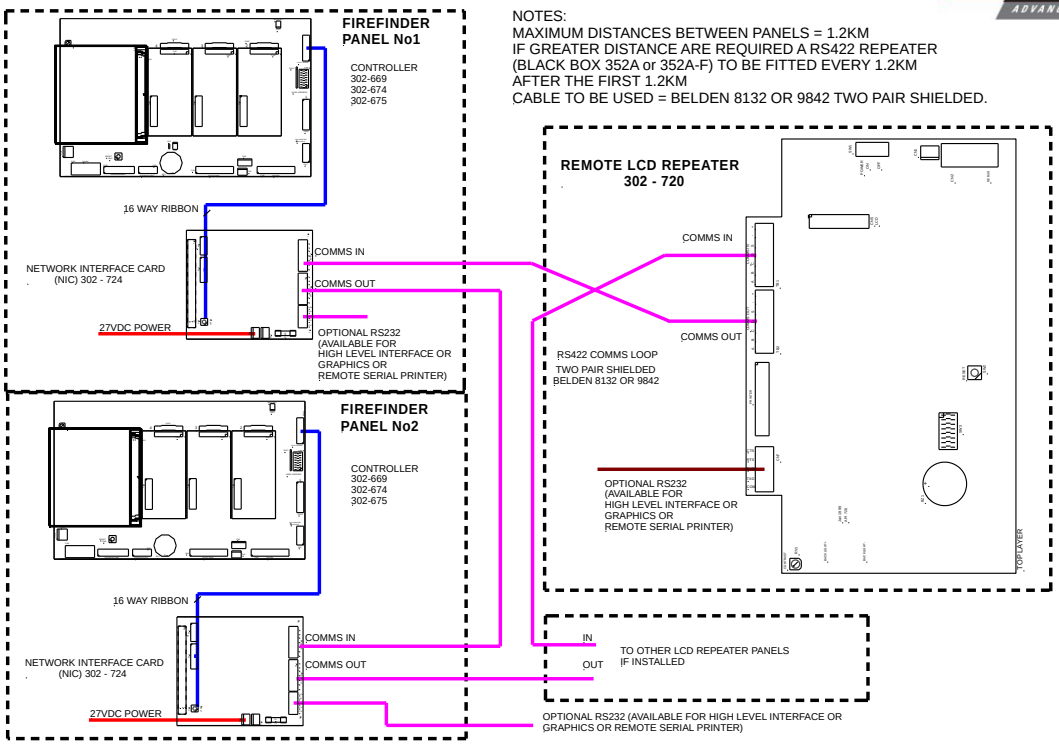


Figure 65: Example of Networking 2 Panels with LCD Repeaters

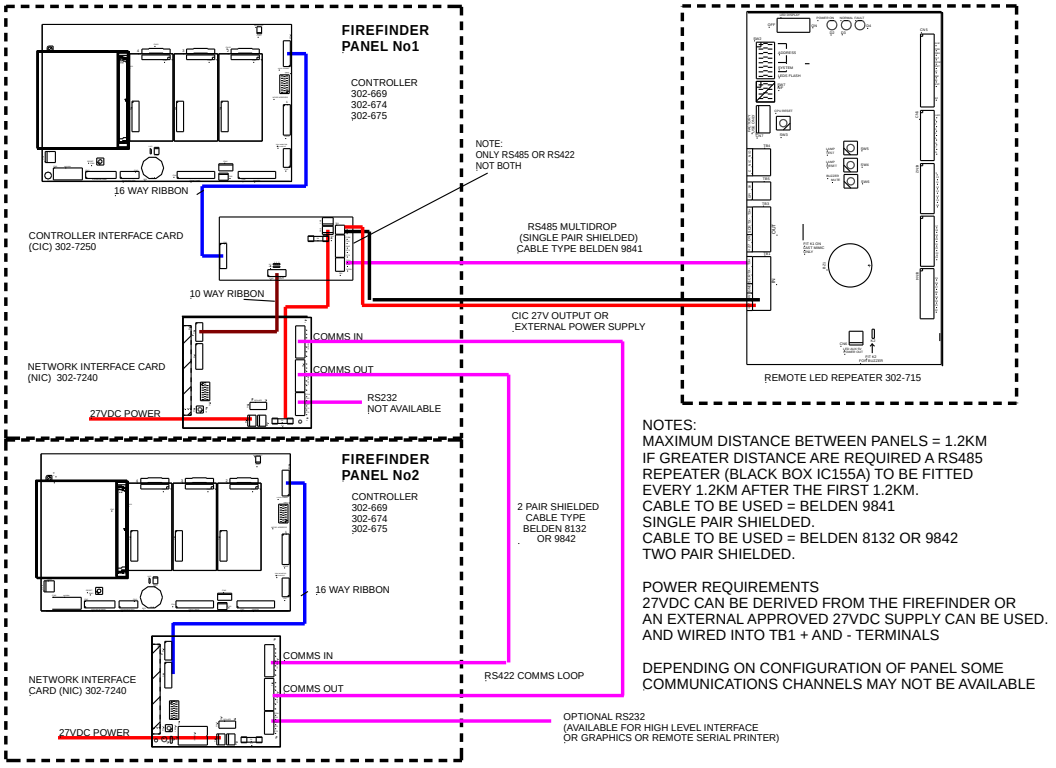


Figure 66: Example of Networking 2 Panels and LED Mimic

8.3 Expansion Board

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

Connections

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

Board Overlay

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

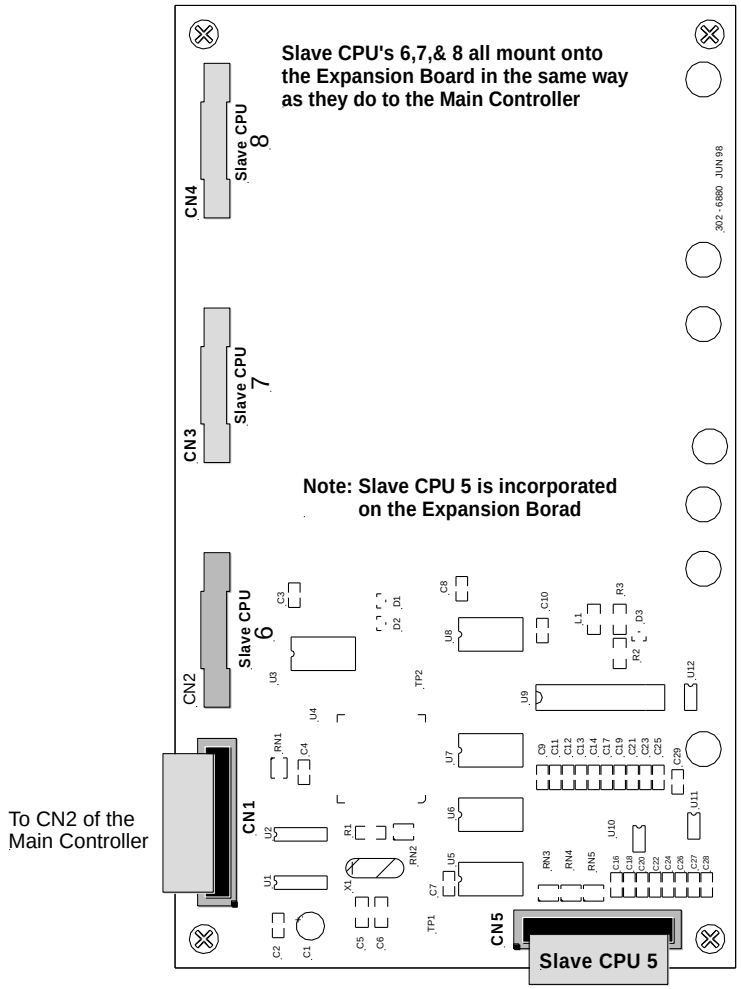


Figure 67: Expansion Board

8.4 Controller Interface Card

The Controller Interface Card (302-725) provides connections to the communication ports on a Controller. The module connects to the Loop Communication connector (CN18) on the 302-674. It may provide two communications ports (RS232 and RS485) dependent upon the mode in which it is used.

RS232 is available for communications with graphics and building management systems at terminal block TB2 terminals A to E.

RS485 is used to drive Remote LED Mimics and is available at TB1 terminals A to C.

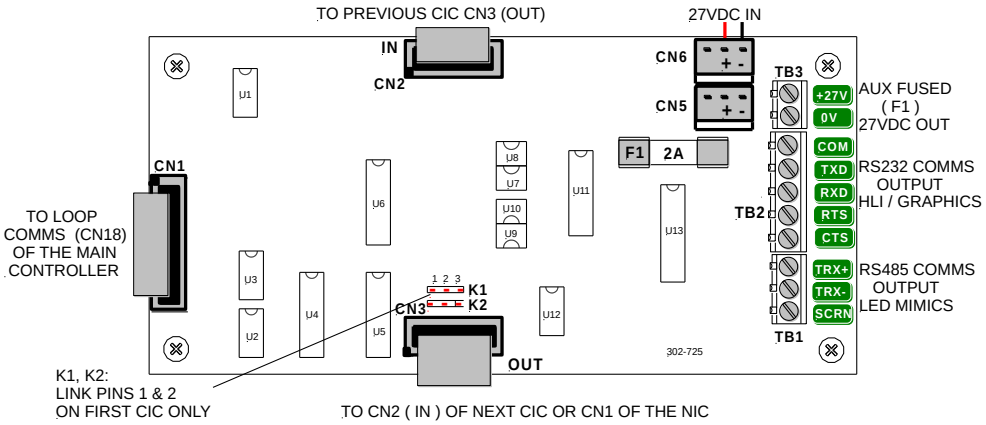


Figure 68: Controller Interface Card

8.5 Network Interface Card

The Network Interface Card (302-724) allows the networking of multiple panels in different combinations, from Data Gathering panels to Peer to Peer panels. The NIC provides two communication buses RS232 and RS422. The NIC can either connect to the main board via connector CN18 (Loop Comms) or to a Controller Interface Card connector CN3 (Out)

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.

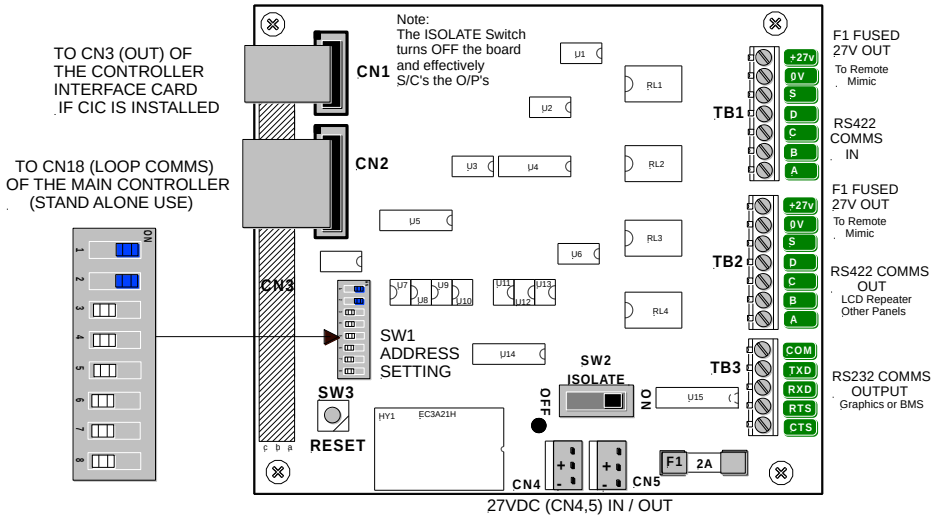


Figure 69: Network Interface Card

8.6 LED Mimic Board

The LED Mimic Board 302-715 remotely mimics the Main Panel's LED's and switches. RS485 protocol is used to communicate with the Main Panel. The Mimic can therefore 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: configured OFF for FACP	SW2 /8: sets the LED's to flash or be steady	SW6: mutes 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.

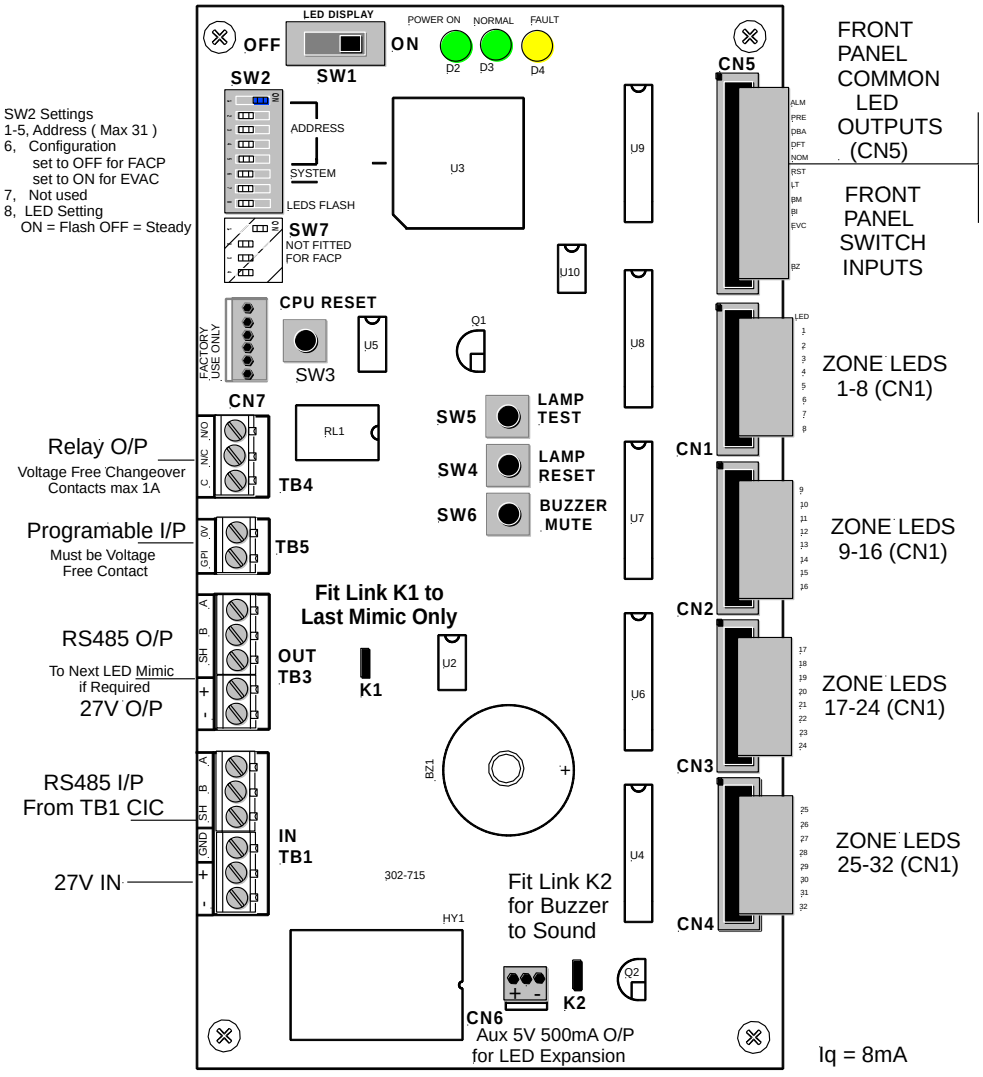


Figure 70: Remote LED Mimic Board

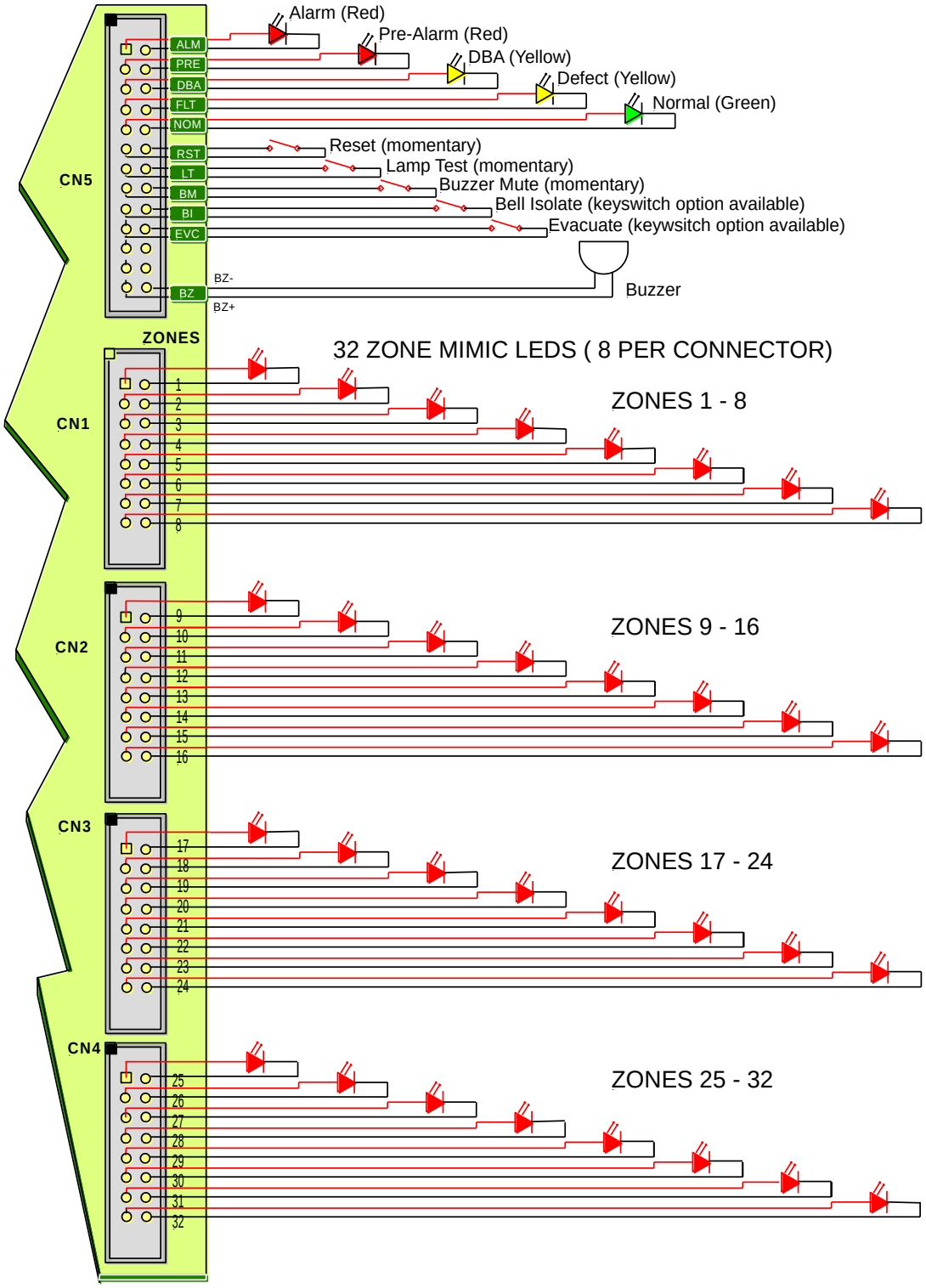


Figure 71: Control and LED Indication Internal Connections

If more than one LED is required per Zone, use the AUX 5V Output to supply the extra current.

8.7 Remote Expansion LED Board

There are three options available.

Option 1

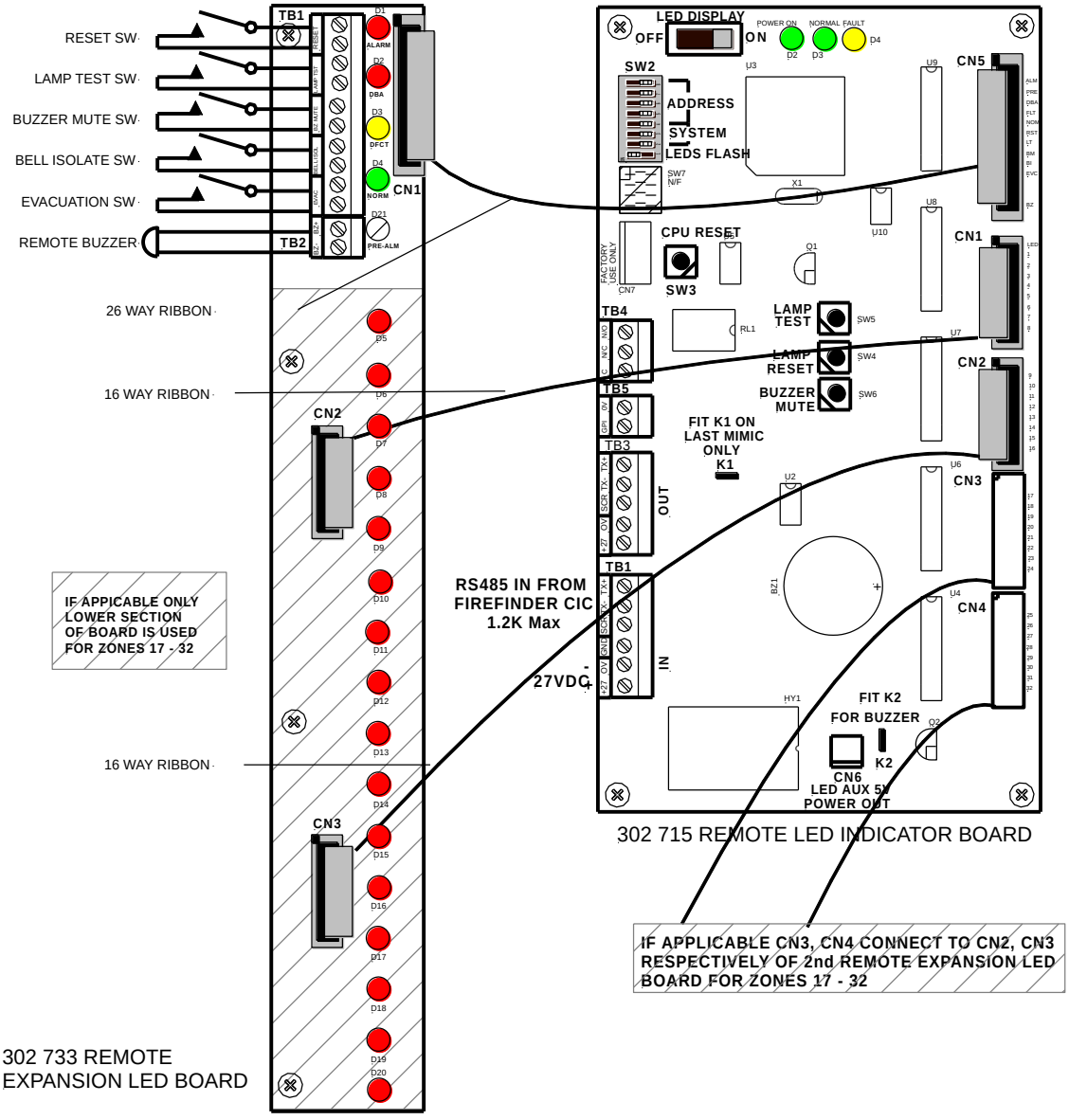


Figure 72: Remote LED Expansion Board Layout and Wiring to the Remote Indicator Board

Option 2 **Option 3**

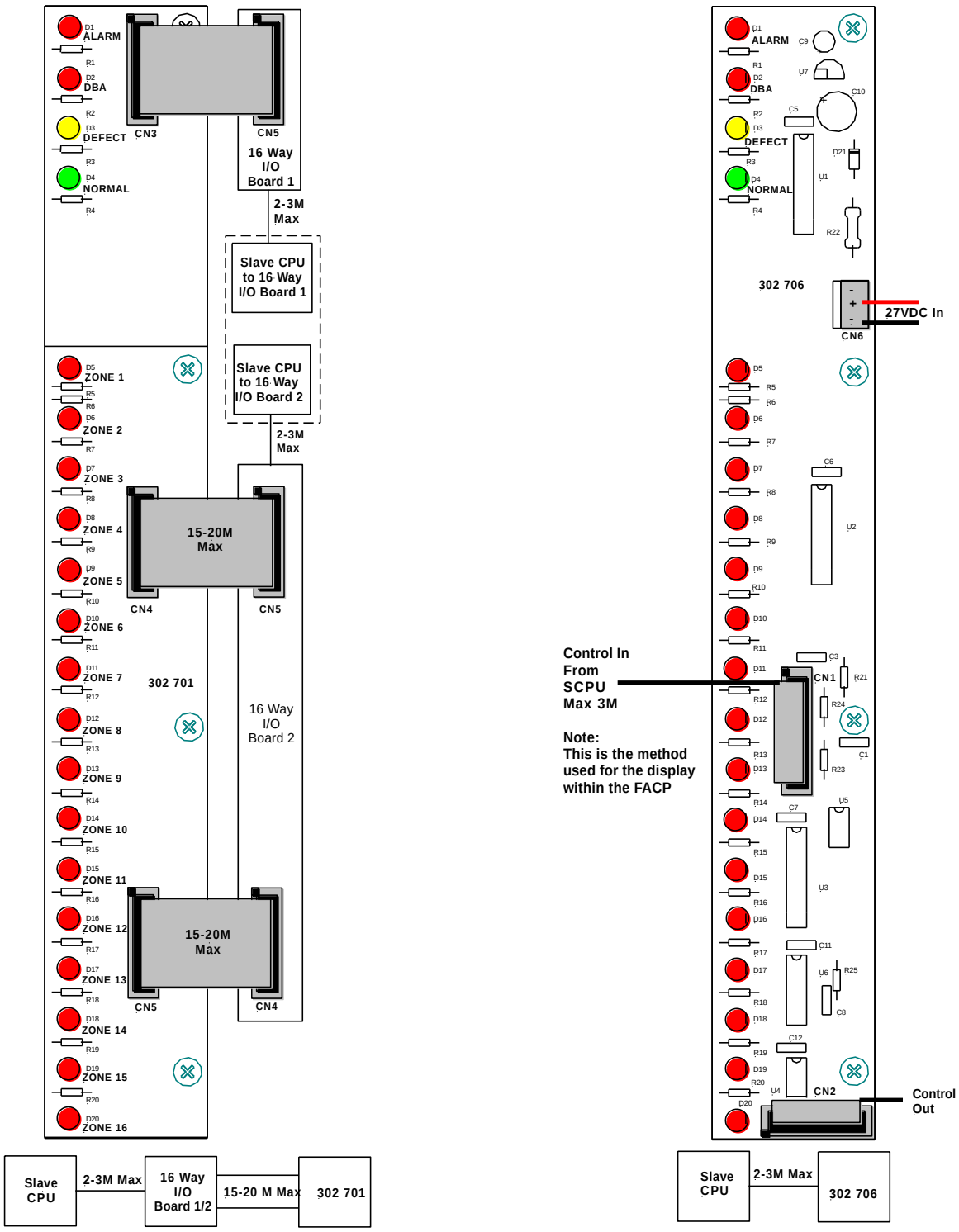


Figure 73: 302 701 & 706 Remote (Note maximum distances) LED Expansion Board Layouts

8.8 Liquid Crystal Display Repeater Panel

The LCDR Repeater displays information as shown at the main panel (302-674) and provides limited controls to interrogate the system.
The Remote LCD Repeater Panel connects to the external RS422 communication loop.

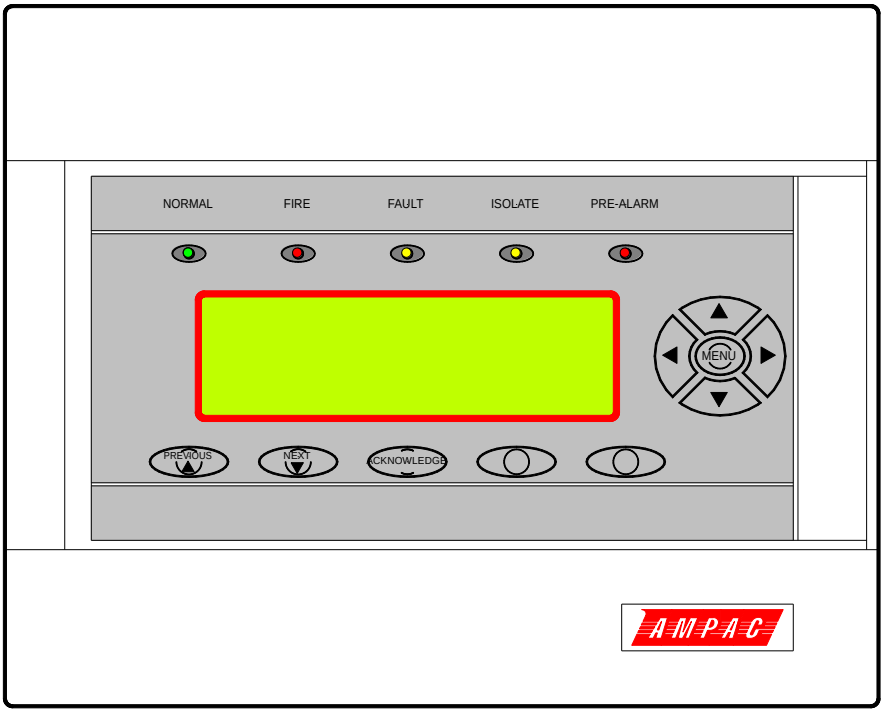


Figure 74: Liquid Crystal Display Repeater Panel

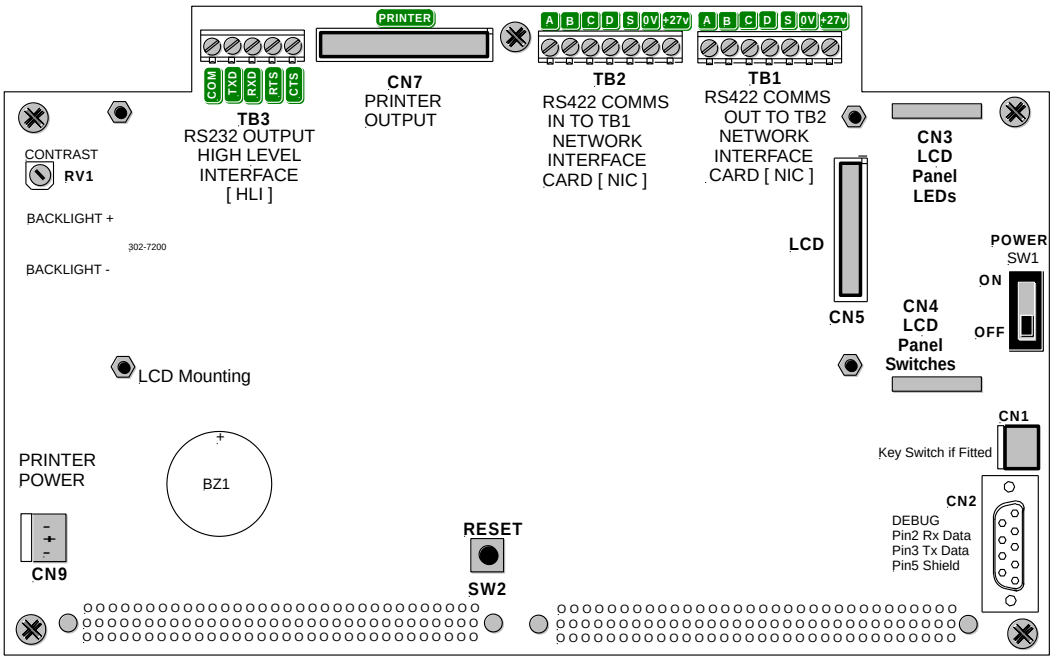


Figure 75: Liquid Crystal Display Repeater Board Layout (302-7200, 302-7210 and 302-6752)

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

9 FireFinder™ Operation

9.1 The Control Panel

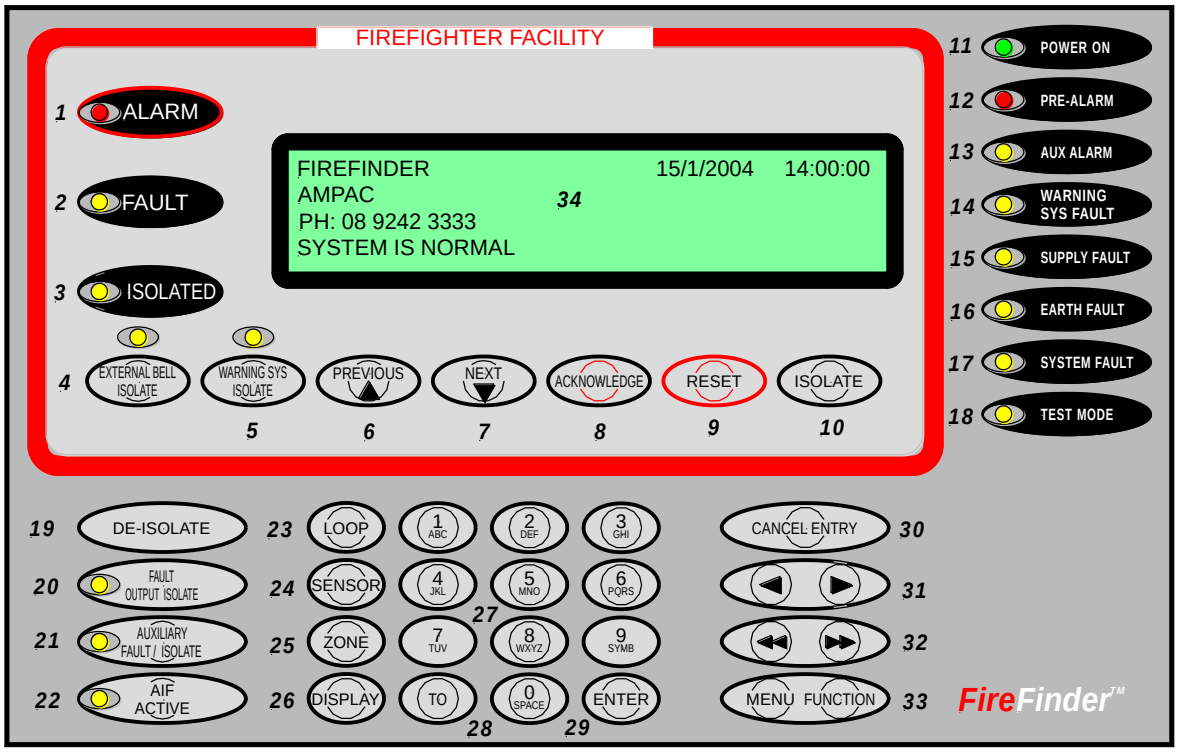


*Figure 76: The **FireFinder™** Control Panel*

The following describes the function of italically numbered keys above.

1. 

(Red) This LED will flash if any unacknowledged alarms are present on the system. If all the alarms have been acknowledged it will light steady.

2. 

(Yellow) This LED will light steady if there are any faults on the system, EG. loop faults, module faults, device faults etc.

3. 

(Yellow) This LED will light steady if any detectors, devices or zones in the system have been isolated.

4. 

(Yellow) Pressing this button will isolate any bells connected to the fire panel If the bell is isolated the LED will be illuminated. Pressing again will de-isolate the bell.

5. 

(Yellow) Pressing this button will isolate the fire panel output to the Warning System if it is connected to one. If the Warning System is isolated the LED just above the button will light steady. Pressing the button again will de-isolate the Warning System output.

6. 

Previous is used for scrolling backwards through the displayed alarms, faults, or isolates.

7. 

Next is used for scrolling forwards through alarms, faults, or isolates on the LCD.

8. 

Pressing this key will acknowledge an alarm currently displayed on the LCD. It will also silence the panel buzzer, which sounds whenever there is an alarm (optional) or fault.

9. 

Pressing this key will reset the panel, clearing any acknowledged alarms and taking the LCD display back to its default screen, unless there are any uncleared faults or isolated devices, these will continue to be displayed.

10. 

This key is used to isolate individual or groups of detectors, devices or zones.

11. 

(Green) This LED will light when the mains power is turned on.

12. 

(Red) This LED will light when a sensor/detector is in the pre-alarm state.

13. 

(Yellow) This LED will light when the auxiliary alarm output has been activated.

14. 

(Yellow) When a warning system is connected to the fire panel, this LED will light if the connection to the warning system becomes faulty.

15. 

(Yellow) This LED will light when there is a fault on the power supply. The following conditions constitute a fault.

- The output voltage is too low (less than 26.5V)
- The output voltage is too high (greater than 28V)
- The battery is not connected properly.

16. 

(Yellow) This LED will light if there is an incorrect earth on any of the signal cables of the system.

17. 

(Yellow) This LED will light if the main system CPU is in fault.

18. 

(Yellow) This LED will light when the panel is in any of the test modes.

19. 

If a detector currently displayed on the LCD has been isolated, pressing this key will de-isolate it.

20. 

(Yellow) Pressing this button will isolate the fault output relay on the brigade board. If the FOI is isolated the associated LED will light.
Pressing the button again will de-isolate the FOI relay.

21. 

(Yellow) Pressing this button will isolate the auxiliary output relay on the brigade board. If the auxiliary fault / isolate is isolated the associated LED will light steady.
Pressing the button again will de-isolate the auxiliary fault / isolate relay.
The auxiliary output line is monitored, should it go into fault, the LED will flash.

22. 

(Yellow) Pressing this button will activate the Alarm Investigation Facility. The LED just above the switch shall turn on.

23. 

Press this key followed by a number to select the loop you wish to access eg LOOP 4.

24. 

After selecting the Loop number using the LOOP key, press this key to enter the sensor number for the device you wish to interrogate.

25. 

Press this key followed by a number eg ZONE 4 to select the required zone

26. 

Press this key after selecting the Zone number or the Loop and Sensor numbers to display the state of the device.

27. 

These keys are used to navigate around the panel's menus and enter data. If you are entering a descriptor, or some other data that contains characters as well as numbers, pressing the keys multiple times will scroll through the available letters written on the button, in sequence. Eg 1,A,B,C.

28. 

Use this key to access a range of devices. Eg, 2 

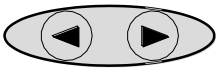
7.

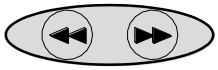
29. 

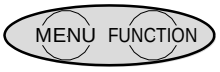
You will be prompted to press the ENTER key at certain times when using the panel, to enter data.

30. 

The CANCEL ENTRY key is used to delete any data in the current field or return to the previously displayed menu.

31. 
These are used to move the cursor back and forth when entering data in a field.

32. 
These are used to move between fields when entering data.

33. 

Pressing the **MENU** key will display the main menu on the LCD. Similarly pressing the **FUNCTION** key will display the function menu on the LCD.

34. **LCD DISPLAY** - This screen can be configured with the servicing companies name and phone number. It also displays the current date, time and that the system is normal (no faults and alarms).

If there are any faults or alarms the LCD will display the device in question, if multiple detectors or zones are not in their normal state, the 

and 

keys are used to scroll through them.

NOTE: ALL KEYS IN THE *FireFinder*™ FACILITY AREA WILL SILENCE THE SOUNDER.

9.2 The Default LCD Display

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

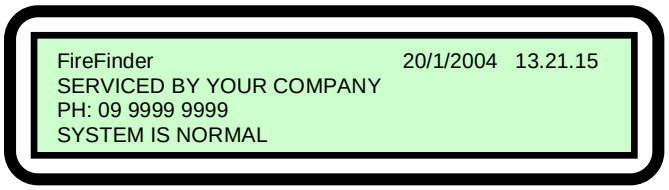


Figure 77: The Default LCD Display

This screen can be configured with the servicing company's name and phone number (via laptop or modem). It also displays the current date and time and that the system is normal (no faults and/or fire alarms).

If there are any faults or fire alarms the LCD will display the device in question, if multiple detectors or zones are not in their normal state, the 

and 

buttons are used to scroll through them.

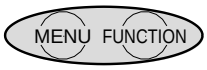
If there is a fault condition or a fire alarm and the buzzer is sounding, press the 

button to stop it sounding.

9.3 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 to guide the operator through the operation.*

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.

9.4 *Function Menu and Access Levels*

The **FUNCTION MENU** provides access to the programming and configuration functions.

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.

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.
- **Logs:** Fire Alarm and Fault logs.
- **Tests:** Walk and loop tests.

- **I/O:** Sets the functionality of Input / Output devices.
- **Programming:** Manual Programming

Level III: In addition to the Level I & II facilities, add **Password control & Self Learn.**

9.5 The Main Menu

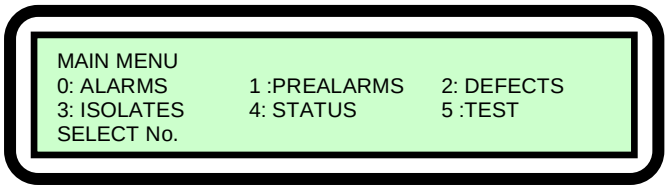


Figure 78: The Main Menu

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

0 **FIRE ALARMS**;

1 **PRE-ALARMS**,

2 **DEFECTS**; Pressing 2 brings up a sub-menu from which a more detailed description of the fault can be displayed. With a Fault present select a field (0 to 7).

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

3 **ISOLATES** on the system.

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

9.5.1 Status Menu

4 Is pressed to access the STATUS MENU.

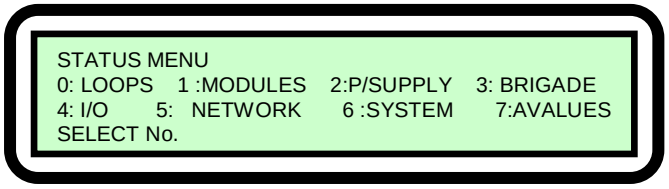


Figure 79: The Status Menu

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

Press

0 **Loops:** Enter the loop number and the LCD will display its status, eg normal, type of fault etc.

1 **Modules:** Select the type of module (Slave or LED Mimic) then enter the module number and the LCD will display the type, the software version and its status.

2 **Supply:** This menu item will display the charger voltage, whether or not the power supply is in fault, if the battery is correctly fitted and if Mains power is present.

3 **Brigade:** This will display the status of all of the outputs on the Brigade Output Board. Eg. Bell, Aux, DSW, Warn, Fault, Alarm, Isol, Bfail, Vmon & Brigade Status

4 **I/O:** The LCD will display the status of an input or output in a panel or on a loop.
Enter
i) the I/O controller number then the input or output on that controller or,
ii) the loop, sensor and output number on that device.

Once entered the LCD will display if it is configured, a description of what that input or output does and its current state.

Network:

❺ Is pressed to access NETWORK STATUS.

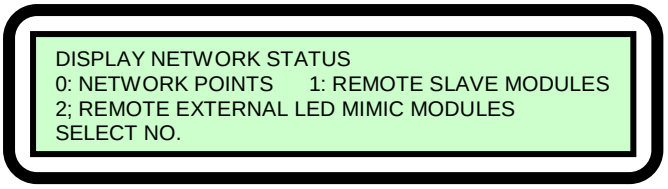


Figure 80: Display Network Status

❶ Network Points:

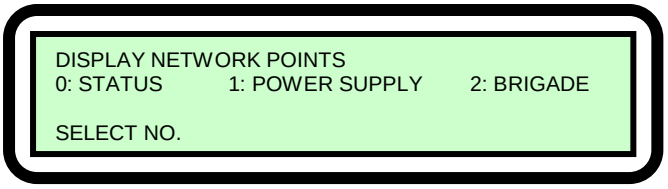


Figure 81: Display Network Points

Network Points Screens are

Press **❶ Status** *Displays* ⬇ Select network point Eg. Loop number

or **❶ Power Supply** *Displays* ⬇ Charger volts Battery Detected Mains OK

or **❷ Brigade** *Displays* ⬇ Operational Non- Op

❶ Remote Slave Modules:

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

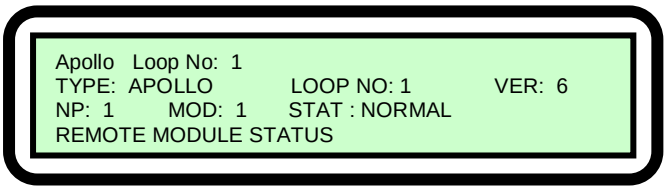


Figure 82: Display Remote Module Status

❷ 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:

❻ Is pressed to access SYSTEM STATUS.

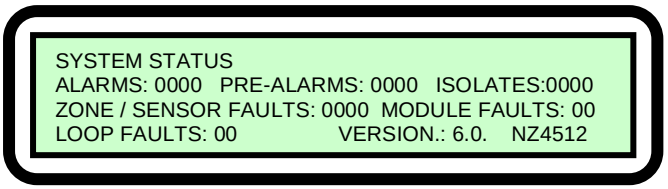


Figure 83: System Status

A Values:

❼ Is pressed to access AVALUES. Enter Loop number then **ENTER** then Sensor number then **ENTER**

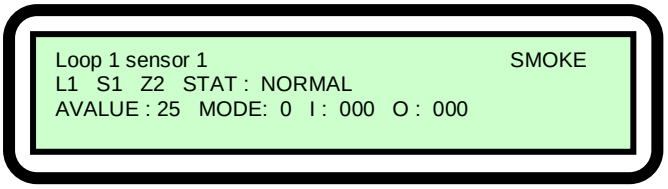


Figure 84: Analogue Values

9.5.2 Testing Menu

Press;

❺ to access the TESTING MENU. From here the following can be tested:

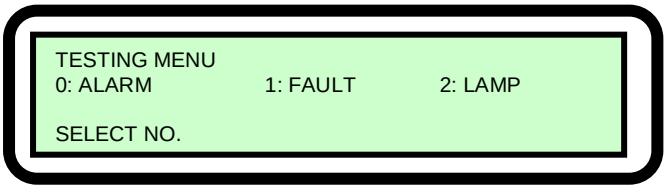


Figure 85: The Testing Menu

Alarm Test

Press

❿ **:** Alarm tests either a zone or a sensor or a range of zones or sensors.

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

Fault Test

Press

❶ **:** 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)

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

Lamp Test

Press

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

9.6 Function Menu (Level 2 / 3)

The Function Menu provides access to the configuration and programming. These Functions are protected by a password (actually a pass-number as it can only contain numbers) to prevent unauthorised tampering with the panel's configuration. A new panel will have the password **2222** for Level 2 and **3333** for level 3 already programmed so that you can enter your own.
To get to the Functions Menu press the "**FUNCTION"** key while the panel is on the Default Display and then enter the password.

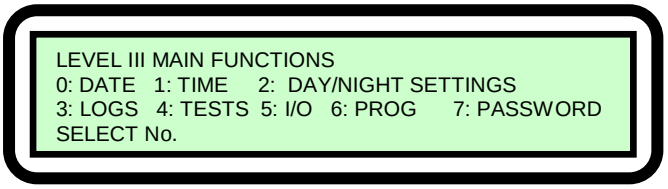


Figure 86 The Level III Functions Menu

9.6.1 Setting the Function Date Facility

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

Press

⓿ to select the set **DATE SCREEN**. The prompt will ask for the date to be entered in this format, **DD/MM/YYYY** (EG 18/09/2001), key in and press **ENTER**. The screen will then return to the **MAIN FUNCTIONS MENU**.

9.6.2 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**.

9.6.3 Setting the Function Daynight Facility

Press

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

Press

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

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

❷ to **ENABLE / DISABLE** then **ENTER**.
For this Function to have control it must be **ENABLED**, press ❷ Re-pressing ❷ will toggle to **DISABLE**.

9.6.4 *Function Logs Facility*

Press

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

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

Press

❶ **ALARM**

❶ **FAULT**

❷ **ISOLATE**

❸ **SYSTEM**

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

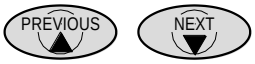
Press

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

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

Press *or* *Press*

❶ to **VIEW BY ENTRY NUMBER** or ❶ 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 alarms by using* 

9.6.5 *The Function Test Facility*

Press

❹ **TESTS** prompts the operator to select the type of test they wish to perform, that is either the **WALK** test or the **LOOP** test.

Press

❶ **WALK TEST;** the operator will again be prompted to press either **ZONE** test or, **SENSOR** test.

Press

❶ **ZONE WALK TEST MENU;**

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

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

Press

❶ **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

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

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

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

The tests displayed are;

® TESTING SIDE A IDENTIFING DEVICES on SIDE A, and

® TESTING SIDE B IDENTIFING DEVICES on SIDE B.

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

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

9.6.6 Function Manual I/O Control

Press

❺ to display the Manual I/O Control menu

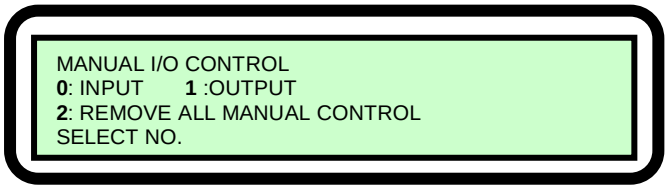


Figure 87: The Manual I/O Control Menu

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

Press

❶ **Input Selected:**

Press

❶ **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.

❶ **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.

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

❶ **Output Selected:** Same sequences as above for inputs but substitute outputs for inputs.

❷ **Remove All Manual Control Selected:** Globally removes all manual control.

9.6.7 Function Programming

Press

❻ to display the Programming Menu.

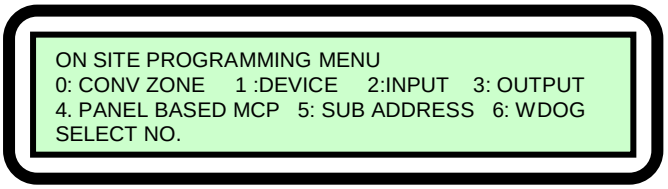


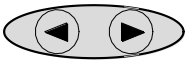
Figure 88: The Programming Menu

9.6.8 Conventional Zone Programming

Press

❿ **Zone:**

Key in the zone number and enter or change the description (**DESC**) by pressing the numeric



buttons to move the flashing underline or curser.

buttons multiple times to access characters while at the same time using

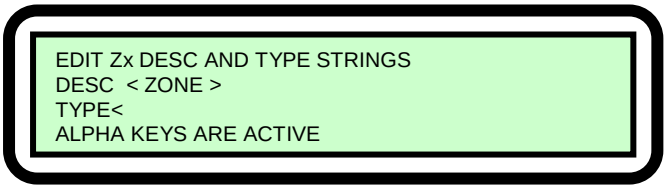


Figure 89: Zone Description & Type Programming

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

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

Figure 90: Brigade Options

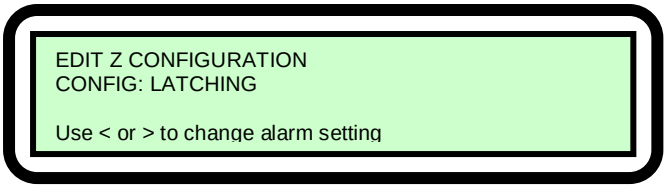


Figure 91: Zone Configuration Latching / Unlatching

Use ◄ *or* ► to change the settings

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

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

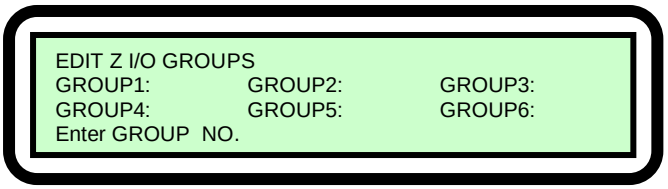


Figure 92: Zone I/O Groups

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

9.6.9 Device Programming

Press ❶ **DEVICE:**

◄ ◄ use these keys to **EDIT** and move through wording & numbering.

● ● Use these keys to **MOVE** between fields ie: DESC & TYPE and NEXT PARAMETER SETTING

Screen:

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

❼ to **EDIT** or ❶ to **DELETE**

1. EDIT LxSx DESCRIPTION AND TYPE STRING. Edit then *press* ●
eg: ***DESC*** ***Loop 1 Sensor 1***
TYPE ***SMOKE***

2. Allocate / Edit the Sensor to a Zone and set the device type then *press.* ●
eg: *XP95 Photo, XP95 Heat etc-*

3. Set /Edit and display the Output Configurations or options then *press.* ●
eg: *Latching, AVF, Non-latching etc*

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

5. Allocates / Edits the Loop and Sensors Groups.

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

9.6.10 *Input Programming*

Press

❷ **INPUT:**

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

Screen: PROGRAM MENU SELECTING AN INPUT

❶ **IN A PANEL**	❶ **ON A LOOP**
I/O MODULE	**LOOP**
Select I/O MODULE **NO.** then ENTER	Select **LOOP NO**. then ENTER
INPUT	**SENSOR**
Select I/P NO then ENTER	Select **SENSOR NO**. then ENTER
EDIT / **DELETE** DESC	**INPUT**
	Select **INPUT NO**. then ENTER key
ALPHA KEYS ARE ACTIVE	**EDIT** LxSxI/Px DESC STRING DESC

9.6.11 *Output Programming*

Press

❸ **OUTPUT:**

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

9.6.12 *Manual Control Point (MCP)*

Press

❹ **MCP:**

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

9.6.13 *Sub Address*

Press

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

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

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

Editing

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

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

9.6.14 Watchdog

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

9.6.15 Self Learn

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

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

9.6.16 Extra Devices Detected

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

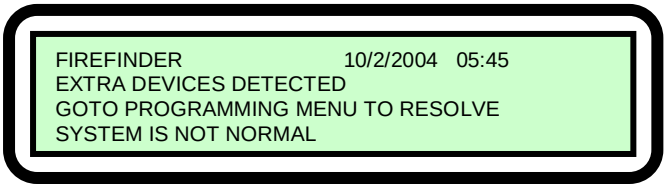


Figure 93: Resolving Extra Modules And Devices

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

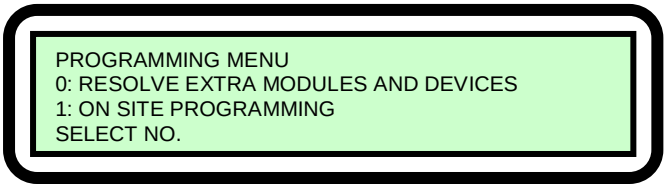


Figure 94:Added Module Or Device

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

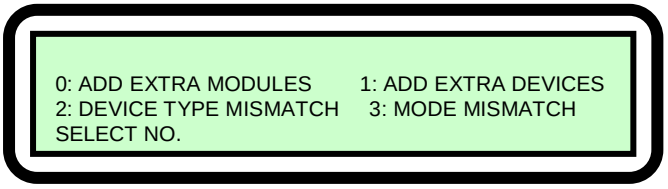


Figure 95: Resolving Extra Modules Or Devices

9.6.17 Mismatch Detected

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

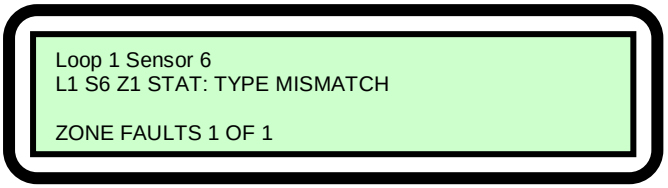


Figure 96: Resolving A Mismatch

9.6.18 Function Passwords

Figure 97: The Password Menu

Press

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

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

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

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

9.6.19 Forgotten Passwords

If you have forgotten your password,

a. enter 9999 into the password field;

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

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

d. a temporary password will be issued to allow access to level 3 functions;

e. 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.*

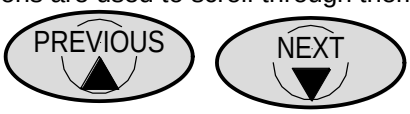
10 Incoming Fire Alarm Signal

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 buttons are used to scroll through them.



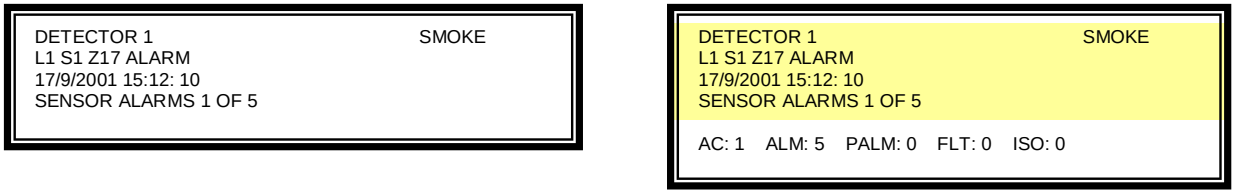


Figure 98: LCD Screen With 5 Devices In Alarm

Note:

This information changes to that associated with the device as the PREVIOUS / NEXT push buttons are pressed.

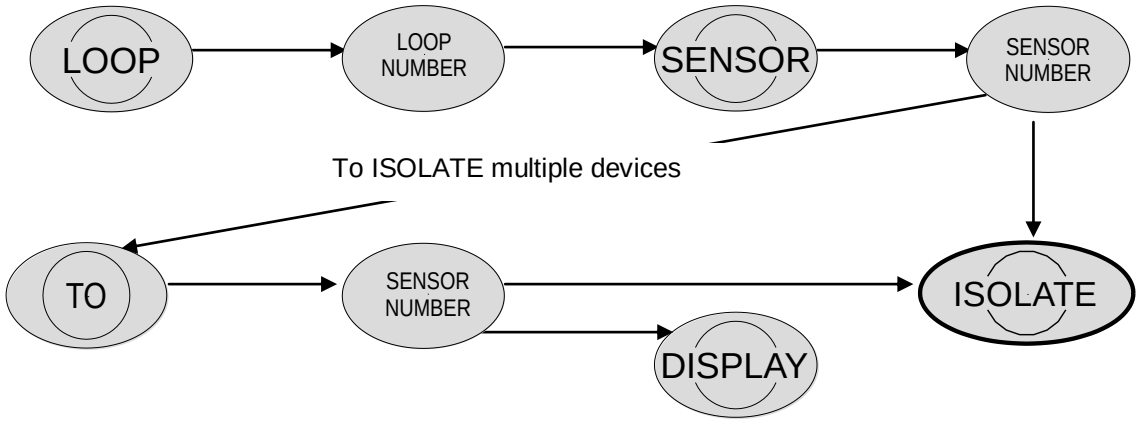
If there is a fault condition or a fire alarm and the buzzer is sounding, press the

button to stop it sounding.

11 Accessing a Loop, Sensor or Zone

LOOP OR SENSOR

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



ZONE

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

12 List of Compatible Devices

Note Q I = Quiescent Current Draw

Conventional Detectors

Heat Detectors *Note: Rate of Rise Heat Detectors are also available.*-

Order Code	Description	Q I	Cct Max
4255-0300	Heat Detector blue Indicating 57°C	40µA	40
4255-0400	Heat Detector yellow Indicating 77°C	40µA	40
Smoke Detectors			
55000-217	Apollo Series 65 Ionisation (LPC)	45µA	35
55000-317	Apollo Series 65 Optical (LPC)	45µA	35
55000-220	Apollo Series 65 Integrating Ionisation (LPC)	45µA	35
45681-200	Apollo Series 60/65 universal base	N/A	
201-0501	Apollo Orbis Optical with Flashing LED	65µA	24
201-0505	Apollo Orbis MultiSensor	65µA	24
201-0528	Apollo Orbis universal base	N/A	
Beam Detectors			
220 0004	Fireray 2000 Beam Detector Tx/Rx/controller	8mA	N/A
220 0005	Fireray 50R Beam Detector	4mA	N/A
220 0006	Fireray 100R Beam Detector	4mA	N/A
Manual Call Points			
213 0042	Ampac Manual Call Point	40µA	40
Beam Detectors			
220 0004	Fireray 2000 beam detector Tx/Rx/controller		
220 0005	Fireray 50R beam detector		
220 0006	Fireray 100R beam detector		
Addressable Devices			
2010001	Apollo XP95 Analogue thermal detector		
2010002	Apollo XP95 Analogue ionisation smoke detector		
2010003	Apollo XP95 Analogue photo optical smoke detector		
2010004	Apollo XP95 Analogue detector base		
2010005	Apollo XP95 Short circuit isolator		
2010006	Apollo XP95 Short circuit isolator base		
201 0094	Apollo Discovery multi element smoke detector		
201 0007	Apollo XP95 input/output device		
201 0010	Apollo XP95 sounder control (loop controlled lamp sounder o/p)		
201 0085	Ampac single input device (S.I.D)		
201 0086	Ampac three input/output device (3 I/O)		
213 0028	Apollo S90 manual call point		
201 0016	Apollo loop sounder and cap		
201 0100	Ampac zone interface device (ZID)		
214 0004	Apollo XP95 DUCT PROBE c/w XP95 detector		
Alarm Indicating Devices			
206-0002	Bell 24VDC Red 150 mm.		
209-0018	Sounder with LED and mute facility.		
205-0006	Horn Siren 24VDC 200mA Red.		
205-0002	AS2W Flush sounder White 12/24V 15mA .		
205-0001	AS2R Flush sounder Red 12/24V 15mA.		
205-0009	Vara white		
205-0010	Vara red		
205-0011	Vector white		
205-0013	Viper white		
205-0014	Viper red		
205-0062	Vantage Sounder AS2220 Evac Tones (Red)		
205-0063	Vantage Sounder AS2220 Evac Tones (White		
205-0066	Vantage Combi Sounder AS2220 Evac Tones (Red)		
205-0067	Vantage Combi Sounder AS2220 Evac Tones (White)		

13 Certification Information

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

AMPAC TECHNOLOGIES PTY LTD

7 Ledgar Road

Balcatta 6021

Western Australia

PH: 61-8-9201 6100

FAX: 61-8-9201 6101

Manufactured to: NZS4512 2003

OPUS Certificate of Compliance Number: _____

Equipment Serial Number: _____

Date of Manufacture: _____

14 Troubleshooting Chart

Problem	Solution
No Mains Power	Check mains Fuse
Supply fault LED illuminated	Check output voltage is 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	Panel needs to be reset
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 contracts.
Sounder Fault	Make sure you have a 10K Ohm EOL resistor fitted and a diode (1N4004) in series with the sounder

15 Binary Address Setting

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

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

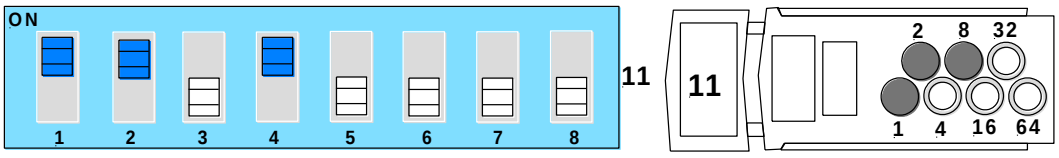


Figure 99: Example of Switch and Apollo Detector Tag set to 11

16 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
VD : DIRECT CURRENT VOLTS
DGP : DATA GATHERING POINT
EARTH : BUILDING EARTH
EOL : END OF LINE
FACP : FIRE ALARM CONTROL PANEL
FDS : FIRE DETECTION SYSTEM
FIP : FIRE INDICATOR 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
PCB : PRINTED CIRCUIT BOARDS
P/S : POWER SUPPLY
PSM : POWER SUPPLY MODULE
REM : REMOTE
SPOT : SINGLE PERSON OPERATING TEST
TB : TERMINAL BLOCK

17 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 that provides an automatic resetting function for spurious alarm signals so that they will not initiate master alarm facility (MAF), or ACF functions inadvertently. Using the configuration manager 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 an emergency warning system to alert 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 fire indicator panel or where sub-indicator panel(s) communicate with a main fire indicator panel.

Factory connections - connections made during manufacture and should not require any field alterations.

Field connections - connections made to FACP or ancillary equipment at the project 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.

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.

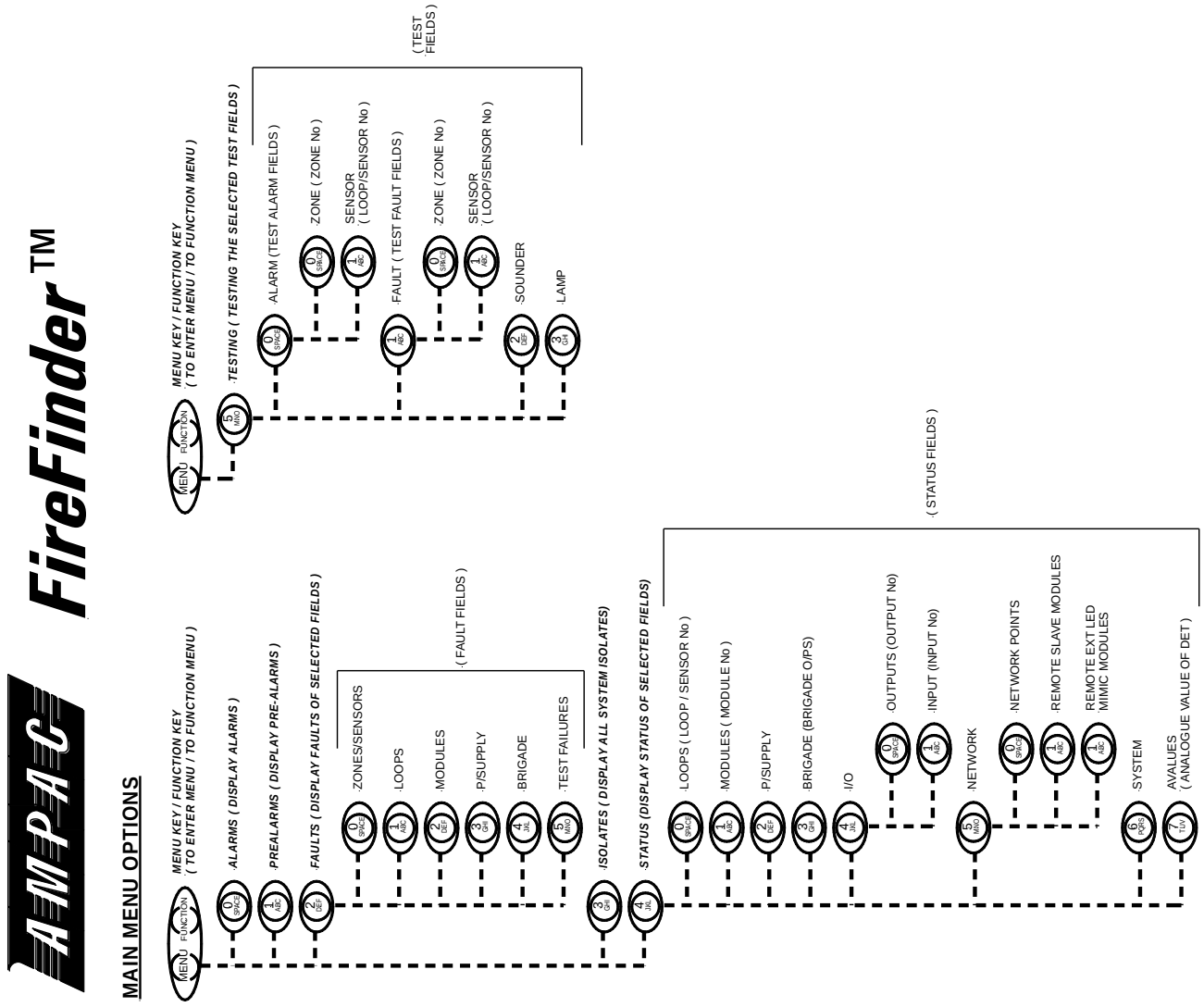
Interface - The interconnection between equipment that permits the transfer of data.

Master Alarm Facility (MAF) - that part of the control and indicating 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 – circuitry which supplies all voltages necessary for operation of the FACP.

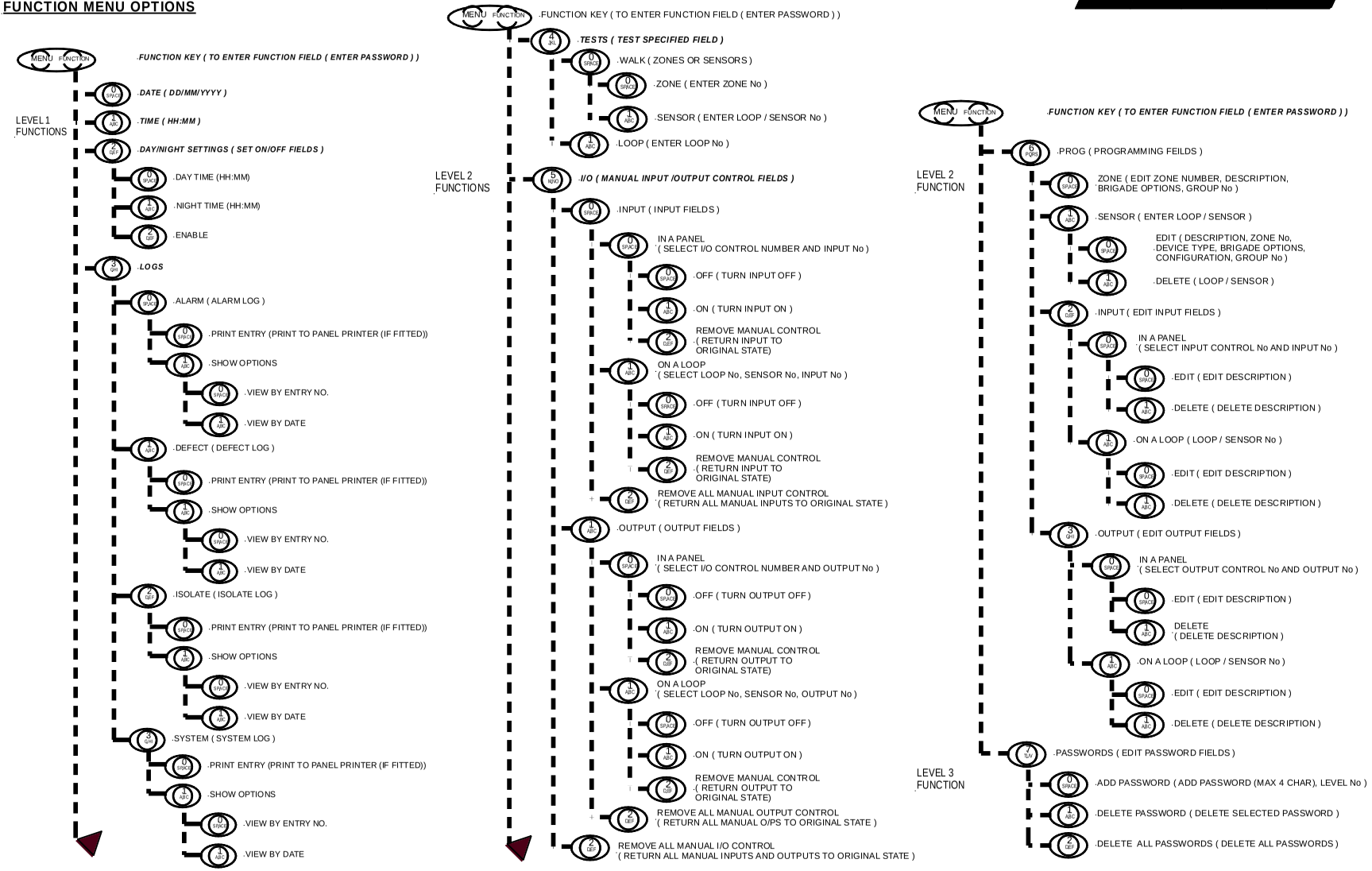
Regulatory Authority - an authority administering Acts of Parliament or Regulations under such Acts.

18 Quick Reference Guides



FireFinder™ Quick Reference

FUNCTION MENU OPTIONS



19 Battery and Power Supply Capacity Calculation

Battery Capacity

Step 1: Calculate the quiescent current of the entire system, quiescent meaning the system has no alarms, faults or isolates and is in the normal state.

Iq = Quiescent Current.

Iq is best calculated by using a simple table as shown below.

List of Boards / Devices	I Drawn mA		Number Off		Total I mA
FACP	200	X	1	=	200
Detectors	0.25	X	30	=	7.5
Devices	10	X	1	=	10
				Total =	217.5
Ancillary Loads		X		=	
Locks	100	X	4	=	400
Relays	20	X	2	=	40
				Total =	440

Note: In some cases it is also advisable to actually measure the current draw to confirm the above calculation.

Step 2: Calculate the ***alarm current Ia***, that is the current draw when the system is alarm plus Iq minus the current not being used by loads that do not consume power during an alarm.

Ia = Alarm Current

List of Boards / Devices	I Drawn mA		Number Off		Total I mA
Sounder	40	X	4	=	160
Bells	80	X	5	=	400
Evac interface	20	X	1	=	20
Fire Control Stn. Interface	20	X	1	=	20
Warning signs	500	X	3	=	1500
				Total =	2100

Step 3: ***Establish Ie*** that is the current draw Iq minus the loads that de-energise on alarm.

List of Boards / Devices	I Drawn mA		Number Off		Total I mA
Aircon relays	20	X	2	=	40
Electric locks	100	X	4	=	400
				Total =	440

Total Alarm Load Ia (mA) = Iq – Ie + Ia in mA
= 657.5 – 440 + 2100
= 2317.5 (or 2.3175 Amps)

Required battery capacity at the end of its life. Note the X *1.25* to meet this requirement.
= (Iq X 24) + (Ia X 0.5) X *1.25*
= (0.658 X 24) + (2.32 X 0.5) X *1.25*
= (15.8 + 1.16) X *1.25*
= 21.2Ah

Rounded UP to the nearest battery available = 25Ah.

Battery Charger Calculation

Battery Charger Requirements = battery charged for 24 hours

Battery Charging Current Required = $\frac{25}{24 \times e}$

Where ***e*** is the efficiency say 0.8 in this example

= 1.3A

Power Supply Requirement

Select the greater of:

(i) Ia + non-battery backed ancillary loads

List of Boards / Devices	I Drawn mA		Number Off		Total I A
Door Holders	50	X	4	=	0.2

= 2.32 + 0.2 = 2.52A

OR

(ii) Iq + non battery backed quiescent loads

List of Boards / Devices	I Drawn mA		Number Off		Total I A
Door Holders	50	X	6	=	0.3

= 0.658 + 0.3 = 0.958A

In this case the required power supply rating is 2.52A

Where the power supply is also used as the charger, the battery charger requirement MUST be added to the minimum power supply requirement to obtain the minimum power supply requirement.

In this case the requirement would be;

= Ia + battery charger requirement
= 2.52 + 1.3
=3.82A

UNCONTROLLED DOCUMENT

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