F3200
FIRE INDICATOR PANEL
INSTALLATION & PROGRAMMING MANUAL

F3200 PRODUCT MANUAL

Document Number: LT0122

Issue .... 2.7; 5 July 2001

-- A P P R O V A L S --

AUSTRALIAN STANDARD AS1603.4 1987 (Incl. Amdt 1 & 2)
AUSTRALIAN STANDARD AS4050(INT) 1992
- SSL Listing Number afp789
AUSTRALIAN STANDARD AS3548 1995 Class A

The F3200 Fire Indicator Panel is manufactured for

Tyco Services Fire & Safety
25 Cleeland Road
Oakleigh South
VIC 3167
AUSTRALIA

Tel : +61-3-9543 2220
Fax : +61-3-9543 2155

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The F3200 Fire Indicator Panel has a configuration programming facility which may be accessed from the keypad by using a password.

This programming facility allows the user to define detail of the operation of the F3200 System which is being customised. It is possible for the user to program operational features that prevent the installed FIP from meeting statutory requirements.

Tyco Services Fire & Safety does not accept responsibility for the suitability of the functions programmed by the user.

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AMENDMENTS

ISSUE	DATE	COMMENTS	ECN
1	20/04/94	Original. Corresponds to V1.10 software, which includes RZDUs, multiple access codes, revised print menu, NSW Coder, Programmable Alarm Text, Inst Alarm Text (not in V1.01)	
2	30/01/95	Was WP5.1. Upgraded for small FIP,6A PSU. Upgraded ordering info, AS1668 Application, Detector List and added I.S.(9.4). Also some corrections.	2162
2.1	01/02/96	Auto-Test Disable note added to 6.4.4. Note 10 (Pg A-5) modified. Table III updated. Applications note 9.5 added. PA0443 added to Ordering Info P4-5.	2360
2.2	16/04/96	Deleted paragraph headed "C29BEx" in Section 9.4.3.4.	2417
2.3	01/12/97	F3200 V2.00 software release. Chapters 6, 7 modified. Network programming Chapter 11 added. Daylight saving, output logic control of zone LEDs, selectable event types for history and printing, database verify, database CRC recall. Controller Board was 1931-2-1.	2620 2709
2.4	09/04/98	Section 1.3.2 add V2.01-V2.04 details. "Minute" timers 65-72, Section 3.8. Section 4.1 new part numbers, Figs 6.1.2 and 7.1.1. Fault Action Text & PC Programming Section 6.4.3. RDU zone name transmission Section 7.6. Output logic commands for zone isolate, zone de-isolate, and zone reset, Section 7.4.9. RDU wiring Section 8.8. Add AS/NZ 3548 Class A warning.	2742
2.5	22/03/99	V2.06 software. Section 1.3 add V2.06. Section 6.4.4 Bells/Ancil Isol key disabling; mains frequency 50/60Hz. Section 11.3.5, 11.11, 11.12 ACK Broadcast Specific SID. System Configuration Sheets Page 2 and Network Parameters.	2937
2.6	14/06/00	Corresponds to V2.07/V2.08 software. Changes throughout but mainly Sections 5.5, 5.6, 6.3.7, 6.4.4 and Chapters 12 and 13 added.	3079
2.7	05/07/01	Corresponds to V2.09 software. New buzzer mode & sounder silence options in Chapter 6. Sect 7.2.4 change to SAD type. Section 7.4.6 SNA option new. Section 7.5 Relay supervision. Appendix A Simplex detectors. Appendix B modified. Section 3.3.5.2 NDU Quiescent current added. Section 12.8 NZ mode installation added. Chapter 8 Installation revised and Section 9.2 Gas Flood revised. Complete re-print.	3165 3154

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CHAPTER 1
INTRODUCTION

1.1 SCOPE

This manual provides information for the personnel responsible for planning, ordering, installing and programming an F3200 Fire Alarm System. It is assumed that such staff have been trained to plan/install fire alarm equipment and are familiar with the relevant standards.

The manual is divided into the following chapters:

Chapter 1 Introduction: Information on this manual.

Chapter 2 System Description: A description of the structure of the F3200 FIP.

Chapter 3 Specifications: A detailed specification for the F3200 FIP.

Chapter 4 Ordering Information: Part numbers for the various system components.

Chapter 5 Configuring a FIP: General information and detail on fitting of various links and resistors when configuring a system.

Chapter 6 Programming: An introduction to programming and a description of the programming menus and global parameters.

Chapter 7 System Configuration: Detail on specific programmable options in the FIP I/O.

Chapter 8 Installation & Wiring: Detail of installation and field wiring.

Chapter 9 Applications: Detail of configuration and wiring for specific applications.

Chapter 10 Alignment, Adjustment & Placing Into Operation: Detail on how to adjust an F3200 in the field and place it into operation.

Chapter 11 Networking: Detail on programmable options for networked F3200s and NDUs.

Chapter 12 NZ Operation: Describes operation of the NDU in NZ mode.

Chapter 13 Tandem LCD Mode: Describes operation of Tandem LCD mode.

Appendix A
1. Compatible Detectors: A list of detectors which are approved for use with F3200.
2. Detector Configuration: Detail on AZC and zone configuration for specific detector types.

Appendix B Configuration Forms: A set of master forms for recording programming detail.

1.2 ASSOCIATED DOCUMENTATION

1.2.1 PRODUCT

Additional information on the AS1603.4 approved F3200 FIP is found in the following product manuals.

F3200 Operator's Manual	A guide to the operation and maintenance of the F3200 FIP. Part Number LT0119 is a loose A4 version. Part Number LT0120 is a bound A5 version.
F3200 Technical Manual	A technical description of the F3200 system and modules. Part Number LT0121.
F3200 Installation & Programming Manual	This manual. Part Number LT0122.
F3200 Panel-Link Upgrade and Installation Manual	Upgrade instructions on how to make the F3200 panel network capable. Part Number LT0198.

Information on the AS4428.1 approved F3200 is found in the following manuals:

F3200 AS4428.1 Operator's Manual	For panels that comply with AS4428.1 LT0251 is in A4, loose leaf form. LT0250 is in A5, bound form.
F3200 AS4428.1 Installation & Configuration Manual	Provides information for designing, installing and commissioning an F3200 and NDU. Part Number LT0255.
F3200 AS4428.1 Programming Manual	Provides information for programming an F3200 and NDU. Part Number LT0256.

1.2.2 STANDARDS

This manual makes reference to the following Australian and New Zealand Standards:

AS1603.4	Automatic Fire Detection and Alarm Systems Part 4 - Control and Indicating Equipment.
AS4050 (int)	Fire Detection and Fire Alarm Systems - Fire Fighter's Control and Indicating Facilities.
AS1668	SAA Mechanical Ventilation and Airconditioning Code.
AS1670.1	Automatic Fire Detection and Alarm Systems - System Design, Installation and Commissioning.
AS4428.1	Fire Detection, Warning, Control and Intercom Systems - Control and Indicating Equipment Part 1 : Fire
NZS4512	Automatic Fire Alarm Systems in Buildings

1.3 PRODUCT HISTORY LOG

1.3.1 HARDWARE

Part No.	Description	Iss	Rev	Date	Drawing
PA0490	Controller/ Display	A	1	11/11/93	1931-2
		A	2	24/02/94	
		A	3	16/06/94	
PA0491	MAF/PSU	A	1	13/10/93	1931-3
		B	2	28/02/94	
		B	3	10/06/94	
		B	4	21/02/95	
		B	5	14/05/97	
		C	6	11/11/97	
		D	9	14/05/01	
PA0492	8 ZONE MODULE	A	1	27/09/93	1931-4
		A	2	29/04/99	
PA0493	8 RELAY MODULE	A	1	10/09/93	1931-5
		A	2	22/09/99	
PA0773	RS485 Comms Bd	C	4	10/04/01	1901-139
PA0797	F3200 Controller/ Display	B	3	04/02/99	1931-84-1
		C	4	02/05/00	
PA0804	F3200 Networkable Controller/ Display	B	2	29/09/97	Used as replace-ment board for all F3200/NDU panels 1931-84-1
		C	4	02/05/00	

1.3.2 SOFTWARE

Part No.	Description	Revision	Date	Comments
SF0089	F3200 EPROM	V1.00	12/12/93	Pre-production
SF0089	F3200 EPROM	V1.01	24/02/94	1st production
SF0089	F3200 EPROM	V1.10	13/05/94	Includes RZDU, multiple access, etc.
SF0164	F3200 EPROM	V2.00	Nov. 1997	Networking
SF0175	NDU EPROM	V2.00	Nov. 1997	First Release
SF0178	F3200 EPROM	V2.00	Nov. 1997	Non-networking
SF0164	F3200 EPROM	V2.01	Feb. 1998	F3200 Networked
SF0175	NDU EPROM	V2.01	Feb. 1998	
SF0178	F3200 EPROM	V2.01	Feb. 1998	Non-Networked
SF0178	F3200 EPROM	V2.02	Mar. 1998	Non-Networked
SF0164	F3200 EPROM	V2.03	April 1998	F3200 Networked
SF0175	NDU EPROM	V2.03	April 1998	
SF0178	F3200 EPROM	V2.03	April 1998	Non-Networked
SF0164	F3200 EPROM	V2.04	August 1998	Networked
SF0175	NDU EPROM	V2.04	August 1998	
SF0178	F3200 EPROM	V2.04	August 1998	Non-Networked
SF0164	F3200 Net EPROM	V2.05	Feb 1999	
SF0175	NDU EPROM	V2.05	Feb 1999	
SF0178	F3200 Std EPROM	V2.05	Feb 1999	

SOFTWARE HISTORY LOG (CONTINUED)

SF0164	F3200 Net EPROM	V2.06	Mar 1999
SF0175	NDU EPROM	V2.06	Mar 1999
SF0178	F3200 Std EPROM	V2.06	Mar 1999
SF0229	F3200, Std Panel, c/w Tandem	V2.07	May 2000
SF0230	F3200, Networked, c/w Tandem	V2.07	May 2000
SF0231	NDU, c/w Tandem	V2.07	May 2000
SF0229	F3200, Std Panel, c/w Tandem	V2.08	July 2000
SF0230	F3200, Networked, c/w Tandem	V2.08	July 2000
SF0231	NDU, c/w Tandem	V2.08	July 2000
SF0229	F3200, Std Panel, c/w Tandem	V2.09	May 2001
SF0230	F3200, Networked, c/w Tandem	V2.09	May 2001
SF0231	NDU, c/w Tandem	V2.09	May 2001

1.4 GLOSSARY OF ABBREVIATIONS

The following abbreviations are used throughout this manual:

A/C	:	Air Conditioning
ac	:	Alternating Current
AEOL	:	Active End of Line
AHr	:	Ampere Hour
ANC 1	:	Ancillary Relay 1
AZC	:	Alarm Zone Circuit, or Detection Zone
AZF	:	Alarm Zone Facility, or Group
AVF	:	Alarm Verification Facility, or Check Alarm
Bd	:	Board
CIE	:	Control & Indicating Equipment
Char	:	Character
CCT	:	Circuit
COM	:	COMMON relay contact
dc	:	Direct current
EEPROM	:	Electrically Erasable Programmable Read Only Memory
ELV	:	Extra Low Voltage
EOL	:	End Of Line (device)
EOLR	:	End of Line Resistor
Expn	:	Expansion
E2	:	Electrically Erasable Programmable Read Only Memory ....
FFCIF	:	Fire Fighter's Control & Indicating Facility
FIP	:	Fire Indicator Panel
FRC	:	Flat Ribbon Cable
I/O	:	Input/Output
LCD	:	Liquid Crystal Display
LED	:	Light Emitting Diode
MAF	:	Master Alarm Facility
Max	:	Maximum
Min	:	Minimum
MCP	:	Manual Call Point (Break Glass Switch)
MOV	:	Metal Oxide Varistor (Used for Surge Protection)
msec	:	Millisecond
NC	:	Normally Closed
NO	:	Normally Open
No	:	Number
Nom	:	Nominal
PC	:	Personal Computer (small computer)
PCB	:	Printed Circuit Board
PSU	:	Power Supply Unit
PTC	:	Positive Temperature Co-efficient (Thermistor)
R1	:	Module Relay Number 1 (program abbreviation)
RL1	:	Module Relay Number 1 (text abbreviation)
RAD	:	Return Air Duct (Air Conditioning Plant)
RMS	:	Root Mean Square
Reqd	:	Required
RTC	:	Real Time Clock
RZDU	:	Remote Zone Display Unit
SAD	:	Supply Air Duct (Air Conditioning Plant)
SID	:	System Identification Number (Network device)
sq mm	:	square millimetre
T1	:	Programmable Timer Number 1 (program abbreviation)
Tmnl	:	Terminal
V1	:	Programmable Variable Number 1

GLOSSARY OF ABBREVIATIONS (CONTINUED)

VA	:	Volts Amperes
VB	:	Battery Backed Voltage
VNB	:	Non Battery Backed Voltage
+VBF	:	Fused Battery-Backed Voltage
+VNBF	:	Fused Non-Battery-Backed Voltage
Z1	:	Zone Number 1 (program abbreviation)
Zn1	:	Zone Number 1 (text abbreviation)
8RM	:	8 Relay Module
8ZM	:	8 Zone Module

1.5 GLOSSARY OF TERMINOLOGY

The following terminology is used throughout this manual:

Ancillary Equipment	:	Equipment external to Fire Alarm system
Ancillary Relay	:	Relay in FIP which operates Ancillary equipment
Auto-Reset	:	Mode for one person testing of detectors
Auxiliary Output	:	Output for driving additional LEDs/relays
Baud	:	Bits per second
Control Output	:	Output from FIP to other equipment
Default	:	Pre-programming option or logic equation i.e. one that exists without the user programming it.
Detector	:	Alarm Detection Device (electrical transducer)
Fire Control Station the	:	Fire Brigade Authority, or any other authority which receives FIP alarm signals.
Mapping	:	Programmable causal relationship between inputs and outputs
Zone	:	Fire searchable area of building represented by a unique number and name in the FIP, and associated with the AZC of the same number.

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CHAPTER 2
SYSTEM DESCRIPTION

2.1 OVERVIEW

2.1.1 GENERAL

The F3200 is a self-contained, modular, intelligent Fire Indicator Panel (FIP) which performs the functions of the Control and Indicating Equipment (CIE) as specified by the Australian Standard AS1603.4 Automatic Fire Detection and Alarm Systems.

It is also available in formats that comply with AS4428.1. Refer to the relevant manuals that apply to the AS4428.1 approved products.

The F3200 has a high degree of flexibility and expandability, catering for medium to very large buildings from 8 zones or less, to 64 zones maximum. Refer to the constraints specified in Section 3.1.3. More panels and zones can be added through the use of the Vigilant Panel-link Network and the appropriate networkable F3200s.

This manual is also used for the installation of an NDU (Network Display Unit). NDU operation is described in Section 11.11. An NDU may be programmed to operate in either Australian mode (default) or New Zealand mode, and the operation of an NDU in New Zealand mode is described in Chapter 12.

2.1.2 DETECTOR CIRCUITS

The F3200 detector interface electronics caters for a wide range of detectors, including various types which have high alarm current requirements. It also caters for interfacing to:

Intrinsically safe circuit barriers/isolators (hazardous areas).
Long line circuits e.g. from a sub-indicator FIP.
Tamper-proof circuits e.g. for water valve supervision.

A full range of compatible detectors is listed in the Appendix A.

2.1.3 DISPLAYS

The primary display of the F3200 is a 2 line by 40 character LCD on which status messages and prompts are shown. The LCD has backlight illumination which is turned on when there is an alarm or operator interaction.

Common conditions such as zone ALARM, ISOLATED and FAULT, and various system states such as BELLS ISOLATED are displayed on LEDs adjacent to the LCD.

The display panel composed of the LCD, LEDs and operator keypad meets the requirements of AS4050 (int) for a Fire Fighter's Control and Indicating Facility (FFCIF).

As an optional extra, individual zone status (ALARM, ISOLATE and FAULT) can be displayed on LEDs by fitting the appropriate number of 16 Zone LED Display Bds.

The F3200 electronics includes, as standard, an open collector transistor output for each zone which can be used to drive an internal or remote mimic display.

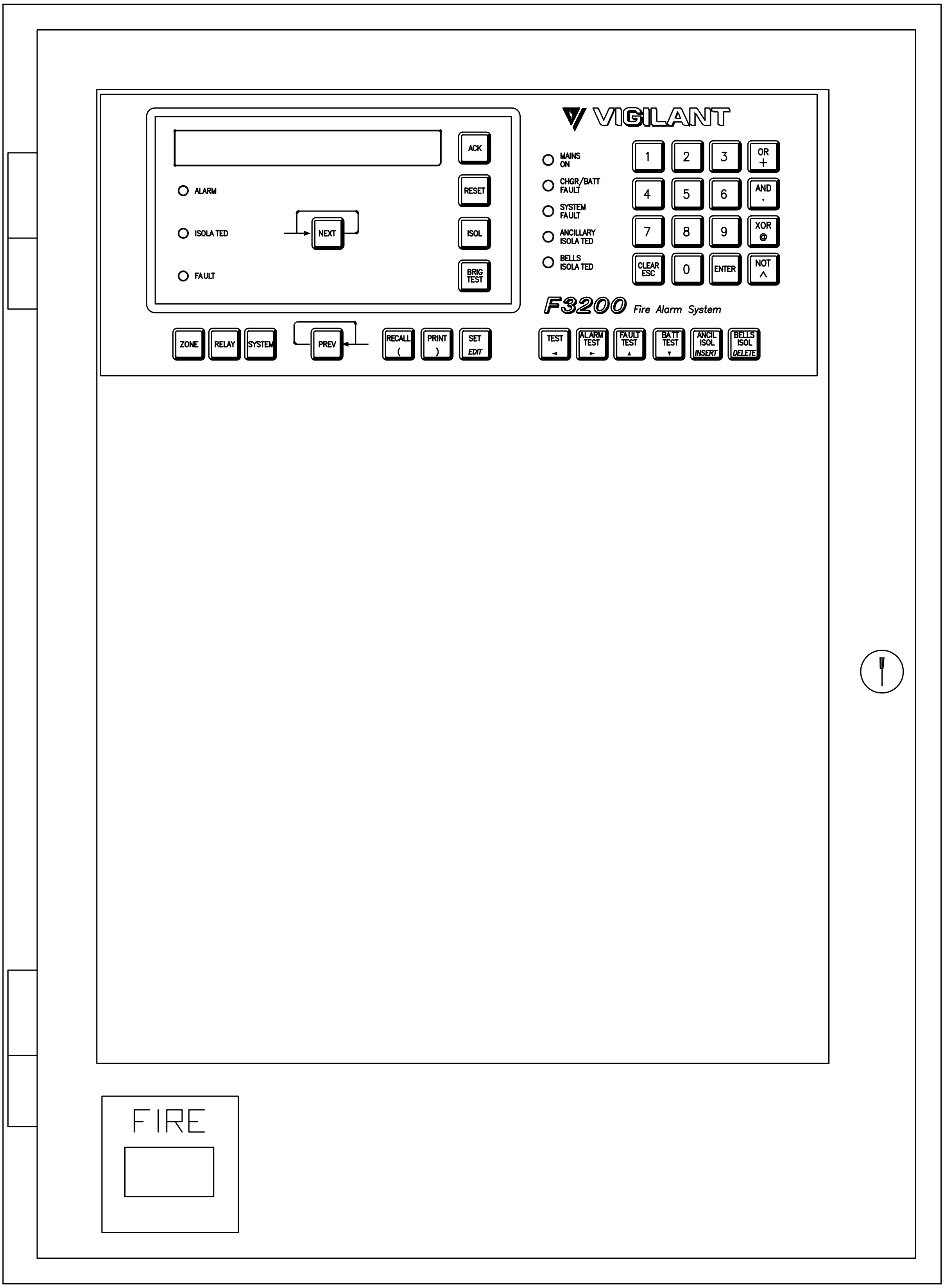


FIG 2.1.1

F3200, STANDARD CABINET - FRONT VIEW

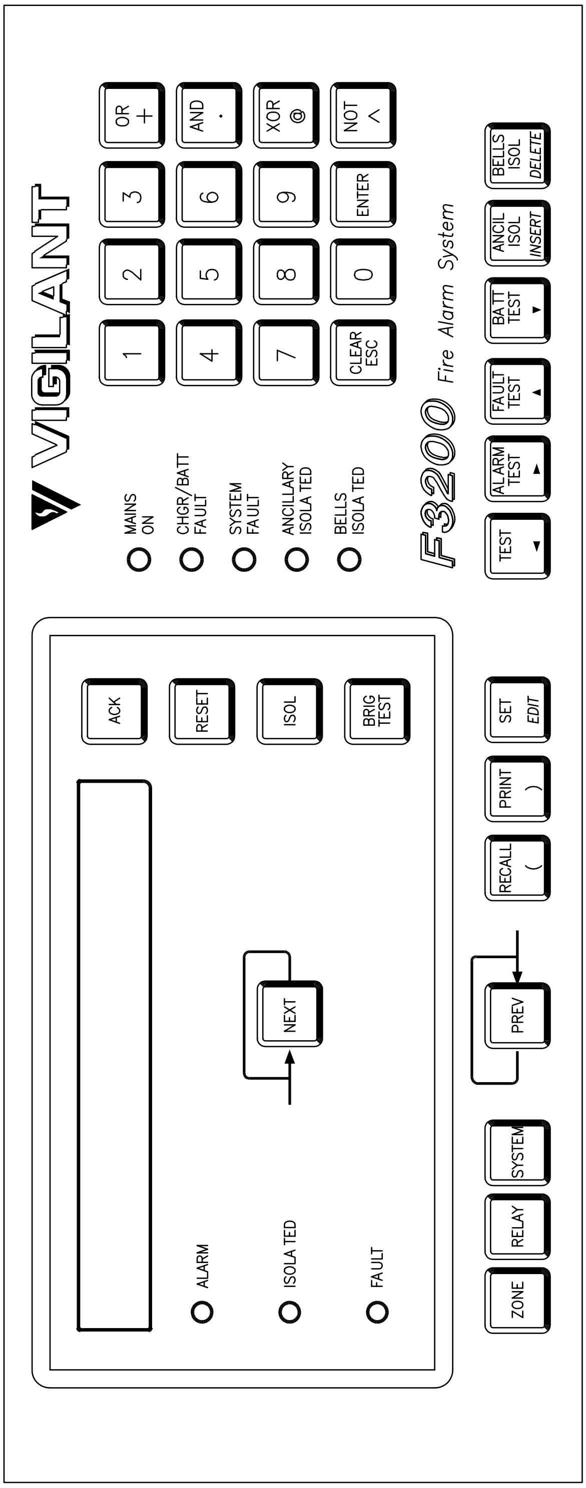


FIG 2.1.2
F3200 OPERATOR DISPLAY PANEL

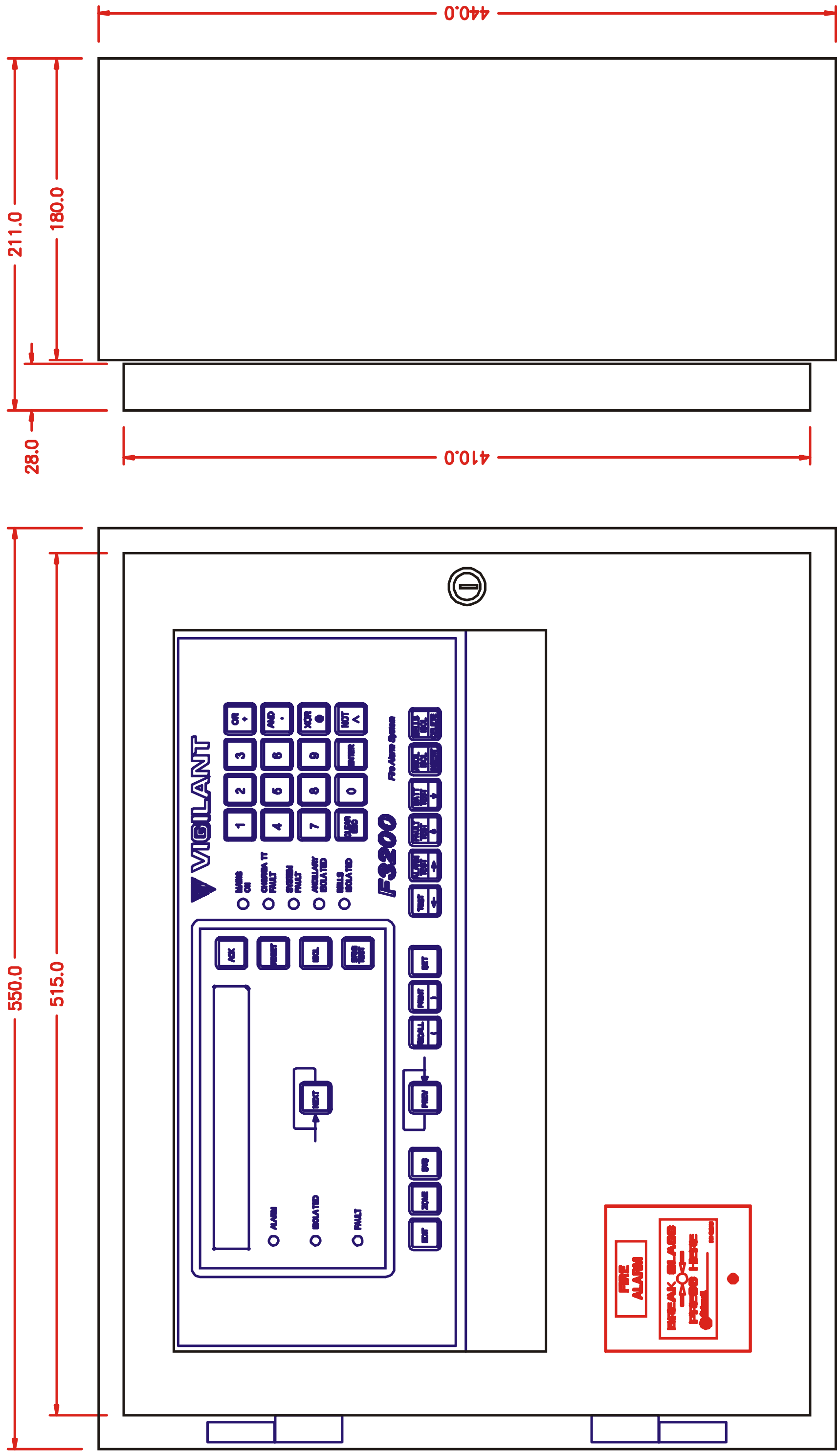


FIG 2.1.3
<u>F3200 - SMALL CABINET</u>

2.1.4 OUTPUTS

The F3200 MAF/PSU Module provides 7 relays as standard. These are used for signalling to the Brigade (Fire Control Station) and for switching alarm bells and ancillary equipment such as door holders, airconditioning shutdown, etc.

When more than 7 relays are required, additional sets of 8 can be added by fitting 8 Relay Modules.

All outputs, including the open collectors on the 8 Zone Modules, are individually programmable by a logic equation of zone and FIP status.

2.1.5 POWER SUPPLY

The F3200 has a 3 Amp battery charger/power supply as standard. There is adequate room for large batteries.

An optional 6 Amp battery charger/power supply is available. This is factory fitted, but is not available in the small cabinet FIPs.

Fuse protected battery backed and non-battery backed supplies are available to power external loads such as bells, illuminated signs, interposing relays, gas release solenoids, door holders, etc.

2.1.6 REMOTE DISPLAY & PRINTER

A serial port is included in the F3200 to provide a 3 or 4 wire link to a Remote Zone Display Unit (RZDU). Several versions of F3200 remote displays are available, including the small, Remote LCD unit.

The F3200 also has a serial port to drive a logging printer, which records all events as they occur, with time and date. Logging of relay events is programmable. For network systems, events from other selected devices on the network may be logged into the history and printed on the local printer, and events generated locally by this system may be printed by some other device on the network.

2.1.7 NETWORKING

Networking of F3200s allows the sharing of zone, event and alarm information, the ability to remotely control other F3200s, and, overall, the expansion of an F3200 system beyond 64 zones.

Networking is achieved through a different software version and the fitting of an RS485 Communications board.

2.2 PHYSICAL STRUCTURE

The F3200 has a rugged, lockable painted steel cabinet, which houses 19 inch rack-mount equipment and comes in two height options (both have the same width and depth). The standard cabinet accommodates 15U total and the small cabinet accommodates 8U (where 1U = 1 3/4" = 44.5mm).

The Operator Display has a screened, polyester overlay mounted on a hinged inner door fitted to the top 4U position. The Controller/Display pcb mounts directly to the rear of this door.

Standard Cabinet

In the standard cabinet the space below the 4U Operator Display panel is covered by a blanking plate, but there is provision for mounting other equipment (e.g. a 7U hinged inner door for a mimic, or 16 Zone LED Display Bds), in place of this blanking plate.

There is provision for mounting additional equipment in the bottom 4U (e.g. an AS1668 control rack), but this would encroach on battery space.

The outer door has a large acrylic window to allow viewing of the equipment inside.

Four versions of FIP are available in this cabinet. The FP0551, which caters for up to 64 zones, has a cardframe fitted to the rear wall as shown in Fig 2.2.1. The FP0550 has provision (pcb stand-offs) for mounting up to three 8 way modules (i.e. 3 x 8 Zone or 8 Relay Modules) on the rear wall. Both are supplied with 1 8 Zone Module fitted.

Versions of these two FIPs are also available with a 6 Amp power supply:

FP0713 (8 module capacity), and FP0712 (3 module capacity).

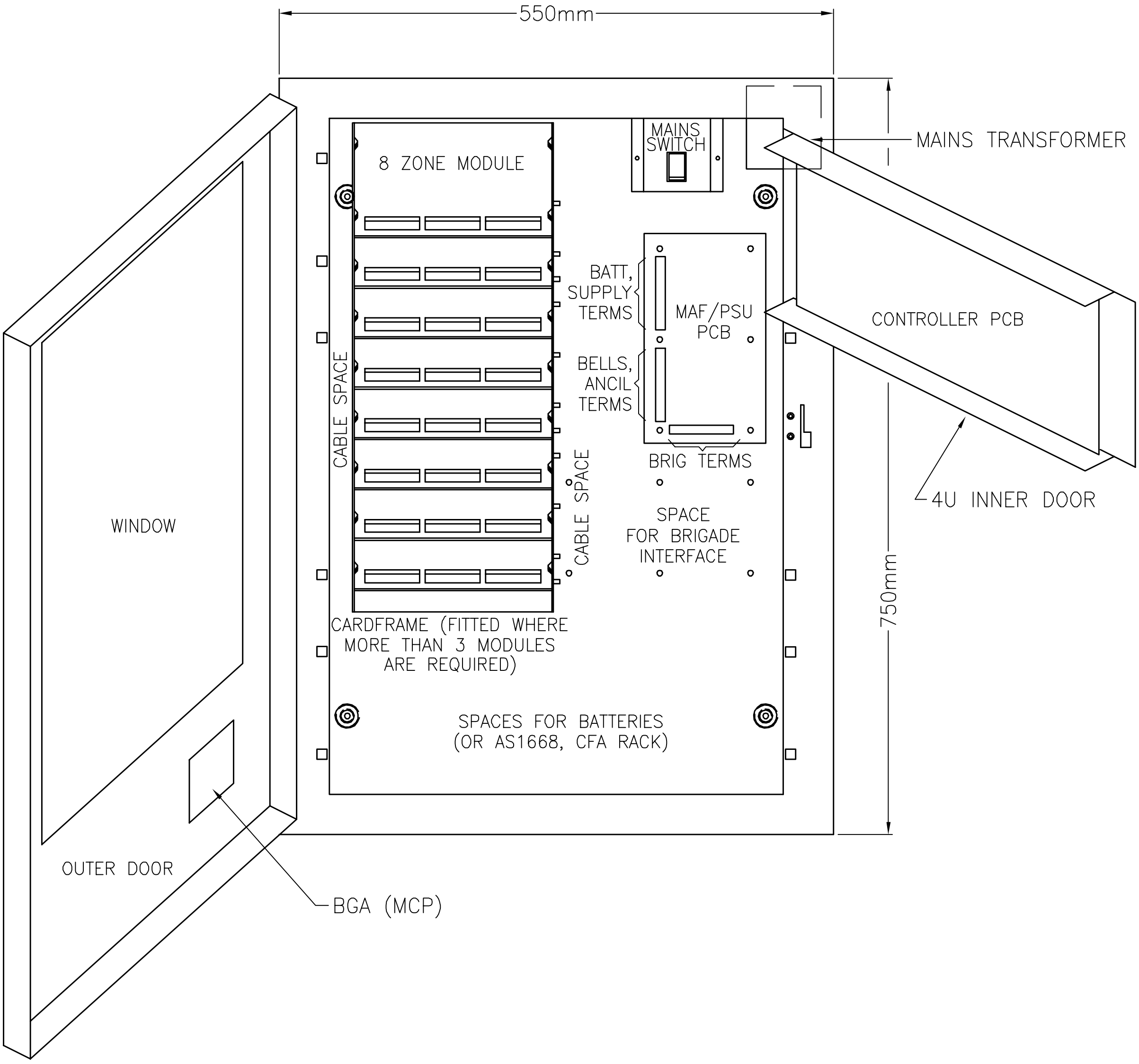
Small Cabinet

In the small cabinet, only 1U (of the 4U) below the 4U Operator Display is visible through the outer window. The gap is covered by a blanking plate (2U), which can be replaced by a bracket for mounting a limited range of equipment, eg. a 1U AIU bracket, or a 1U 1 Zone Gas Control Panel.

A 6A PSU or a 7U LED Display door cannot be fitted.

Up to four 8 way modules can be mounted on the rear wall, but the bottom two of these share space with the batteries. Mounting arrangement and maximum capacity are shown in Fig 2.2.2.

Only one FIP is available (FP0583), and this comes with one 8 Zone Module fitted (in the top left position).



Note: FP0551 and FP0713 have the cardframe as shown.
FP0550 and FP0712 have the modules (3 max.) mounted on the rear wall.

FIG 2.2.1
F3200 STANDARD CABINET - INTERNAL LAYOUT

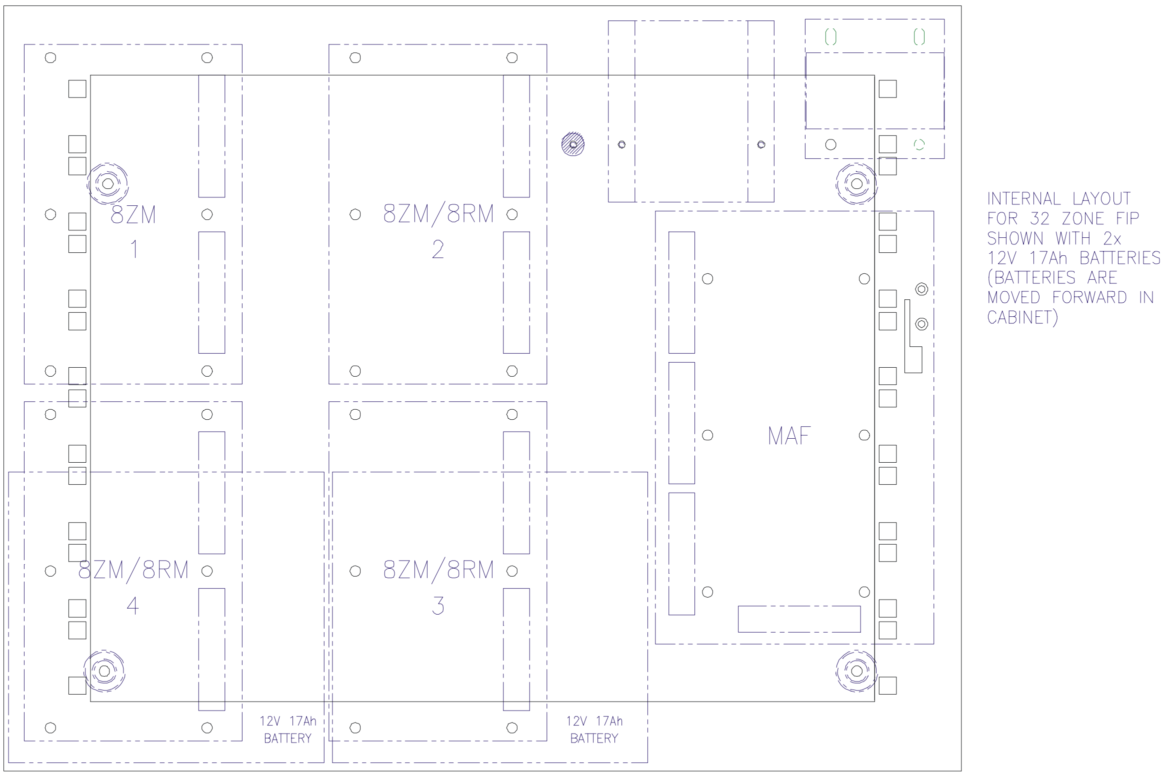


FIG 2.2.2
F3200, SMALL CABINET, MAXIMUM CONFIGURATIONS

2.3 SYSTEM STRUCTURE

2.3.1 PCB MODULES

The 6 printed circuit boards which are used in an F3200 are as follows:

Controller/Display

Mounts on 4U inner door.

Includes: LCD, status LEDs and buzzer
keypad connection
5Vdc supply
voltage monitors for battery charger
microprocessor & memory
serial I/O bus control for all other modules
reference voltage generation for I/O modules
UARTs and serial port electronics
real time clock calendar integrated circuit
FRC connection to other modules.

MAF/PSU

Mounts on cabinet rear wall.

Includes: battery charger/PSU
22V regulator for detector circuits
Brigade & Ancillary relays and supervision circuitry
MCP & door switch inputs
screw terminals (most demountable) for field wiring
FRC connection to other modules.

8 Zone Module

Mounts on cabinet rear or in cardframe.

Includes: electronics to I/F to 8 Alarm Zone Circuits (AZCs)
8 open collector auxiliary outputs
demountable screw terminals for field wiring
FRC connection to other modules.

8 Relay Module

Mounts on cabinet rear or in cardframe.

Includes: 8 relays and supervision circuitry
demountable screw terminals for field wiring
FRC connection to other modules.

16 Zone LED Display

Mounts on 7U inner door.

Includes: 16 sets of 3 LEDs
electronics to control the LEDs (serial bus)

RS485 "Panel-Link" Network Board

Connects to the Controller/Display Board

Includes: RS485 Board used for connection to the Vigilant Network.

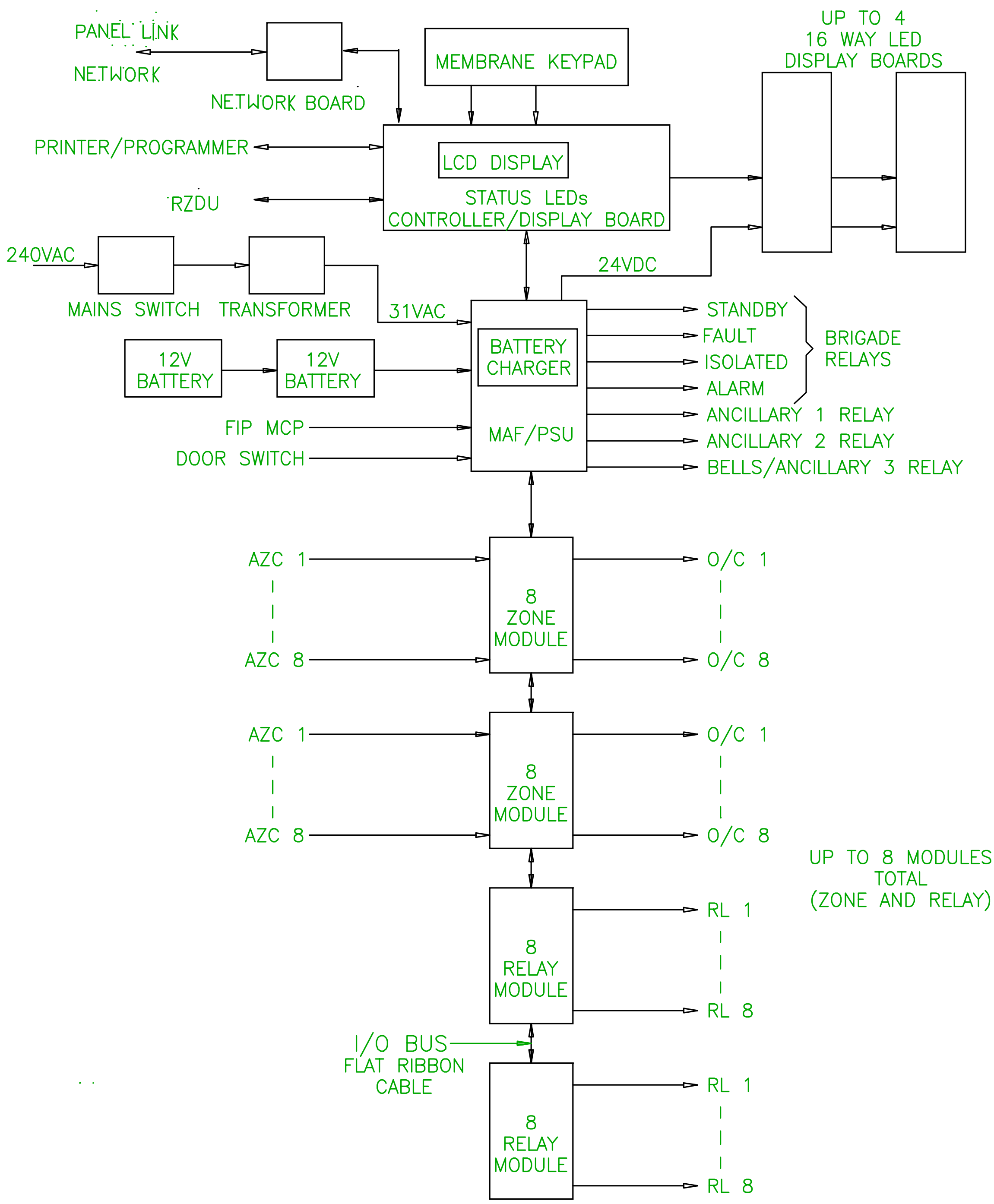


FIG 2.3.1
SYSTEM STRUCTURE

2.3.2 INTER-CONNECTION & STRUCTURE

A basic F3200 system has one Controller/Display, one MAF/PSU, and one 8 Zone Module, all connected by Flat Ribbon Cable (FRC) on a common Input/Output (I/O) Bus.

Additional 8 Zone Modules and/or 8 Relay Modules can be fitted to the I/O bus, with a maximum of eight 8 way modules. This is shown in the block diagram of Fig 2.3.1.

The physical maximums are:
- three 8 way modules in an FP0550 or FP0712.
- four 8 way modules in an FP0583 (with restrictions)
- eight 8 way modules in an FP0551 or FP0713.

Expansion is from top to bottom.

The I/O Bus Out of one module connects to the I/O Bus In of the next module via the 20 way FRC provided (LM0053).

No link or "End of Bus" is required on the last module because the data from the furthest output shift register is fed into the furthest input shift register via the wrap-around resistor as shown in Fig 2.3.2.

Refer to Section 3.1.3 Specifications for detail on the structural arrangement of AZCs and relays.

To further extend these capabilities, up to 64 F3200s may be networked together, with full sharing of information and remote control of each panel by a master panel.

16 Zone LED Display bds are driven from a separate serial bus on the Controller/Display. They receive power from the MAF/PSU via two power leads. Where more than one is required they are connected in series (up to 4 maximum) from right to left (as viewed from the front) on the FIP. The 26 way FRC from J13 of the Controller goes to J1 ("From Previous") of the right hand Display Bd. Zone 1 (default) corresponds to the top LEDs on the left hand Display Bd. The last board requires the "end of bus" minijump connector to be fitted. Note that a special FRC cable is required to connect the Controller Board to the first Display Board (LM0092).

Where LED Display bds are fitted, the default programming requires one Display bd (16 zones) for every two 8 Zone Modules, i.e. one for 1-16 zones, two for 17-32 zones, etc.

Zone 1 corresponds to the top row of 3 LEDs on the left most Display. Zone 2 to the row below it, etc, (top to bottom, left to right).

LED Display bds may also annunciate relay status, i.e. Alarm <-> relay energised, Isolated <-> relay isolated, Fault <-> relay wiring fault (i.e. supervision fault).

The default programming for displaying both zone and relay status requires one Display bd for every two 8 way modules (zone and relay).

INTER-CONNECTION & STRUCTURE (CONTINUED)

The relay LEDs simply follow the zone LEDs in the same order that they occur in the modules. E.g. a system with three 8 Zone Modules and two 8 Relay Modules would require 3 Display bds. Relay 1 would be annunciated on the 25th row of LEDs and the last 8 rows would be unused as shown in Fig 2.3.3.

Mapping zones and relays to LEDs in other patterns is programmable.

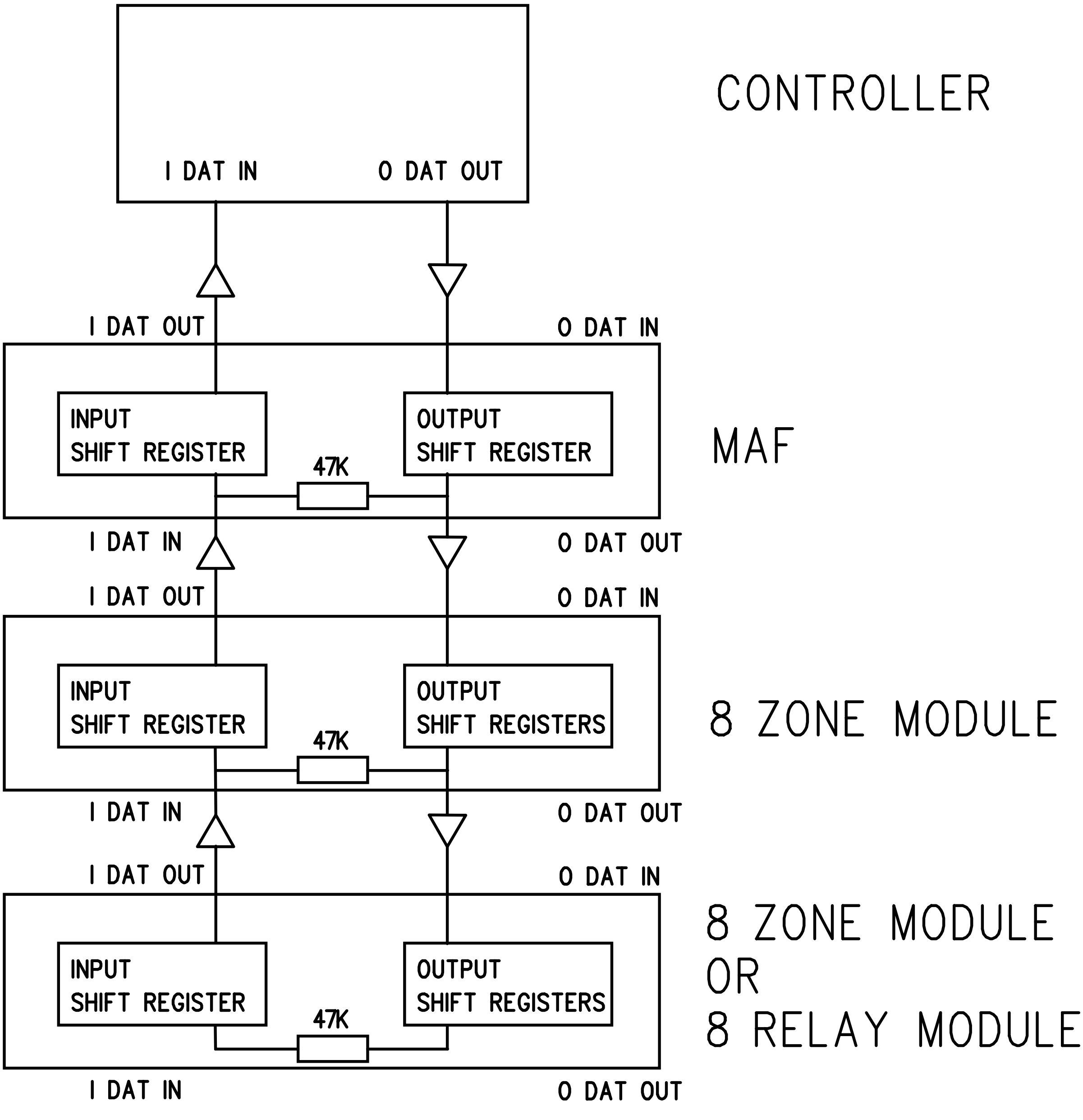


FIG 2.3.2
SERIAL DATA FLOW IN THE I/O BUS

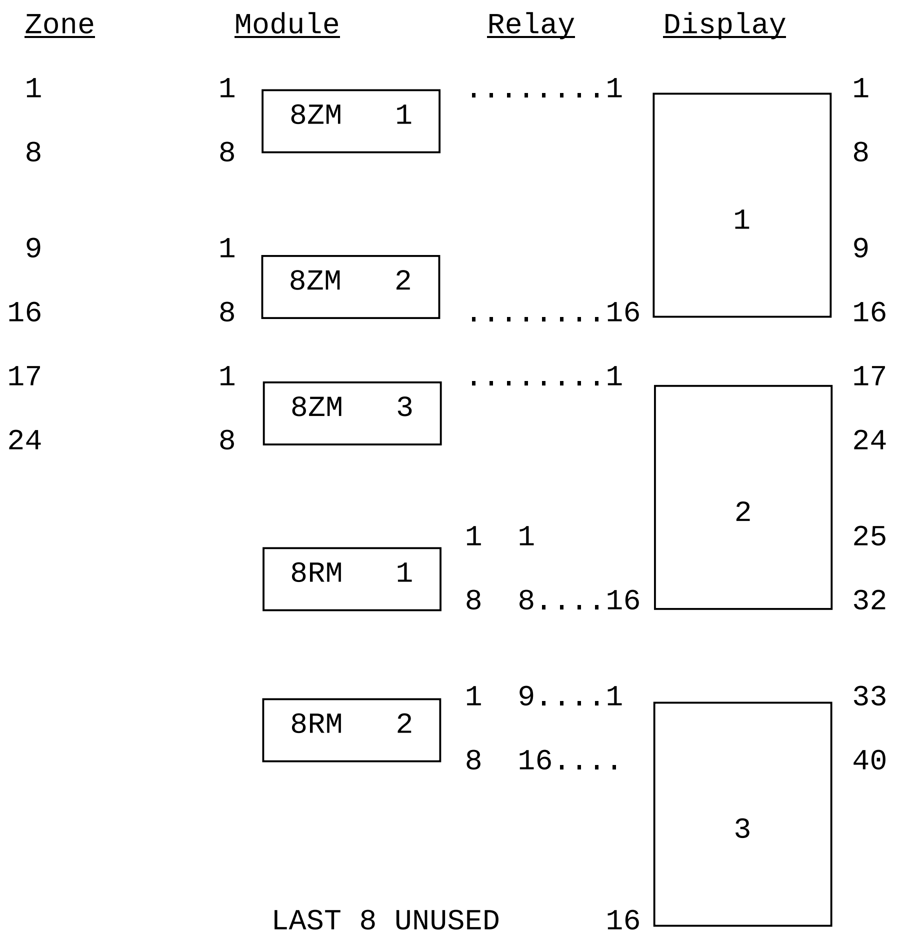


FIG 2.3.3
DISPLAY STRUCTURE
(DEFAULT MAPPING)

EXAMPLE FOR SYSTEM WITH 3 8ZM & 2 8RM

The F3200 can be configured to have a lesser number of Display Bds than required by the default structure, with selective mapping of zones/relays to Display LEDs.

CHAPTER 3
SYSTEM SPECIFICATIONS

3.1 GENERAL

3.1.1 FIP PART NUMBER & DESCRIPTION

Refer to Section 4 also.

FP0550, F3200 FIP, NO CARDFRAME, 24 ZONE MAX, 1931-15
Includes: Full size cabinet (ie. standard cabinet)
Controller/Display with FFCIF LCD & Keypad
MAF/PSU (includes 7 relays, 3A PSU)
1 x 8 Zone Module with standard EOLRs
Modules fit to cabinet rear wall (up to 3 modules max)

FP0551, F3200 FIP, C/W CARDFRAME, 64 ZONE MAX, 1931-16
Includes: Full size cabinet (ie. standard cabinet)
Controller/Display with FFCIF LCD & Keypad
MAF/PSU (includes 7 relays, 3A PSU)
Cardframe (can house up to 8 modules)
1 x 8 Zone Module fitted in cardframe
includes standard EOLRs

FP0583, F3200 FIP, SMALL CABINET
Includes: Small cabinet
Controller/Display with FFCIF LCD & Keypad
MAF/PSU (includes 7 relays, 3A PSU)
1 x 8 Zone Module with standard EOLRs
Modules fit to cabinet rear wall (up to 4 modules max)

FP0712, F3200 FIP, NO CARDFRAME, 24 ZONE MAX, C/W 6 AMP PSU
Includes: Full size cabinet (ie. standard cabinet)
Controller/Display with FFCIF LCD & Keypad
MAF/PSU (includes 7 relays, 6A PSU)
1 x 8 Zone Module with standard EOLRs
Modules fit to cabinet rear wall (up to 3 modules max)

FP0713, F3200 FIP, 64 ZONE MAX, C/W 6 AMP PSU
Includes: Full size cabinet (ie. standard cabinet)
Controller/Display with FFCIF LCD & Keypad
MAF/PSU (includes 7 relays, 6A PSU)
Cardframe (can house up to 8 modules)
1 x 8 Zone Module fitted in cardframe
includes standard EOLRs

3.1.2 SYSTEM EXPANSION

Expansion to the base panels is by adding 8 way zone input or relay output modules, or by networking multiple panels together.

FP0553, F3200 8 ZONE INPUT EXPANSION KIT

Includes: 8 Zone Module, FRC, 8 x EOLR (std)

FP0554, F3200 8 RELAY EXPANSION KIT

Includes: 8 Relay Module, FRC, 8 x Minijump links (for supervision selection)

3.1.3 ENVIRONMENTAL

Operating Temperature	:	-5°C to 45°C (Ambient)
Relative Humidity	:	95% maximum @ 40°C (non-condensing)

3.2 MECHANICAL SPECIFICATIONS

CABINETS

Style : Wall mounting
Hinged outer door with large window (hinges to left)
Accepts 19" rack mounting equipment
4U Display on hinged inner door (hinges to right)

Construction : Welded steel

Material : 1.2mm and 1.6mm mild steel

Size :

- Standard : 750mm (H) x 550mm (W) x 210mm (D) * (Iss B cabinet)
- Small : 410mm (H) x 550mm (W) x 210mm (D) *

* MCP is an additional 20mm.

Finish : Powdercoat BFF-998-CW
Cream Wrinkle
(Iron Phosphate pre-treat)

Weight :

	Unpackaged	Packaged
FP0550	20kg	22kg
FP0551	22kg	24kg
FP0583	17kg	19kg
FP0712	22kg	24kg
FP0713	24kg	26kg

3.3 ELECTRICAL SPECIFICATIONS

3.3.1 MAINS SUPPLY

Voltage	:	240Vac +6% -10%
Current	:	0.5A
Frequency	:	50Hz
Termination	:	For up to 2.5sq mm TPS 3 Way block with wire protectors

3.3.2 BATTERY CHARGER & PSU

Input Voltage (Transformer sec)	:	31Vac rms
Charger Voltage	:	27.3Vdc (nominal at 20°C)
Temperature Compensation	:	-36mV per °C nominal
Non-Battery Backed Voltage	:	28.0 nominal
Max Total Current	:	3Adc for std PSU (Charger, Quiescent & Alarm) 6Adc (for 6A PSU only)
Max Bell Current	:	2Adc
Max. Ancillary Current on VBF1	:	2Adc
Max. Ancillary Current on VBF2	:	2Adc (allows 3A max LED Display)
Max. Ancillary Current on VNBF	:	2Adc (e.g. for door holders)

(VBF <-> battery backed, fused. VNBF <-> non-battery backed, fused)

Current Limit

		Standard PSU	6A PSU
Battery to MAF/PSU	:	PTC, 6A nom, 3.6A min	(see notes below)
PSU/Charger	:	3.3A nom, 3.0A min	6.7A nom, 6.0A min

Notes

1) : The 6A PSU is factory fitted in the FP0712 and FP0713. It is not available in the FP0583.

2) : For the 6A PSU, the PTCs on the MAF are shorted out and a Derwent 10A thermal cutout is wired between the battery + terminal and the MAF/PSU.

STATE	MIN	NOM	MAX	COMMENTS
Charger High	28.05	28.125	28.20	Adjust with pot
Charger Low	26.40	26.57	26.75	
Battery Low	24.15	24.33	24.55	
Standby Off	21.5	22.0	22.5	For voltage falling

Notes:
1. All voltages stated in VDC at temperature of 20°C.
2. Apply temperature compensation of -36 mV/°C for temperature deviation from 20°C.
3. This applies also to charger voltage 27.3 VDC.
4. There are thermal delays, therefore if checking or adjusting in field ensure unit has been running for some hours.
5. Standby Relay is normally energised (on), and turns off for Battery fail.

TABLE 3.3.2
BATTERY AND CHARGER MONITORING VOLTAGE SPECIFICATIONS

3.3.3 BATTERY

Battery Voltage : 24Vdc nominal (2 x 12Vdc)
Compatible Makes Sonnenschein A200 & Sonnenschein A300 series
Powersonic PS12 series
Yuasa NP series

Capacity : 6 to 50 Ahr (dependent on configuration)

Space (mm) : - Standard Cabinet
Up to 220H, 440W, 175D (Iss B cabinet)
- Small Cabinet
Up to 200H, 185W, 175D (3 modules fitted)
Up to 200H, 370W, 125D (4 modules fitted)
(Refer to Fig 2.2.2)

Battery Test Load : 46 Ohm nominal. Suitable for 6 Ahr battery (with quiescent current)
Provision for fitting extra resistors

NOTE: BATTERY TEST RESISTORS (R52, R53) MUST BE REMOVED FOR NEW ZEALAND OPERATION.

3.3.4 FUSES

Location : MAF/PSU PCB

Number	Name	Size	Rating	Type
F1	+VBF1	5 x 20mm	2A	Glass Cartridge, Std
F2	+VBF2	5 x 20mm	6A	Glass Cartridge, Std
F3	+VNBF	5 x 20mm	2A	Glass Cartridge, Std
F4	+VE	5 x 20mm	2A	Glass Cartridge, Std
F5	Mains In	5 x 20mm	6A	Glass Cartridge, Std
F7	+VBELLS	5 x 20mm	2A	Glass Cartridge, Std

3.3.5 CURRENT CONSUMPTION

3.3.5.1 F3200 Quiescent & Alarm Currents

At 24Vdc battery supply, nominal currents:

	Quiescent	Alarm (2 Zone)
FP0550, FP0551, FP0583, FP0712, FP0713 (notes 1-4)	130mA	275mA
8 Zone Module		
- all AZCs disabled	4mA	
- all AZCs enabled (notes 2-6)	82mA	97mA
Current per enabled AZC (note 3)	10mA	
8 Relay Module		
- all supervision disabled	4mA	
- all supervision enabled	6mA	
Current per relay on	11mA	
MAF/PSU		
- all relays off	9mA	
Current per Ancillary Relay (includes bells)	11mA	11mA
Current per Brigade Relay	16mA	16mA
22V Supply (supplies 8 Zones) max rating		800mA
Controller/Display		
- LCD backlight off, status LEDs off	19mA	
- LCD backlight on, status LEDs off	75mA	
Current per status LED on	3mA	
16 Zone LED Display	0mA	16mA/LED (steady)
RS485 network interface board PA0773	7.5mA	

Total electronics and detector max rating 2000mA

Notes

1. FP0550/551/583/712/713 currents include Controller/Display, MAF/PSU and 1 x 8ZM with all ACZs enabled and with EOLRs (2K7 for mode 1 or 2).

2. Quiescent current for an enabled AZC is for modes 1 or 2 (standard or high current) and includes the 2k7 EOL, but not the detector current (up to 4mA detector current per AZC).

3. Quiescent current is only 2.5mA per AZC for mode 3 and 1mA for mode 4.

4. Alarm current is for AZC mode 1, refer AZC specifications for other modes.

5. The 8 Zone Modules (8ZMs) are supplied from the fused battery supply via the 22V regulator which has a maximum rating. The 8 Relay Modules (8RMs) are supplied directly from the fused battery supply.

6. Quiescent and alarm currents do not include external loads e.g. door holders, bells, etc.

3.3.5.2 NDU Quiescent and Alarm Currents

Slimline NDU (FP0714/FP0773/FP0774[4])

Operating Voltage :	24Vdc (18-28V)	
Termination :	For up to 2.5sqmm TPS	
	Quiescent	Alarm
Current Consumption :	25mA	80mA

Full cabinet NDU (FP0715)

	Quiescent	Alarm
Current Consumption (Aust mode)[1]	70mA	165mA
Current Consumption (NZ mode)[2]	85mA	150mA

1. Includes controller, MAF/PSU, energised standby relay, PA0773 RS485 Bd, LCD backlight off in quiescent state.

2. Includes controller, MAF/PSU, NZ Display Extender, energised standby and alarm relays, PA0773 RS485 Bd. LCD backlight off in quiescent state.

3. Refer to Section 3.3.5.1 for additional module currents.

4. For FP0774 the I-Hub currents must be added.

3.4 INPUT SPECIFICATIONS

3.4.1 AZC SPECIFICATIONS

General

Terminations	On 8 Zone Module, 2 per AZC. Demountable screw terminal 1.5sq mm cable max.
Number	8 AZCs per 8 Zone Module. 64 max per system.

End of Lines (EOLs)

Mode	EOL
1 Standard	2k7, 5%, 400mW resistor
2 High Current	2k7, 5%, 400mW resistor
3 Low Current	10k, 5%, 400mW resistor
4 Tamper	EOL002B active EOL
5 Disabled	None

Circuit Resistance & Capacitance

Mode	Capacitance	Resistance
1, 2 & 4	500nF	50 Ohm max
3	1000nF	800 Ohm max for B2 Alarm 2k Ohm max for B3 Alarm

Voltages

		Min	Typ	Max
Detector Supply	on MAF/PSU (note 1)	21.2V (21.8V)	22.0V	22.2V
	at AZC terminals	18.75V	20.3V	22.1V
	at end of circuit	18.0V	20.3V	22.1V

Alarm Voltage Thresholds

	Min	Typ	Max
Band B3 upper threshold	17.2V	17.5V	17.8V
Band B3 lower threshold Band B2 upper threshold	12.75V	13.1V	13.45V
Band B2 lower threshold Band B1 upper threshold	2.7V	2.9V	3.1V
Band B1 lower threshold	0V	0V	0V

AZC SPECIFICATIONS (CONTINUED)

	Min	Typ	Max
AZC current limit (note 1)	13.5mA (14.5mA)	15.5mA	16.5mA
EOL & detector quiescent			11.95mA
EOL, no detectors	7.0mA (7.2mA)	7.8mA	8.2mA
Fault threshold	4.4mA	5.75mA	6.8mA
Detector quiescent	0mA		4.0mA

Notes

1. The minimum figures shown are for battery voltage greater than the minimum Standby (Battery Fail) level i.e. 21.5V. The figures shown in brackets are for a battery voltage greater than 22.5V.

2. Modes 1 & 2 have the same thresholds before the Alarm state is latched. For Mode 2 additional current is turned on once the Alarm state is latched (refer to Graph 3.4.2).

	Min	Typ	Max
Mode 3 Only			
Current into short circuit			34.3mA
Current into 800 Ohm (note 3)	14.2mA	14.8mA	15.3mA
Current into 2000 Ohm (note 4)	8.0mA	8.2mA	8.4mA
EOLR Current		2mA	
Minimum current for EOLR & 2k circuit	1.64mA		
Modes 3 & 4			
Fault thresholds	0.85mA	1.28mA	1.59mA
Maximum allowable load or circuit leakage			0.5mA

Notes

3. I.e. short at end of an 800 Ohm circuit (gives voltage band B2 alarm, ref graph 3.4.1).

4. I.e. short at end of a 2000 ohm circuit (gives voltage band B3 alarm, ref graph 3.4.1).

MCP Zener Diode

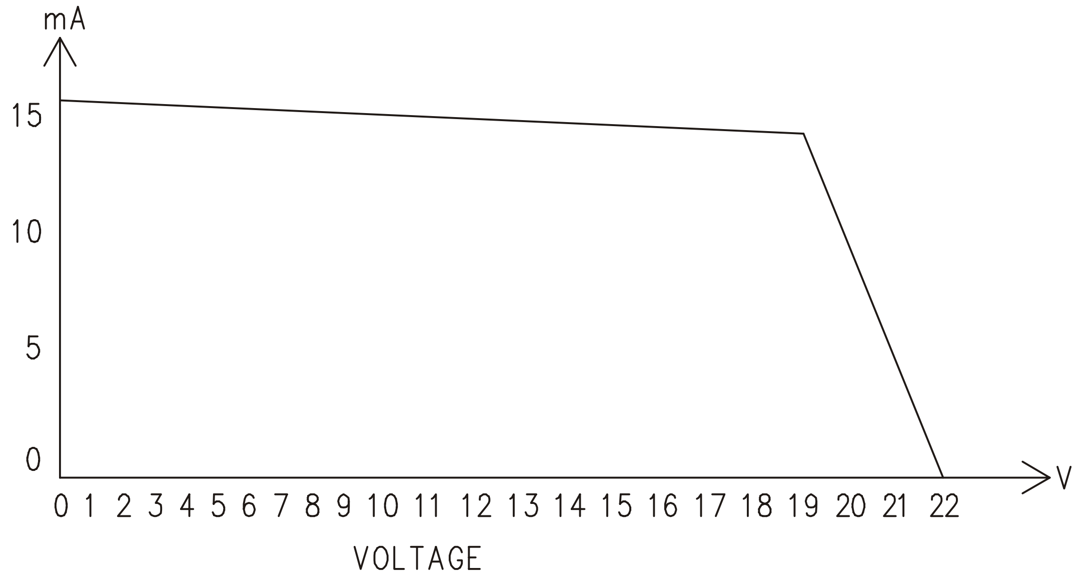
For voltage band B3 operation BZT03C15 3W, 15V.

AZC SPECIFICATIONS (CONTINUED)

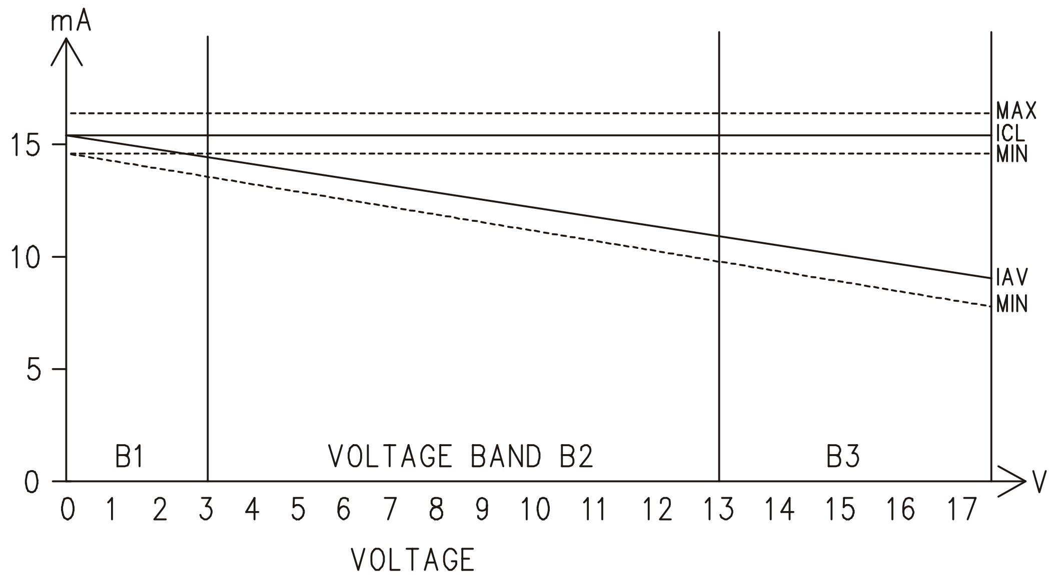
Detector Alarm Currents

The current available to a latched detector is the AZC supply current at the detector "Alarm" voltage minus the EOLR current and the remaining quiescent current at that voltage.

The following graphs show current/voltage characteristics for the various modes of operation.

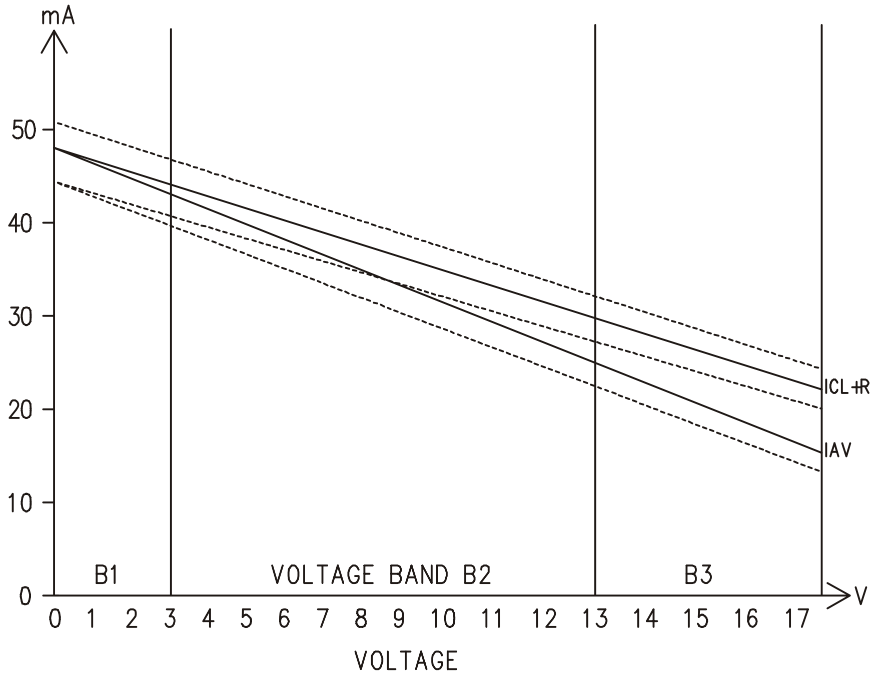


GRAPH 3.4.1
AZC CURRENT LIMIT CHARACTERISTICS (MODES 1 & 2)



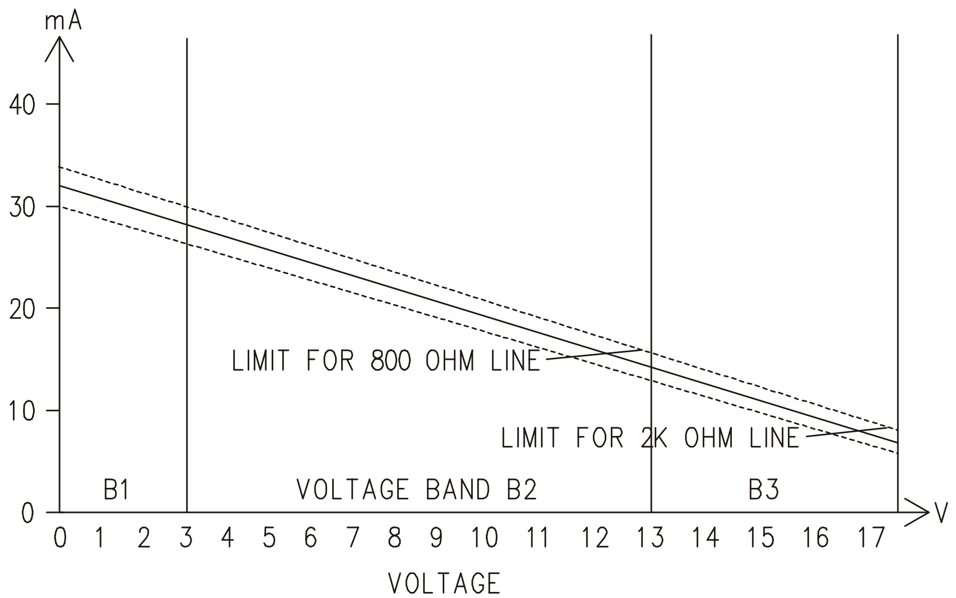
ICL = Current Limit
IAV = Current Available to Detectors with EOLR fitted
IAV = ICL - IEOLR

GRAPH 3.4.2
AZC CURRENT VS VOLTAGE : MODE 1 (STANDARD)



ICL+R = Current sourced through current limit and pull up resistor
IAV = Current available to detectors with EOLR fitted
IAV = ICL+R - IEOLR

GRAPH 3.4.3
AZC CURRENT VS VOLTAGE MODE 2 (HIGH CURRENT)



A short circuit at the end of an 800 Ohm line will give a B2 (Detector Operated) alarm.

A short circuit at the end of a 2k Ohm line will give a B3 (programmable) condition.

GRAPH 3.4.4
ACZ CURRENT VS VOLTAGE MODES 3 & 4 (LOW CURRENT & TAMPER)

AZC SPECIFICATIONS (CONTINUED)

Timing

Standard Delay (into Alarm, Fault, Normal)	2.3 sec (2.0 - 2.6 sec)
AZC Reset	5.3 sec (5.0 - 5.6 sec)
AZC Ignore Period 1 (after Reset)	2 sec nom (plus std 2.3 sec delay)
AZC Ignore Period 2 (after Start Up or Programming)	1 sec nom (plus std 2.3 sec delay)
AZC Time Into Alarm	Programmable 0-250 sec
AZC Time Out of Alarm	Programmable 0-250 sec

Refer to Section 7.2.4 for detail on other sequences and programmable delays.

3.4.2 MAF/PSU INPUTS

Battery Termination	One pair screw terminals; 4sq mm max cable
AC Input	31V rms; 3.6A rms; 2.8mm tab terminals
Door Switch	5V, 0.5mA, Unsupervised, 4 Way .1" pcb header, J6
MCP	5V, 1mA, 2k7 EOLR, 4 Way .1" pcb header, J6
Spare Inputs (not fitted)	5V, 0.5mA, Unsupervised, Cabinet internal use only, 4 Way .1" pcb header, J5

Relay Supervision

Anc 1 Sup/Anc 2 Sup	One screw terminal each	
Modes of Operation	1 Door holder (Default for Anc 1) 2 Load (Default for Anc 2)	
	Relay Off	Relay On
Door Holder Mode expects	Voltage Present	No Voltage Present
Load mode expects	Resistive to 0V	Open Circuit or Voltage Present
Voltage Threshold (Door Holder Mode)	3.65V Nom	
Supervision Current	0mA @ +5V, 1mA @ 0V	
Load Resistance (Load Mode)	400 Ohm - 10k Ohm less than 400 Ohm with series diode at load. 14 Ohm absolute minimum.	

Bells Relay

Form	Reverse polarity - requires series diode at each device

MAF/PSU INPUTS (CONTINUED)

End of Line Resistor	No. of Circuits	Type
	1	3k3, 5%, 250mW resistor
	2	6k8, 5%, 250mW resistor
	3	10k, 5%, 250mW resistor

Supervision Current: 0mA @ +5V, 1.5mA @ 0V, +ve to BELLS- terminal
Circuit Resistance: 100 Ohm max.

3.4.3 CONTROLLER/DISPLAY INPUTS

Spare DC Input/Output	24Vdc nom demountable screw terminal, 4 way, J5
Spare Input	22V, 10k Ohm pull up resistor Provision for supervision (up to 5 band)
Spare Inputs IP0, 1, 2 (not fitted)	Unsupervised, Cabinet internal use only +5V, 100k pull up resistor, 10 Way FRC header, J10
Serial I/O	RZDU Refer Section 3.5.3; Others 3.5.2

3.4.4 8 RELAY MODULE SUPERVISION

Form	Load monitoring	
	Relay Off	Relay On
Expects	Resistance to 0V	Voltage Present
Selected By	Minijump link on pcb & programming of FIP	
Default Programming	Disabled (unsupervised)	
Load Resistance	400 Ohm - 10k Ohm Less than 400 Ohm with series diode at load 14 Ohm absolute minimum	
Voltage Threshold	3.65V nom.	
Supervision Current	0mA @ +5V, 1mA @ 0V	

3.4.5 NZ MODE DISPLAY EXTENDER BOARD INPUTS

The Display Extender Board is used with New Zealand operation only. The inputs it provides are : Silence Alarms, Trial Evac, Building Services Restore, Lamp Test and External Defect. All inputs have closure to zero volts to assert the input. An input may be left open or unconnected if not used. Refer to section 12.8 for wiring.

All Inputs: Closure below 1.5V @ 0.35mA required to activate.
Open voltage = 5V

3.5 OUTPUT SPECIFICATIONS

3.5.1 8 ZONE MODULE OUTPUTS

Type	Darlington open collector Switch to 0V
Voltage Rating	28.5V max, "off" state 1V max @ 30mA, "on" state 1.1V max at 100mA
Current Rating	100mA max per O/P, 0.6A max per module 1A max per FIP.
Transient Protection	Allows external wiring
Terminations	8 Way demountable screw terminal 1.5sq mm max. cable
Operation	Programmable
Default	O/C 1 = Zone 1 Alarm O/C 2 = Zone 2 Alarm etc.

3.5.2 8 RELAY MODULE OUTPUTS

Form	1 Pole changeover contacts Voltage-free when unsupervised
Termination	Demountable screw terminals 1.5sq mm max cable
Rating	ELV only 30V, 2Adc resistive 30V, 1Adc inductive

Note The relays are 2 pole, with the second pole terminated on pcb pads.

Operation	Programmable
Supervision	Ref 3.4.4.
Looping Terminals	2 Sets of 4 joined voltage-free terminals per module

3.5.3 MAF/PSU OUTPUTS

Brigade Relays

Number	4
Standby	Normally energised De-energises on battery fail or panel fail
Fault, Isolated, Alarm	Normally de-energised Energise on active state
Form	1 Pole changeover contacts Voltage-free
Termination	Demountable screw terminals 1.5sq mm max cable
Rating	ELV only 30V, 5Adc resistive 30V, 3Adc inductive
Isolation	1500V rms contact to coil

Ancillary & Bells

Number	3
Anc 1, Anc 2	1 Pole changeover contacts Voltage-free
Termination	Demountable screw terminals 1.5sq mm max cable
Rating	ELV only 30V, 2Adc resistive 30V, 1Adc inductive

(Note: The relays are 2 pole, with second pole terminated on pcb pads).

Operation	Programmable
Default	Active on any unisolated Zone Alarm.
Supervision	Separate terminal (ref 3.4.2)
Anc 3/Bells	2 pole relay Link selectable function
Standard Format	Bells Switched 24Vdc output 2 terminals, Bells +, - Demountable screw terminals 1.5sq mm max cable

MAF/PSU OUTPUTS (CONTINUED)

Option	1 Pole changeover contacts Voltage-free Snip Links Lk2, 3, 4.
Rating	ELV only 30V, 2Adc resistive 30V, 1Adc inductive 24V, 1.5Adc inductive bells
Operation	Programmable
Default	Active on any unisolated zone alarm
Supervision	On Bells +, - only (ref 3.4.2)

Power Supply Outputs

0Vdc

Termination	1 non-demountable screw terminal 4sq mm max cable
	2 demountable screw terminals 1.5sq mm max cable 1 2.8mm tab terminal (LED Display)

Battery Backed DC Supply

Rating	27.3Vdc nom. (24V battery nom) 2Adc, fused.
+VBF1 Termination	1 non-demountable screw terminal 4sq mm max cable
	1 demountable screw terminal 1.5sq mm max cable
+VBF2 Termination	1 non-demountable screw terminal 4sq mm max cable
	1 demountable screw terminal 1.5sq mm max cable
	1 2.8mm tab terminal (LED Display)

MAF/PSU OUTPUTS (CONTINUED)

Non-Battery Backed DC Supply

Rating	28Vdc nom 2Adc, fused
+VNBF Termination	1 non-demountable screw terminal 4sq mm max cable 1 demountable screw terminal 1.5sq mm max cable

RZDU Comms

Tx, Rx, 0V	3 Wire (+VBF2 also available)
Transmission Rate	1200 Baud
Protocol	Vigilant F4000
Termination	Demountable screw terminals 1.5sq mm max cable

3.5.4 CONTROLLER/DISPLAY OUTPUTS

Spare Parallel Outputs	(not fitted)
Number	6
Type	CMOS
Voltage Rating	0-5V
Termination	10 Way FRC pcb header, J10

Serial I/O

Printer/Programmer Port

Form	Pseudo RS232 Rx, Tx, 0V signals only
Transient Protection	Allows external wiring
Transmission Rate	9600 Baud
Protocol	ASCII Xon, Xoff
Termination	4 Way .156" male molex (J1) 9 Way Miniature D available via transition cable Part number LM0041 Female Pins (socket)

CONTROLLER/DISPLAY (CONTINUED)

Pin 2 3 5 1 4 6 7 8
Tx Rx 0V

25 Way Miniature D available via transition cable Part Number LM0042
Female Pins (socket)

Pin 2 3 7 6 8 20
Rx Tx 0V

Alternative Function (on same serial port)

Serial Port 0 10 Way FRC header, J2
UART signals: RXD, TXD, RTS-, CTS-, DCD-
5V levels; 0V, +5V, +24V also available

Network 1 10 Way FRC header, J7
(fitted only for network systems)

Network 2 10 Way FRC header, J9
(fitted only for network systems)
UART signals for Network 1/2
RXD, TXD, RTS-, CTS-, DCD-
5V levels; 0V, +5V, +24V also available

3.5.5 RS485 BOARD

CMOS Modem: 10 Way FRC header
+12V, RXD- TXD-, RTS-, CTS-, 0V, DCD-, +5V

Network: 6 Way demountable screw terminals
RS485 standard signals
A+, A-, B+, B-, 0V ISOL, Earth

3.5.6 NZ DISPLAY EXTENDER BOARD OUTPUTS

This is used in New Zealand mode only. Refer to section 12.8 for wiring of the outputs on the unprotected termination board. The Display Extender Board already has common Normal, Defect and Fire status LEDs fitted to it, but these may be replicated externally if necessary. There are also ancillary defect and fire outputs which are active low open collector, and an output to drive an index lamp.

All Outputs (except LAMP) Open collector pulldown to 0V
Off voltage = 30Vmax
On voltage = 1.1V @ 100mA (max)
On Current = 100mA max

LAMP + Open collector pull up to VBATT
Off voltage = 0V
On voltage = VBATT-1V
On current = 400mA max

LAMP - Connected to Battery –

3.6 CONTROLS

KEYPAD

Type	:	Polyester Membrane
Keypress	:	Buzzer gives short "beep" for valid keypress
Number of Keys	:	34 (plus 5 concealed with no function)
FFCIF Keys	:	ACK; RESET; ISOL; BRIG TEST
Other Keys	:	Ref F3200 Operator's Manual for description

INTERNAL CONTROLS

Mains On : Switch in cabinet

Database Write Protect

Function : Enables/disables writing to EEPROM

Form : 2 position minijump shunt, Lk7
On Controller/Display PCB

E2 INIT

Function : Initiates self-programming of system configuration on system power up (i.e. number of modules, etc)

Requires DATABASE WRITE PROTECT to be in WRITE position.

Form : 2 Way .1" male pins on Controller/Display PCB
Short circuit pins to initiate.

BUZZER

Mounted on Controller/Display pcb

Type	:	Piezo Electric
Frequency	:	2800Hz nominal
Sound Level	:	70dB min at 1m (outer door closed)

3.7 DISPLAYS

Standard Display

Includes	:	LCD; FFCIF LEDs; System Status LEDs
Panel Size	:	19", 4U
FFCIF Type	:	3 (common indicators & common controls)
Standard	:	Complies with AS4050 (int) - 1992
LCD Size	:	2 Lines of 40 characters 5.5mm (H) x 3.2mm (W) per character
Site Name	:	40 Characters max.
Zone Name	:	30 Characters max.
Relay Name	:	30 Characters max.
FFCIF LEDs	:	ALARM (red); ISOLATED (yellow); FAULT (yellow)
System Status LEDs	:	MAINS ON (green); CHGR/BATT FAULT (yellow); SYSTEM FAULT (yellow); ANCILLARY ISOLATED (yellow); BELLS ISOLATED (yellow)
Internal Status LEDs	:	Mains On (green), Fuse Blown (yellow) on MAF/PSU pcb.

Optional Additional Display

Requires 1 x ME0060 plus: 1 x FZ3031 plus 1-3 FP0475 as required.
Note: FZ3031 contains the FRC cable (LM0092) that is required to connect the Controller Board to the first Display Board.

ME0060, MECH ASSY, 1901-79, F4000 RAC, EXT INNER DOOR
(19", 7U, mounts up to 4 of 16 Zone LED Display Bd)

FP0475, FP, 16 ZONE LED DISPLAY EXTENDER KIT, 1901-26

Includes	:	1 x 16 Zone LED Display Bd; FRC; Power leads; zone name label (FP0475 has 0.5m FRC, FZ3031 has 1.2m FRC).
Format	:	7U Parallel LED display mounts directly below the standard 4U LCD. The LCD and common LEDs operate as per standard. Zone status is additionally shown on the zone LEDs.
FFCIF Type	:	2 (individual zone indicators and common controls)
Zone LEDs	:	ALARM (red); FAULT (yellow); ISOLATED (yellow)
Name Space	:	10mm x 60mm per zone on paper label. E.g. 2 lines of 23 characters at 10 per inch.

CHAPTER 4
ORDERING INFORMATION

4.1 ORDERING INFORMATION

The following lists the part numbers for the range of products and spares associated with the AS1603.4 approved F3200. It includes a brief description where considered necessary.

FA1227,FAB,1931-24,F3200 BLANK PANEL,PLASTIC,9.5U

FA1235,FAB,1919-27-5,F3200,FLUSH SURROUND (P) (STD CABINET)
FA1298,FAB,1919-27-6,F3200,SMALL FLUSH SURROUND (P)
FA1299,FAB,1919-27-7,F3200,STD + BATT BOX,FLUSH SURROUND (P)
FA1300,FAB,1919-27-8,F3200,SMALL + BATT BOX,FLUSH SURROUND (P)

FP0475,16 ZONE LED DISPLAY EXTENDER KIT,1901-26
(includes Display Bd, 0.5m FRC, power leads and label master. Cannot be used for first LED Display. See FZ3031)

FP0550,F3200 FIP,NO CARDFRAME,24 ZONE MAX,1931-15
(ref Section 3.1.1)

FP0551,F3200 FIP,C/W CARDFRAME,64 ZONE MAX,1931-16
(ref Section 3.1.1)

FP0553,F3200 8 ZONE INPUT EXPANSION KIT
(ref Section 3.1.2)

FP0554,F3200 8 RELAY EXPANSION KIT
(ref Section 3.1.2)

FP0556,F3200 CABINET,EMPTY,C/W DOOR,WINDOW,LOCK

FP0557,F3200 CABINET,EMPTY,C/W BLANK OUTER DOOR

FP0558,F3200 REMOTE LCD DISPLAY UNIT, FULL CABINET & MAF/PSU
Similar to FP0550, but with RDU Controller and Software, No 8ZM. Previously called RZDU. Refer to manuals LT0133 and LT0148.

FP0559,F3200 REMOTE LCD,DISPLAY UNIT,SLIMLINE,WALL MOUNT
(small, low profile cabinet with F3200 RDU Controller fitted, no MAF or PSU)

FP0570,FP,1937-3-1,LOCAL GAS CONTROL STATION,AUTO
(wall mounting box with flip cover break glass "Gas Start" switch and double action toggle "Gas Inhibit" switch, includes buzzer and LEDs)

FP0572,FP,1937-3-2,LOCAL GAS CONTROL STATION,MANUAL
(as per above, but without "Gas Inhibit" switch, LED and buzzer)

FP0576,FP,F3200,BATTERY BOX

FP0577,FP,REMOTE LCD DISPLAY UNIT,4U 19" RAC UNIT
(Includes ME0064 plus I/F PCB, FRC, earth wire, RDU, Operator's Manual, door switch (c/w bracket and loom) and MCP loom).

FP0583,FP,F3200 FIP,SMALL CABINET

FP0584,FP,F3200,SMALL EMPTY CABINET,FULL WINDOW

FP0585,FP,REMOTE LCD DISPLAY,SMALL CABINET,C/W MAF/PSU

ORDERING INFORMATION (CONTINUED)

FP0712,FP,F3200 FIP,NO CARDFRAME,24 ZONE MAX,6A PSU
FP0713,FP,F3200,FIP,64 ZONE MAX,6A PSU

FP0714,FP,NETWORK DISPLAY UNIT (NDU),SLIMLINE,WALL MOUNT
FP0715,FP,NETWORK DISPLAY UNIT (NDU),FULL CAB & MAF/PSU

FP0731,FP,RDU TO NDU UPGRADE KIT
FP0733,FP,NETWORK DISPLAY UNIT,4U 19" RACK MTG,NO MAF/PSU

FP0749,FP,F3200 6A PSU UPGRADE KIT,1931-44
Kit to purchase to upgrade on existing panel to a 6A PSU.

FP0772,FP,REMOTE LCD DISPLAY (RDU),SLIMLINE,FLUSH MOUNT
Same as FP0559 except is a flush mounting cabinet.

FP0773,FP,NETWORK DISPLAY UNIT (NDU),SLIMLINE,FLUSH MOUNT
Same as FP0714 except is a flush mounting cabinet.

FP0774,FP,NDU,NETWORK DISPLAY,C/W I-HUB,SLIMLINE,SURFACE
Surface mount NDU, contains I-Hub for networking.

FZ3010,F3200,16 ZONE,STD CAB,NO CARDFRAME,NO LED,1U SHELF
(FP0550 with second 8ZM and 1U document shelf fitted)

FZ3024,F3200,8 ZONE,NO CARDFRAME,NO LEDS,7U BLANK,1U SHELF
(FP0550 with 7U blank hinged door and 1U document shelf fitted)

FZ3027,F3200,64 ZONE,C/W LEDS,1U SHELF

FZ3031,KIT,F3200,16 ZONE LED DISPLAY,LHS POSITION
(as per FP0475, but with 1.2m FRC, allows mtg of Display Bd in furthest left position. Required for first display).

FZ3034,F3200,8 ZONE,NO CARDFRAME,NO LEDS,6A PSU

FZ3051,F3200,1 ZONE GAS CONTROL,SMALL CABINET

FZ9002,FP,19" RAC,7U BLANK INNER DOOR

FZ9009,KIT,19" RAC,3U AIU BRKT (mounts 2 Melbourne F.B. AIUs)

FZ9010,KIT 19" RAC,1U AIU BRKT (mounts 2 Melbourne F.B. AIUs)
(These include bracket and screws, etc, The 1U item is 1U at the front, but larger at the rear, as required for F3200 small cabinet).

KT0072,KIT,F3200,CARDFRAME UPGRADE

KT0075,KIT,F3200,PSU UPGRADE,3A TO 6A,1931-44 (Factory fitted option only)

KT0111 KIT,1945-1-1,AS1668 CONTROL MODULE,TYPE 1 (refer PBG0015)

KT0112 KIT,1945-1-2,AS1668 CONTROL MODULE,TYPE 2 (refer PBG0015)

KT0113 KIT,1945-1-3,AS1668 CONTROL MODULE,TYPE 3 (refer PBG0015)

LM0041,LOOM,1888-58,PROG PORT TO 9 PIN SERIAL
(cable to connect printer/computer to Controller, has 9 pin min D)

ORDERING INFORMATION (CONTINUED)

LM0042,LOOM,1888-62,PROG PORT TO 25 PIN SERIAL
(cable to connect printer/computer to Controller, has 25 pin min D)

LM0044,LOOM,1901-81-1,DISPLAY EXTENDER FRC,2M

LM0045,LOOM,1901-81-2,DISPLAY EXTENDER FRC,5M

LM0046,LOOM,1901-81-3,DISPLAY EXTENDER FRC,0.5M

LM0049,LOOM,1901-81-4,DISPLAY EXTENDER FRC,0.25M

LM0053,LOOM,1931-28-1,F3200 20 WAY FRC,300MM
(standard FRC for interconnecting 8 way modules, included in FP0553, 554)

LM0092,LOOM 1901-88 CONTROLLER TO 1ST DISPLAY, FRC, 1.2M
(connects Display Bd to Controller, allows mounting of Display Bd in furthest left position, included with FZ3031).

LT0119 LITERATURE,1931-17,F3200 OPERATOR'S MANUAL,A4,LOOSE

LT0120 LITERATURE,1931-18,F3200 OPERATOR'S MANUAL,A5

LT0121 LITERATURE,1931-19,F3200 TECHNICAL MANUAL

LT0122 LITERATURE,1931-20,F3200 PROGRAMMING & INSTALLATION MANUAL

LT0130 LITERATURE,1931-32,F3200 PRESENTATION,ACAD12 DISK

LT0133 LITERATURE,1931-46,REMOTE LCD UNIT,OPERATOR MANUAL,A4

LT0135 LITERATURE,1931-52,F3200 ARCHITECTS SPEC,A4

LT0148 LITERATURE,1931-64,RDU INSTALLATION & PROGRAM MANUAL

LT0212 LITERATURE,RDU TO NDU UPGRADE INSTRUCTIONS

ME0060,MECH ASSY,1901-79,RAC CABINET,EXT INNER DOOR
(hinged 7U inner door for mounting Display Bds on, includes screws, perspex window, cage nuts and pcb standoffs)

ME0063,MECH ASSY,1931-15-1,F3200 4U HINGED CONTROL PANEL
(4U hinged door with keypad and Controller/Display pcb mounted on it).

ME0064,MECH ASSY,1931-15-1,F3200 4U HINGED RDU CONTROL PANEL
(4U hinged door with no-name keypad and RDU Controller/Display mounted on it).

ME0065,MECH ASSY,1931-47,1 ZONE GAS CONTROL 7U DOOR

ME0066,MECH ASSY,1931-47,2 ZONE GAS CONTROL 7U DOOR

ME0067,MECH ASSY,1931-47,3 ZONE GAS CONTROL 7U DOOR

ME0068,MECH ASSY,1931-47,4 ZONE GAS CONTROL 7U DOOR

(ME0065-68 include screened 7U door, field connector and looms for connecting to 8RMS and 8ZMs, screws and cage nuts - for 1,2,3 or 4 gas zones)

ORDERING INFORMATION (CONTINUED)

ME0069,MECH ASSY,1931-57,1 ZONE, 1U GAS CONTROL PANEL
(similar to ME0065 except on a non-hinged, 1U panel)

ME0072,MECH ASSY,1931-70,F3200 RACK MTG GEARPLATE
(allows F3200 internals to be fitted to a RAC cabinet. Factory fit option only. See Note 1)

ME0155,MECH ASSY,694-384,19" 4U CFA ASSEMBLY

ME0250,MECH ASSY,1919-35,RAC CABINET,IP65,20U X 200 (ie. waterproof)

ME0258,MECH ASSY,1919-21-2,RAC CABINET,1U SHELF,135 DEEP
(includes screws and cage nuts for mounting to FIP)

PA0443,PCB ASSY,1841-18,CONTACT CONVERSION MODULE

PA0491,PCB ASSY,1931-3,F3200 MAF/PSU

PA0492,PCB ASSY,1931-4,F3200 8 ZONE MODULE (See FP0553)

PA0493,PCB ASSY,1931-5,F3200 RZDU CONTROLLER/DISPLAY (See FP0554)

PA0703,PCB ASSY,1931-27,F3200 REMOTE I/F BD

PA0707,PCB ASSY,1931-39,F3200 3A RECTIFIER BD

PA0773,PCB ASSY,1901-139-3,RS485 COMMS BD,CMOS;FRC ONLY

PA0797,PCB ASSY,1931-84-1,F3200 CONTROLLER/DISPLAY

PA0798,PCB ASSY,1931-84-2,F3200 RDU CONTROLLER/DISPLAY

PA0804,PCB ASSY,1931-84-1,F3200 CTRL NETWORK/NDU,NO S/W

RR0509,RESISTOR,WIRE WOUND,10W,68 OHM

SF0089,SOFTWARE,F3200 FIRE CONTROLLER,V1.10 EPROM

SF0094,SOFTWARE,REMOTE LCD DISPLAY,RDU,V1.35 EPROM

SF0164,SOFTWARE,F3200 FIRE CONTROLLER NETWORKED,V2.04,EPROM

SF0175,SOFTWARE,NETWORK DISPLAY UNIT (NDU),V2.04,EPROM

SF0178,SOFTWARE,F3200 FIRE CONTROLLER,V2.04,EPROM

SF0179,SOFTWARE,REMOTE LCD DISPLAY,RDU,V2.02 EPROM

SF0229,SOFTWARE,F3200,STD PANEL,C/W TANDEM,V2.09 EPROM

SF0230,SOFTWARE,F3200,NETWORKED,C/W TANDEM,V2.09,EPROM

SF0231,SOFTWARE,NDU,C/W TANDEM,V2.09,EPROM

ORDERING INFORMATION (CONTINUED)

NEW ZEALAND OPERATION ONLY

A variety of display options are available to satisfy varying NZ requirements. These are covered in detail in Section 12.8. Ordering codes are included for the various components for each option. Major items are as follows:

PA0499 PCB ASSY, NZ DISPLAY EXTENDER BOARD
NZ Display Extender Board in standard 16 Zone LED board format.

PA0742 PCB ASSY, PFD NZ DISPLAY EXTENDER BOARD, 24V
NZ Display Extender Board in format suitable for "picture frame" cabinet.

PA0741 PCB ASSY, PFD 16 ALARM LED DISPLAY, 24V
"Picture Frame" format 16 Zone display board (alarm LEDs only).

PA0754 PCB ASSY, PFD 16 ZONE FULL STATUS, 24V
"Picture Frame" format 16 Zone display board (all LEDs fitted).

PA0753 PCB ASSY, PICTURE FRAME DISPLAY, 16 LED MIMIC, 24V
"Picture Frame" cabinet format board for mimicking 16 Fire LEDs from Display board.

PA0760 PCB ASSY, NZ DISPLAY EXTENDER, PFD MIMIC
"Picture Frame" cabinet format board for mimicking 3 LEDs from Display Extender Board.

PA0483 PCB, UNPROTECTED TERMINATION BOARD
With a 26 way FRC gives access Display Extender Board inputs and outputs.

PA0772 PCB ASSEMBLY, PFD TERMINATION BOARD
Breaks 26-way display FRC out to multicore cable (12 way).

PA0769 PCB, UNPROTECTED TERMINATION BOARD, C/W RESISTORS
Versions of PA0483 with 3k3 resistor per output for LED current limit.

ME0074 PICTURE FRAME DISPLAY, F/S NZ LOCK, C/W INDEX
Wall mounting "Picture frame" display cabinet.

ME0076 PICTURE FRAME DISPLAY, R/S NZ LOCK, C/W INDEX
Window mounting, "Picture frame" display cabinet.

ME0073 PICTURE FRAME DISPLAY, F/S 003 LOCK, C/W INDEX
Wall mounting "Picture frame" display cabinet with 003 lock.

CHAPTER 5
CONFIGURING A FIP

5.1 GENERAL

An F3200 FIP is configured to suit a particular customer's requirements by:

Fitting and connecting the required pcb modules;
adding appropriate battery test resistors when necessary;
adjusting or removing links on the pcbs;
programming the FIP.

The detectors, manual call points (MCPs), warning devices, ancillary equipment and field wiring that are connected to the FIP must match the FIP configuration.

The FIP configuration data, which is entered during programming, is stored in the non-volatile memory database. The database may be saved to a computer for backup storage, or reloaded from a computer.

All programmable options have a default option for the most likely usage. That is, for many applications, no programming other than entry of site and zone names will be necessary.

Programming is described in detail in Chapters 6, 7, 11 and 12. The rest of this chapter describes configuration of the hardware.

5.2 MODULE CONFIGURATION

The required modules are fitted to the F3200 as described in Section 2.3.2. Note that 8 way modules are connected Bus Out to Bus In with all 8 Zone Modules preceding any 8 Relay Modules. (Refer also to Section 8.1.3).

The F3200 does various self-tests on start up and includes checking to see what modules are present (including 16 Zone LED Display Bds). It displays the results on the LCD. If the modules present do not agree with the programmed database then the FIP annunciates this and remains inactive.

E2 Initialisation causes the Controller/Display to accept the modules found as present and stores this configuration in the database. E2 Initialisation also clears all other data programmed in the database. Refer to Section 6.3.1.

Where it is desired to add a module to an existing system this can be done by programming the Module Configuration through the keyboard (see Section 7.1).

For servicing, modules can be temporarily removed as detailed in Section 10.2 of the Operator's Manual. This temporary configuration is not stored in the database.

5.3 BATTERY & POWER SUPPLY

5.3.1 GENERAL

The F3200 FIP has a dc power supply, which also serves as battery charger and requires a 24V sealed lead acid battery (i.e. 2 x 12V batteries in series) to be fitted. (See Section 3.3.3 for compatible batteries). Battery leads with 4.8mm Quick Connect receptacles (for connecting to the battery tabs) are included.

Charger Rating (Refer to AS1670.1 Section 8.2)

The standard F3200 has a 3A power supply. Versions are also available with a 6A PSU. This has a second mains transformer, a 3A rectifier pcb and a larger heatsink connected to the MAF/PSU. Several components on the pcb are also upgraded.

When a 6A power supply is fitted, the standard PTC on the MAF/PSU are shorted out and additional battery protection must be fitted (see Section 5.3.6).

To comply with AS1670.1 the power supply rating must be sufficient to charge the batteries while powering the panel with 2 zones in alarm. This must include all remaining quiescent loads, common alarm load, plus 2 (or 20%, whichever is the larger) of all connected fire suppression systems in the active state (i.e. solenoids, warning signs, etc).

The definition of charging the batteries is supplying enough current to charge them within 24 hours to provide a capacity that will support 5 hours of FIP quiescent load (i.e. with mains off) followed by 0.5 hour of alarm load for two worst-case zones.

The recommended order of performing calculations is listed in Section 5.3.2.

Battery Rating (Refer to AS1670-1 Section 8.2).

The battery capacity must be sufficient to support 24 hours of quiescent load (i.e. with mains off), followed by 0.5 hour of alarm for the two worst case zones.

Notes

1. The quiescent load includes the FIP electronics (in normal state) plus any external normally energised loads that operate from the battery backed supply. Hence door holders are normally supplied from a non-battery backed supply.

2. Alarm load includes FIP electronics (in alarm state) plus any external loads such as bells, air conditioning shutdown relays, etc, plus the 2 (or 20%) fire suppression zones.

3. The capacity of a battery depends on the rate (i.e. current) at which it is discharged. Most batteries are quoted at a 20 hours discharge e.g. a 10Ahr battery will supply 0.5A for 20 hours. At 3 times the current (i.e. 1.5A) the same battery will discharge in typically 5.6 hours, i.e. the capacity is only 8.5Ahr. At 10 times the rate the capacity is approximately 75% of the 20 hour rate capacity (i.e. 7.5Ahr). Hence for alarm loads it is safest to derate the capacity to 75%.

GENERAL (CONTINUED)

4. The approvals laboratory recommends using 90% derating of batteries used on F3200 because the battery fail voltage (Standby) is 22V instead of 21V (as used on some other FIPs). The local approval body may not require this, however, because although the F3200 will not generate new alarms below the "battery fail voltage", it will maintain any alarms and outputs that occurred when the voltage was higher than the battery fail voltage. AS1670.1 1995 does, however, recommend 80% derating of batteries for the effect of ageing, ie. multiply the required battery capacity (at end of life) by 1.25 when calculating the required capacity for a new battery.

5. For maximum physical battery sizes refer to "Battery Size". (Refer to Section 5.3.4).

5.3.2 BATTERY/CHARGER CALCULATIONS

The recommended order of calculations is as follows:

1. Calculate the FIP quiescent load (Iq) from the figures given in Section 3.3.5. Note that the detector load for each AZC has to be added to the quiescent current per AZC. Calculate In separately, where In is the external non-alarm, non-battery backed load on the FIP PSU (e.g. door holders).

2. Calculate the FIP alarm load (Ia) for 2 zones in alarm from Section 3.3.5. (Include all external loads e.g. bells, relays).

3. Calculate the 5 hour/0.5 hour battery capacity for the charger requirement as follows:
   Cap (5 hr) = (5 x Iq) + (0.5 Ia x 1.33) Ahr
   = 5Iq + 0.66Ia where
   Iq = quiescent current
   Ia = alarm current

   Note that the 1.33 multiplier increases the required capacity to allow for an alarm load of up to 10 times the quiescent load (i.e. 75% derating of capacity).

4. Find the greater of Iq + In, or Ia. Calculate the power supply/charger requirement (Ic) as follows and check that it is less than 3A. (If greater a 6A charger is required).
   Ic = I + Cap (5 hr) ÷ 24e where I is the greater of Iq + In, or Ia, and e is the changing efficiency of the particular battery being used, at the current being used (typically 80%, ie. (cap/24) x 1.25).

5. Calculate the battery capacity as follows:
   Cap (24 hr) = (24 x Iq + 0.66 Ia) x 1.25
   (See note 4 of Section 5.3.1 regarding the x 1.25 multiplier).

   Select a battery which has a rated capacity (i.e. 20 hr rating) equal to or above that just calculated. (Refer to Sections 3.3.3 and 5.3.4 for approved types).

5.3.3 EXAMPLE BATTERY/CHARGER CALCULATIONS

An example FP0551 FIP has the following configuration:

3 8ZMs total (i.e. 2 x FP0553 expansion modules fitted)
1 8RM fitted
20 AZCs enabled, 4 disabled
42mA total detector current on the 20 AZCs
350mA of door holders off +VNBF
5 relays on the 8RM used, with supervision enabled, all switching 24V, 50mA relays, normally de-energised.
Ancillary relay 1 (on the MAF) switching a 24V, 100mA load
A Bell circuit with 0.75A of 24V bell load.

Calculate the required battery capacity and check the power supply load.

Steps

1. The quiescent load (Iq) for the mains fail situation is:
   130mA (FIP including one 8ZM)
   \+ 82mA (second 8ZM, all AZCs enabled)
   \+ 4mA (third 8ZM, basic current only)
   \+ 4 x 10mA (third 8ZM, current for 4 AZCs)
   \+ 42mA (detector current)
   \+ 6mA (8RM, supervision enabled)
   304mA

   Say Iq = 0.30A for mains off.
   The quiescent load for mains on is Iq plus the door holders (In = 0.35A) i.e. 0.65A.

2. Say, for example, that the 2 zones in alarm can, at most, turn on 3 of the 5 module relays plus all the bells and the Anc 1 load.

   The alarm load for 2 zones in alarm is therefore:
   275mA (FIP including 1 8ZM, 2 zone alarm, MAF relays)
   \+ 82mA (second 8ZM, quiescent only)
   \+ 44mA (third 8ZM, quiescent only)
   \+ 42mA (detector current)
   \+ 6mA (basic 8RM current)
   \+ 3 x 11mA (3 relays on 8RM)
   \+ 3 x 50mA (loads on 3 relays)
   \+ 100mA (Ancillary 1 relay load)
   \+ 750mA (Bells load)
   1482mA

   Say Ia = 1.48A (the door holders are switched off in alarm).

3. Cap (5 hr) = 5 x 0.3 + 0.66 x 1.48 Ahr = 2.49 Ahr

4. Battery charger current required is:

   Ia (1.48A) is greater than Iq + In, (0.65A), therefore:

   Ic = 1.48A + (2.49/24) x 1.25 = 1.61A (where the 1.25 allows for charging efficiency e of 0.8) i.e. 3A is sufficient.

5. Battery capacity

   Cap (24 hr) = [(24 x 0.3) + 0.66 x 1.48] x 1.25 = 10.2Ah.

Suggest that two 12V, 10 Ahr sealed batteries from list in Section 3.3.3. would be adequate (or next size up, e.g. 17 Ahrs).

Note that these require a 68E, 10W battery test resistor to be fitted to the tabs on the MAF/PSU as described in Section 5.3.5.

5.3.4 BATTERY SIZE

The maximum battery size given in the specification, Section 3.3.3, of 220mm x 220mm x 175mm, is imposed by the cardframe, which obstructs insertion and removal of batteries in the bottom of the cabinet.

The maximum sizes which fit within this size are:

Sonnenschein	A212/36A	36 AHr
Powersonic	PS-12400	40 Ahr
Yuasa	NP38-12	38 Ahr
Century Yuasa	PS-12400	40 Ahr
IRH BB Battery	BP40-12	40 Ahr
Panasonic	LC-X1242P(AP)	42 Ahr
YHZ Power	NP38-12	38 Ahr

If batteries larger than this are required, then the cardframe can be made removable by replacing the 3 pop rivets with M4 or M5 screws and nuts.

For an FP0550, or an FP0551 with a removable cardframe, the maximum allowable size is 220H x 260W x 175D.

The maximum sizes which fit within this restriction are:

Sonnenschein	A212/50A	50 Ahr
Powersonic	PS-12600	60 Ahr
Yuasa	NP38-12	38 Ahr

Fitting and removing batteries of this maximum size is difficult, and may require the removal of any modules or brackets fitted in the bottom of the cabinet.

These very large size batteries may also impede the plugging in and removal of modules fitted to the bottom position of the cardframe.

Battery Combinations

Large capacity batteries can be made up of two parallel sets of 24V batteries of smaller capacities. This allows easier fitting, and allows larger capacities, and a greater range of capacity, to be achieved than is possible with a single pair (as indicated above).

Examples of combinations that will fit in an FP0551 with no cardframe removal required.

1. 2 Powersonic PS-12330 (33 Ahr) batteries in parallel with 2 Powersonic PS-12100 (10 Ahr) batteries gives a total of 43 Ahr.

2. 2 sets of 2 Powersonic PS-12280 (28 Ahr) will provide 56Ahr and will fit side by side on the bottom of an FP0551.

5.3.5 BATTERY TEST RESISTORS

The standard battery test resistor is suitable for a battery of capacity of up to 6.5AHr.

For larger batteries, additional resistors must be fitted, either directly to the MAF/PSU pcb (in R34 and/or between Battery Test tabs), or within the FIP and wired to the Battery test tabs.

Where the additional resistors are carrying a current of greater than 0.7A, a 24Vdc relay must be fitted to switch the load as shown in Fig 5.3.1. (Note the diode polarity, the ▌end is marked on the case).

Battery test current is calculated as 0.1C at 25V where C is the battery ampere hours. E.g. 1A test current is required for a 10Ahr battery.

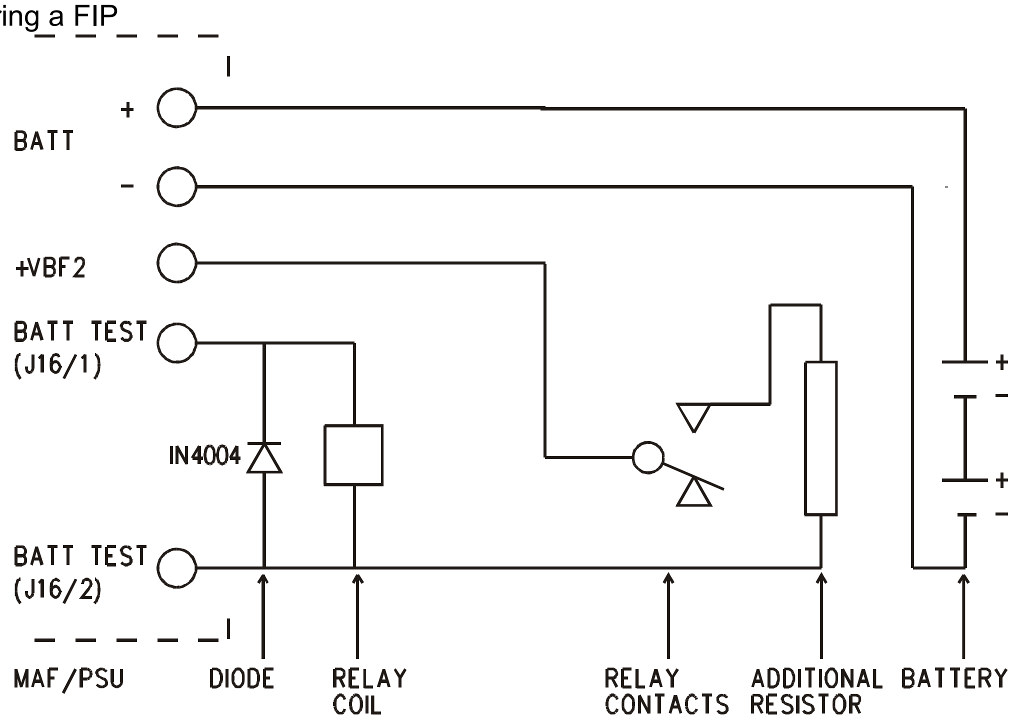
The standard battery test current of 0.65A includes FIP quiescent current. Table 5.3.1 shows the additional battery test resistors that must be fitted for various battery sizes. It is calculated using the quiescent current of a base FP0550 (or FP0551). In general, a FIP requiring larger batteries will have a higher quiescent current than that of a base FP0550, and so a smaller additional test current than that shown could be used.

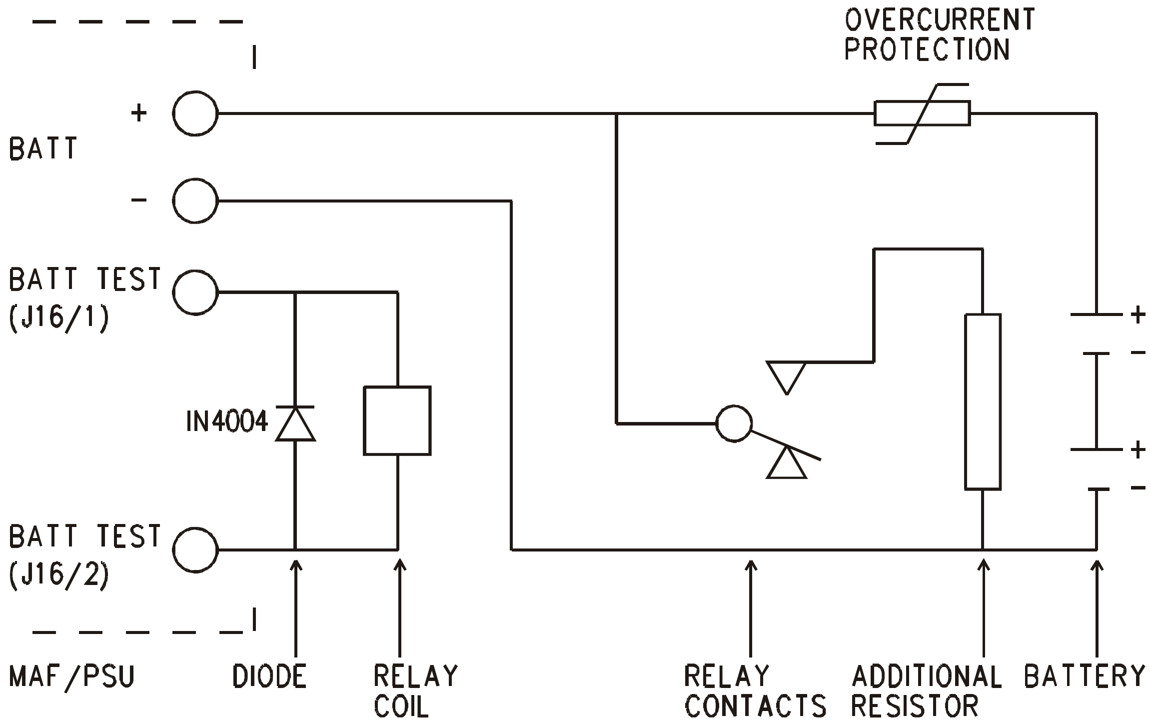
Because the battery test runs only for 1 minute and is then disabled for greater than 1 minute, resistors may be used at full power rating, or even slightly greater. (Resistors of power ratings greater than that shown may be used).

Battery Capacity Ahr	Total Test Current A	Additional Test Current A	Additional Resistance Ohms	Resistor Combination Ohms/Watts	Relay Rating Amps (at 24Vdc)
6.5	.65	-	-	-	-
10	1.0	.35	71.4	68E 10W	-
17	1.7	1.05	23.8	22E 20W OR 27E 20W// 180E 5W	2
28	2.8	2.15	11.6	12E 50W// 330E 2W OR 10E 50W	2.5
33	3.3	2.65	9.43	10E 50W// 150E 5W	3
40	4.0	3.35	7.46	15E 50W// 15E 50W OR 10E 50W// 27E 20W	4
60	6.0	5.35	4.67	4E7 100W OR 10E 50W// 10E 50W// 68E 10W	6

Note : // means "wired in parallel with".

TABLE 5.3.1
<u>BATTERY TEST RESISTORS</u>





A. FOR ADDITIONAL TEST LOAD GREATER THAN 0.7A AND ALARM LOAD/CHARGER CURRENT LESS THAN 3A.

B. FOR ALARM LOAD/CHARGER CURRENT GREATER THAN 3A.

FIG 5.3.1
<u>CONNECTION OF BATTERY TEST RELAY/RESISTOR</u>

5.3.6 BATTERY OVERCURRENT PROTECTION

The MAF/PSU has two parallel PTCs, rated to carry over 3A, for battery overcurrent protection.

Where the Alarm load from the battery to FIP is greater than 3A (i.e. with mains failed), or where a 6A power supply is used, an external, self-resetting, overcurrent device of suitable rating (greater than 6A, less than 35A e.g. Derwent, 10A Type D (connected to pins 1 and 3)) must be wired between the battery terminals on the MAF/PSU and the battery (see Fig 5.3.2). For this option the PTCs must be shorted by soldering a suitable copper wire between the two adjacent test points +VB and BATT+ (TP11 and TP16 on the MAF/PSU). For a FIP supplied with a 6A PSU, this is done in the factory and the Derwent cut-out is included.

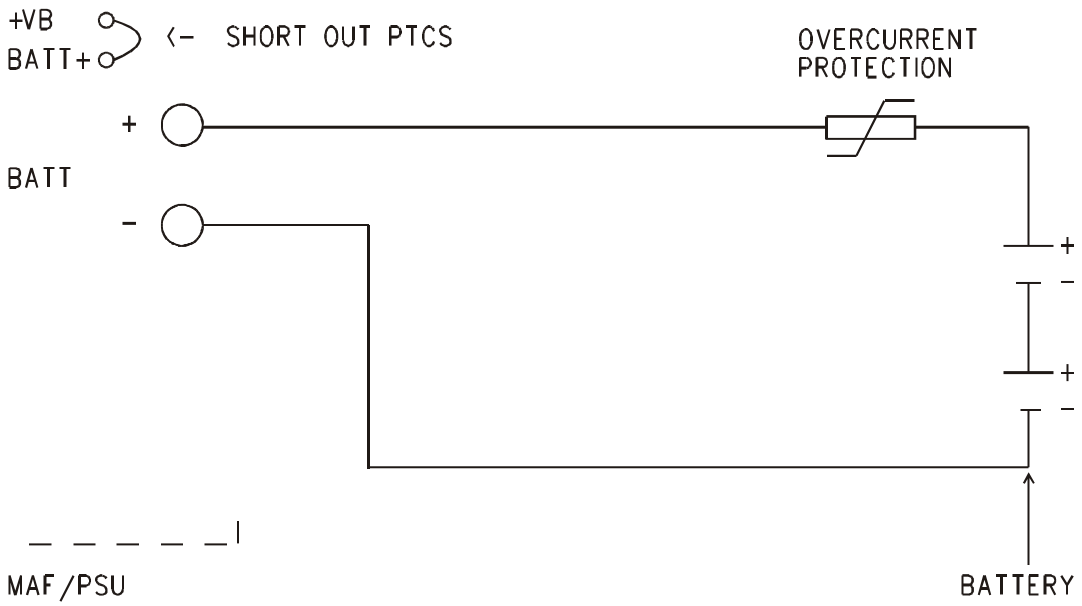


FIG 5.3.2
<u>BATTERY OVERCURRENT PROTECTION FOR LOADS GREATER THAN 3A</u>

5.3.7 POWERING AN F3200 FROM AN EXTERNAL DC SUPPLY

To comply with AS1670.1 F3200 uses a 240Vac supply as the primary power source and back-up batteries as the secondary power source. However the F3200 may be powered from an external dc supply. This must be battery backed, or have another form of secondary source to comply with AS1670.1. The supply must provide a voltage and current within F3200's operating range (preferably 25-27Vdc).

The following wiring instruction connects the dc supply voltage onto the ac (low voltage) input so that the Mains on LEDs on both the MAF/PSU and Controller PCBs are illuminated. Because this signal is not ac, the Controller generates a 'Mains Fail' condition and automatically disables the charger monitoring and battery tests.

With no mains (ac) present the real time clock (RTC) on the Controller Display will use the crystal time base instead of mains 50Hz and will therefore not be as accurate. The accuracy of the clock can be improved by installing V3.XX F3200 software instead of V2.XX software. Refer to LT0255/LT0256.

POWERING AN F3200 FROM AN EXTERNAL DC SUPPLY (CONTINUED)

Without a mains connection, F3200 will indicate “Mains Fail” in a system fault recall but this is not actually a fault and can be ignored.

WIRING

Disconnect the secondary wires of the transformer from the AC IN tabs on the MAF/PSU. Cable tie them safely out of the way (if the mains is not connected they will not be live).

Connect the DC supply –ve to the BATTERY – terminal, and the +ve to the BATTERY + and, if the mains power on LED is to be lit, to the J3/1 AC IN tab on the MAF/PSU. This requires a 2mm crimp receptacle (or alternatively may be soldered and preferably covered with sleeving).

If the maximum alarm load can be greater than 3.5Adc, but less than 7A, fit a second PTC (Vigilant part RR0917) to the R43 position on the MAF/PSU (adjacent to the existing PTC, R42). If the alarm load can be greater than 7A then short out the PTCs (connect TP16 to TP11) and fuse the external supply with a sufficient rating to meet the maximum alarm load, but not so high as to not blow on a short circuit or wiring fault.

The +VNBF output (J7A) must not be used.

CURRENT CALCULATIONS

Add an extra 80mA to the stated F3200 quiescent and alarm currents if the connection to the J3/1 AC IN terminal is made (the connection to J3/1 is optional).

PROGRAMMING

If battery low monitoring is enabled, a Battery Low Fault will occur if the supply voltage falls below a specified threshold.

If the version of software installed supports them (not all do), then the following parameters should be set as shown. All values are disabled by default.

Mains fail is fault after 8 hours	-	disable
Charger high/low fault	-	disable
Battery connection monitoring	-	disable
Hourly battery test	-	disable
Daily 40 min battery test	-	disable
Battery low monitoring	-	enable/disable as desired

5.4 LINKS ON PCB MODULES

5.4.1 CONTROLLER/DISPLAY

Apart from E2INIT (SW1) and DATABASE WRITE PROTECT/ENABLE (Lk7) all links on the Controller Display are factory set. (These configure the pcb for memory chips used, other functions, and type e.g. as a FIP Controller or an RZDU Controller).

SW1 and Lk7 are described in Section 6.3.1.

5.4.2 MAF/PSU

Of the 4 links on the MAF/PSU, 3 are for field adjustment as follows:

Lk2-Lk4	Bells/ANC 3	-	Fitted in factory to provide switched 24V output. (Bells+, Bells-).
		-	Snip all 3 for clean changeover contacts (NO, COM, NC).

Note that Lk2-Lk4 must remain fitted if Bells supervision is required (No links are required for Ancillary Relay 1, 2 supervision).

One is for factory configuration as follows:

Lk1	Master/RZDU	-	Fitted for Master.
		-	Snipped for RZDU (3-wire isolated connection to FIP).

5.4.3 8 RELAY MODULE

The 8 three position links (Lk1-Lk8) select load supervision for each relay.
U <-> unsupervised (voltage free)
S <-> supervised

The default setting (factory set) is unsupervised. Note that in addition to shifting the minijump for supervision, supervision must be enabled during programming.

5.4.4 16 ZONE LED DISPLAY

The last Display Bd in the chain (i.e. in furthest left position as viewed from the front) requires the minijump provided to be fitted to Lk1.

5.5 ERROR MESSAGES DURING FIP CONFIGURATION

Listed below are some error messages that can appear on the LCD during installation. Refer also to Section 6.6.3 System Faults in the Operator Manual LT0119.

Error messages that can occur on startup or exit from program mode

"Shift reg clocking fault"
"Invalid # shift regs.Total # regs=xxx # input regs=xxx"
These messages indicate a hardware fault with the shift register bus that connects the Controller, MAF/PSU, 8 Zone, and 8 Relay modules. The fault could be on the Controller, the interconnecting FRCs or any of the connected boards. Try connecting just the MAF/PSU on its own and with different cables to isolate the problem.

"Shift reg driver fault"
This message indicates a problem with the software driver for the shift register bus.

"Clock crystal timebase check fail"
This message indicates a hardware fault on the Controller.

"Clock chip ram write read fail"
"Clock register write read fail"
"Clock startup fault"
These messages indicate a hardware fault on the Controller.

"Eprom CRC fail"
This message indicates the checksum of the software program code is incorrect. This can be caused by a damaged EPROM or some other hardware fault on the Controller.

Error messages that can occur on entry to program mode

"This database is invalid and should be reinitialised-net dbase in non net panel"
This message is produced on entry to program mode when a database created with networked F3200 or NDU software is used with non-networked software. This is unusable and the database should be re-initialised and reprogrammed.

CHAPTER 6
PROGRAMMING

6.1 INTRODUCTION

6.1.1 GENERAL

The F3200 has two main levels of programming. The first level is accessible to the Operator (via the keypad) and does not require entry of an access code. It allows the setting of parameters, such as time and date, which do not affect the basic structure of the system.

The second level allows entering of data into the database to configure the operation of the FIP. It is accessible only by fitting the WRITE ENABLE link on the Controller and entering an access code on the keypad. When this level has been accessed, Alarm and other I/O processing is stopped.

The FIP can be programmed from the keypad and the database can be saved to a computer, and restored from a computer, in binary format. (Currently, the database can not be configured off line on a computer. It can only be configured from the FIP keypad).

It is recommended that, for each FIP, configuration sheets specifying Text and all parameters, be filled out before programming commences. Some suggested master sheets are included in Appendix B. A set of completed sheets should be kept in the contract file.

NOTES

1. When filling out configuration sheets it is only necessary to record any non-default parameters.

2. It is necessary to install and configure the modules before the other programming, such as text entry, is performed.

The recommended order of configuration and programming is shown in Section 6.1.4.

6.1.2 MENU STRUCTURE & PARAMETER ENTRY

The Programming menu structure of the F3200 takes the form of an inverted tree, with a display screen for every branch. Each screen shows an item with parameters to be changed, a prompt, or a menu of options.

Options are normally preceded by numbers, and the desired choice is made by pressing the appropriate digit on the numeric keypad (1-9).

The general method of programming is to step down the branches of the tree by selecting options until the sub-level which contains the items to be programmed (e.g. Configure Zones) is reached. Items (e.g. Zone 1, Zone 2, etc) can be stepped through by use of the "NEXT" and "PREV" keys.

When an item is selected, the attributes (e.g. MAF Mapping) are selected by use of the horizontal cursors (≺ ≻). For each attribute selected the options are displayed. Options (e.g. N for non-mapped, M for mapped) are selected by use of the vertical cursor (⅄), or, in cases where there are more than two choices, pressing the digit associated with the desired option.

When all the desired attributes for an item have been selected they are saved into the database (where applicable) by pressing "ACK".

The "CLEAR ESC" (Escape) key is used to return up levels in the menu tree. To get from one branch of the tree to another branch of the tree, generally "CLEAR ESC" must be repeatedly pushed until the menu option gives the choice of the two branches.

GENERAL (CONTINUED)

If "CLEAR ESC" is pressed enough times, the programming mode display is exited and the database checksum is calculated.

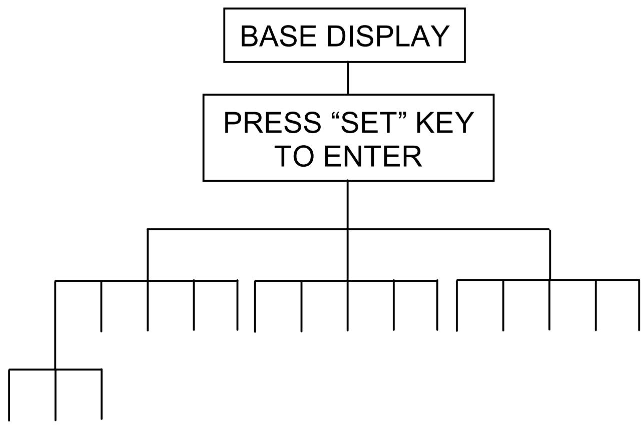


FIG 6.1.1
MENU STRUCTURE

Details of the programming menu are shown in Figures 6.1.2A-C.

Figure 6.1.2A is for V1.00 and V1.01 software
Figure 6.1.2B is for V1.10 software
Figure 6.1.2C is for V2.0X software, noting that some commands are only available from specific versions onwards.

Fig 6.1.2C and 6.1.2D1/D2 are for V2.0X software but note that some options are not provided in “older” software versions.

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F3200 PROGRAMMING MENU STRUCTURE

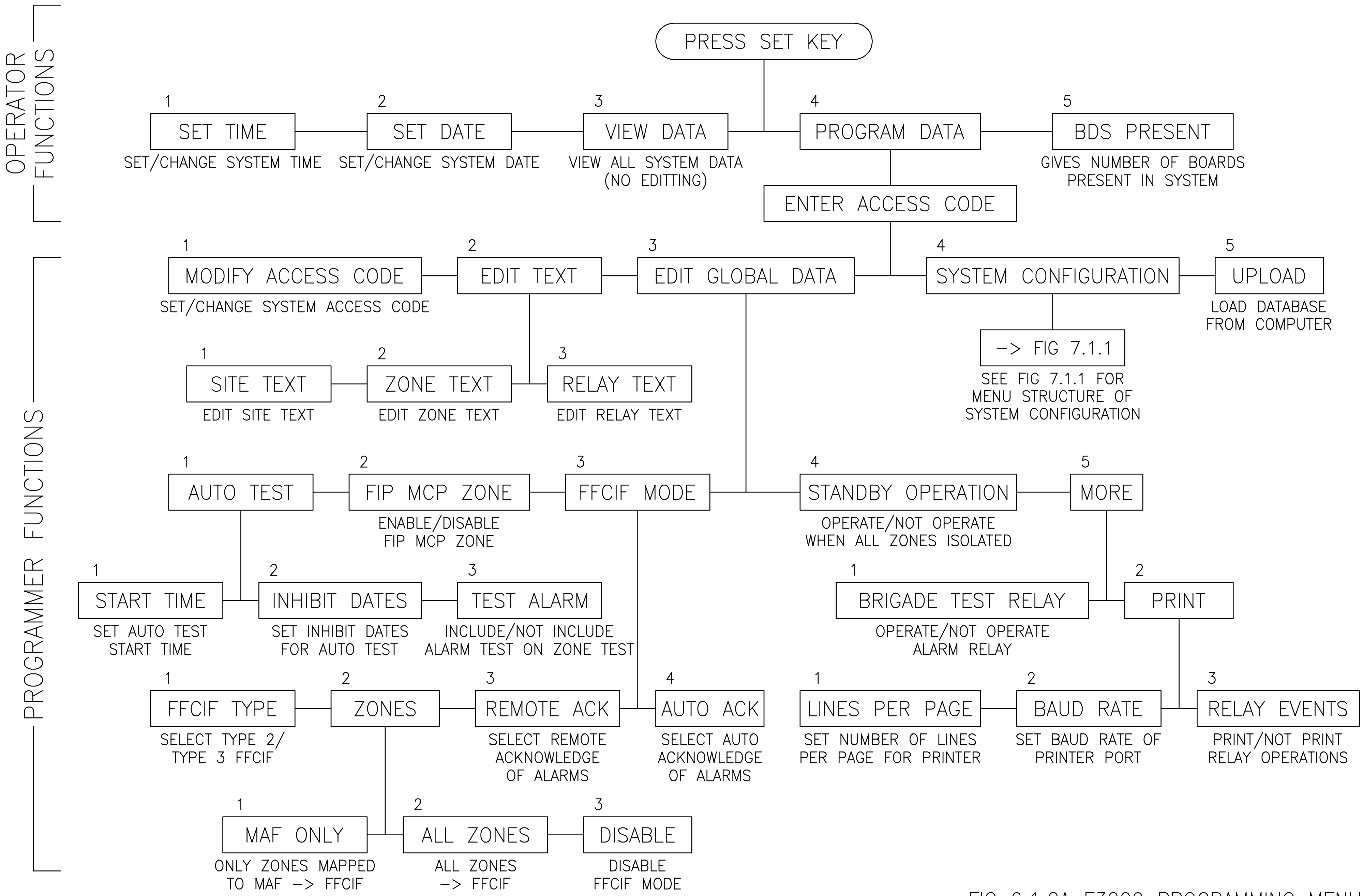
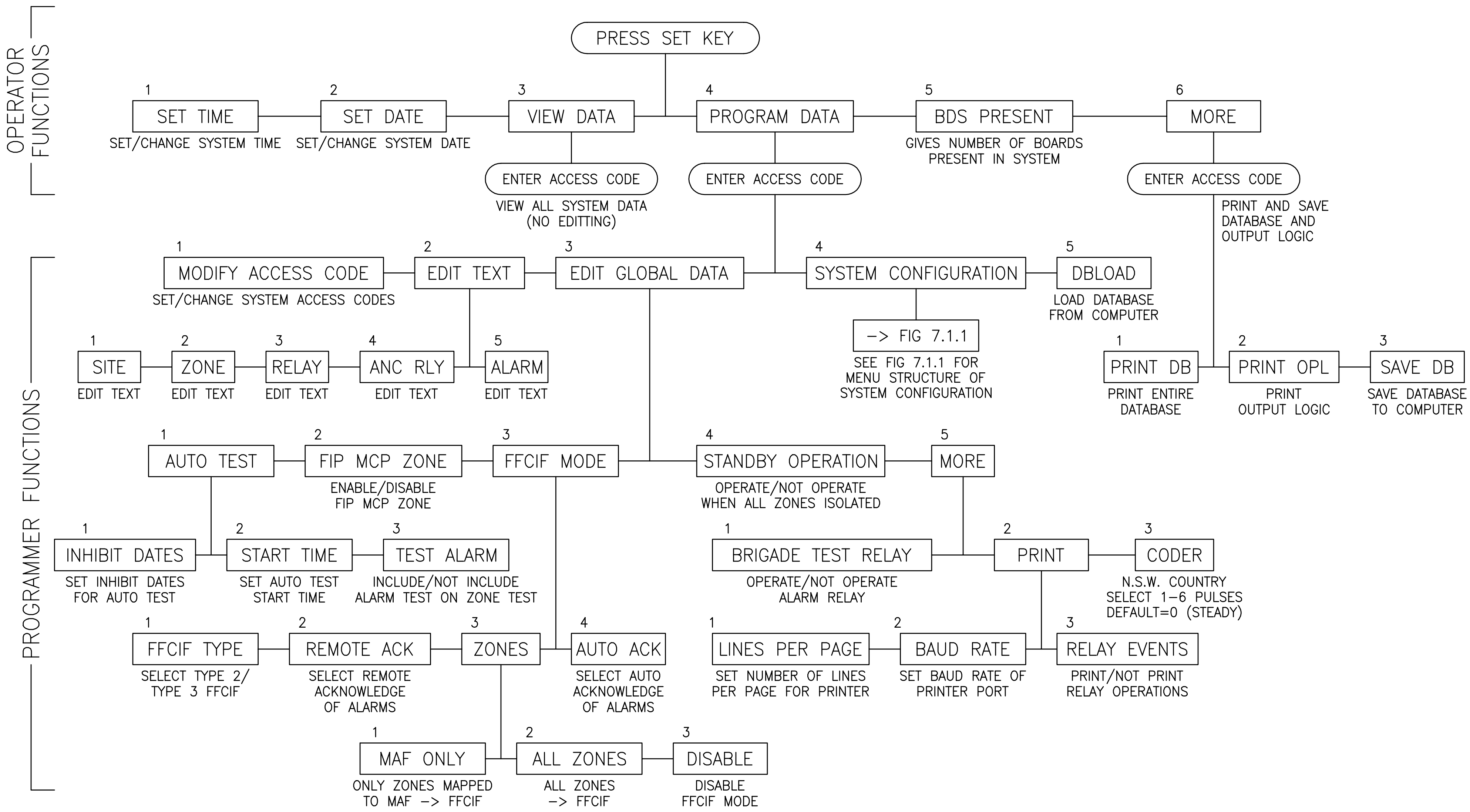


FIG 6.1.2A F3200 PROGRAMMING MENU STRUCTURE FOR V1.01 SOFTWARE

F3200 PROGRAMMING MENU STRUCTURE



DATE OF LAST REVISION: 14 FEBRUARY 1995

FIG 6.1.2B F3200 PROGRAMMING MENU STRUCTURE FOR V1.10 SOFTWARE

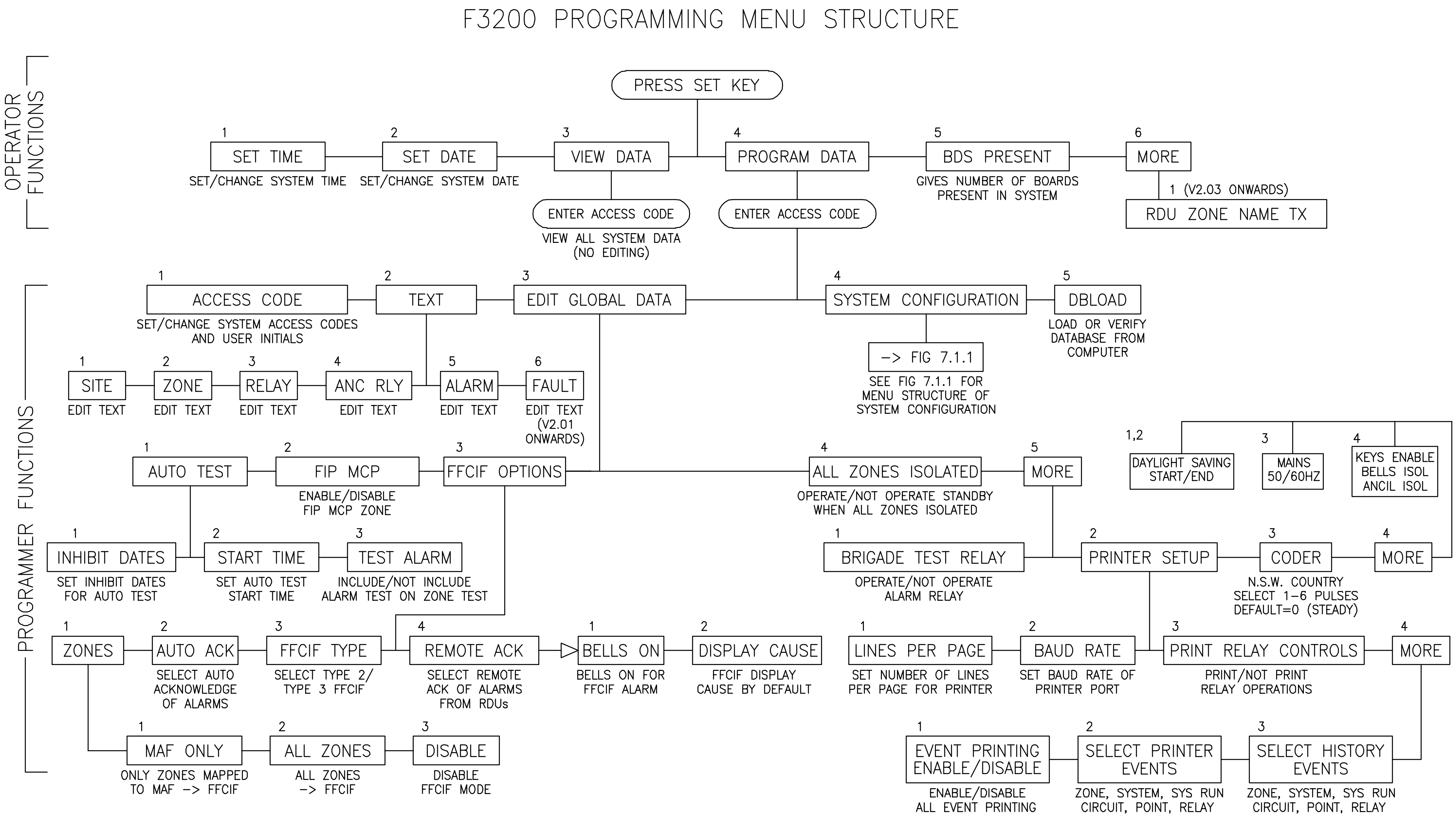


FIG 6.1.2C F3200 V2.06 OR EARLIER PROGRAMMING MENU STRUCTURE

F3200 PROGRAMMING MENU STRUCTURE PAGE 1

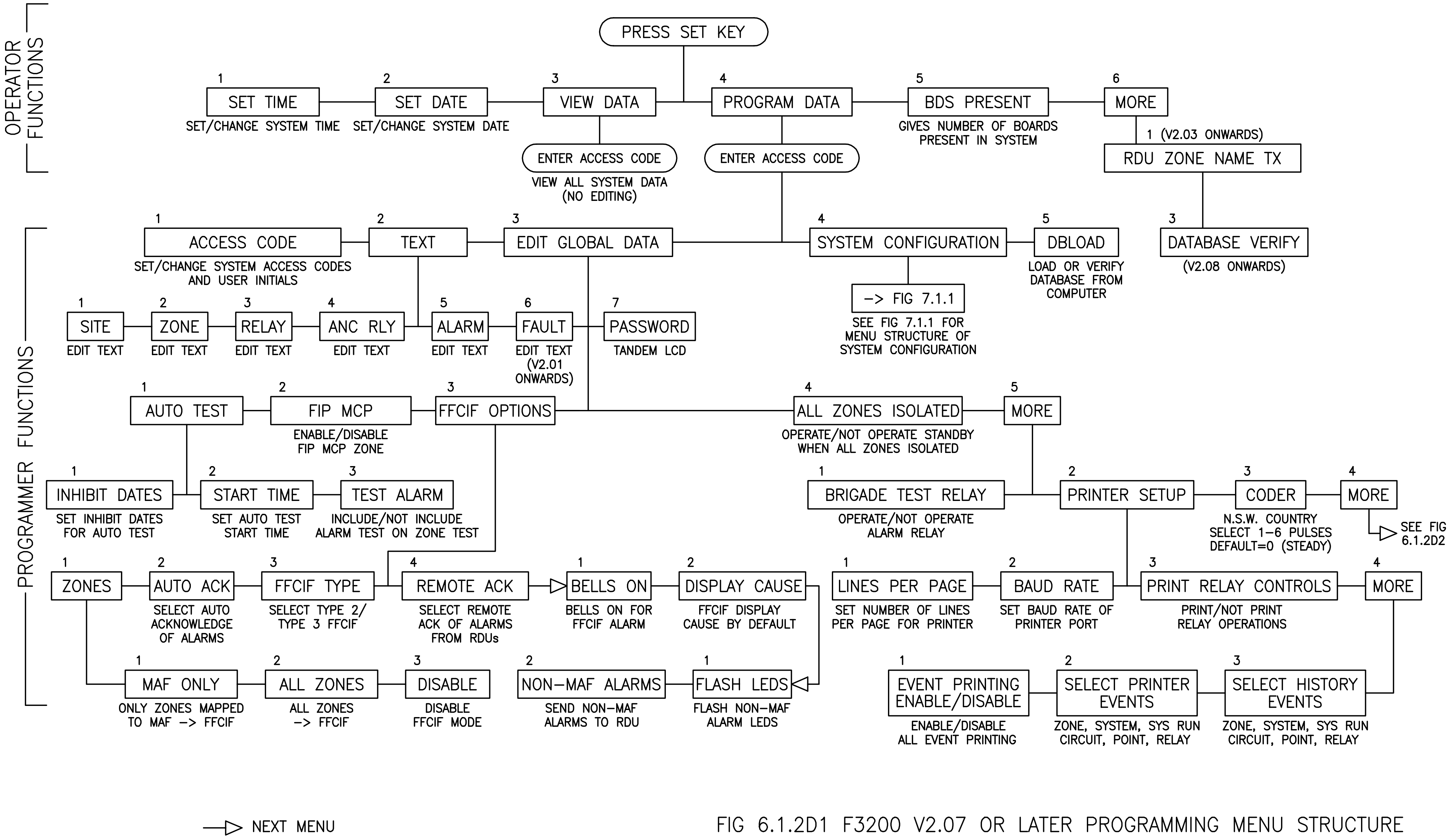


FIG 6.1.2D1 F3200 V2.07 OR LATER PROGRAMMING MENU STRUCTURE

F3200 PROGRAMMING MENU STRUCTURE PAGE 2

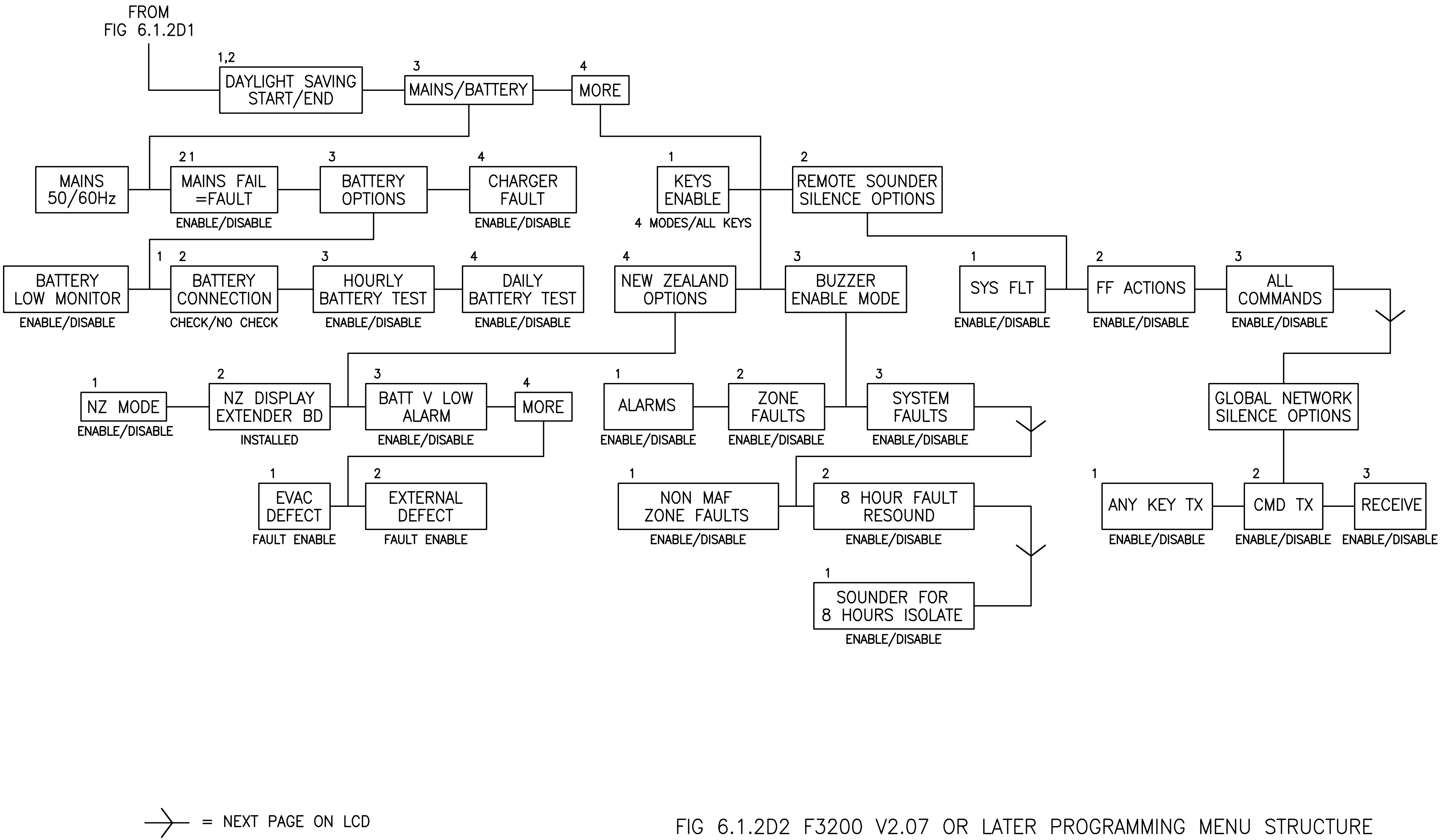


FIG 6.1.2D2 F3200 V2.07 OR LATER PROGRAMMING MENU STRUCTURE
NOTE: SOME OPTIONS ARE NOT PROVIDED IN OLDER SOFTWARE VERSIONS

6.1.3 PROGRAMMING KEYS

Looking at the keypad (or picture in Fig 2.1.2) the user will observe a 4x4 "numeric" keypad, and a row of function keys across the bottom. The function keys from "RECALL" to "BELLS ISOL" all have two functions e.g. "BELLS ISOL/DELETE". In programming mode, these keys operate the bottom functions i.e. "DELETE", "INSERT", etc. An exception is "RECALL/(" which will be either "RECALL" or "(" depending on the programming function selected.

The logic functions in the right hand column of the 4 x 4 "numeric" keypad are used for entering output logic equations. The symbol and the word represent the same function e.g. logical "OR" is represented in an equation by the symbol "+".

During text entry the "NOT" key may be used to enter a blank space.

6.1.4 RECOMMENDED PROCEDURE FOR CONFIGURATION & PROGRAMMING

1. **System Design**
   Determine all system requirements; decide number of 8ZMs, 8RMs, LED Display (if any); allocate zones and relays. Fill out configuration sheets with programming for detector type, relay supervision, output logic, etc.

2. **Battery & PSU**
   Calculate battery and PSU requirements as per Section 5. Decide on battery capacity. Check that physical size of battery fits with proposed mechanical arrangement.

3. **Configure Hardware**
   With mains power off and battery disconnected. Fit battery test resistor (if required). Install modules and fit any relay supervision links required.

4. **E2 Init**
   Fit links Lk7, SW1 and turn mains power on to perform Database Initialisation as per Section 6.3.1. Check that modules configured by Controller match modules installed.

5. **Access Database**
   As per Section 6.3.2, using default code.

6. **Assign Access Codes**
   As per Section 6.4.2. Note that the first code is the master code, and should be known by the System Designer or Service Supervisor as appropriate.

7. **Enter Text**
   As per Section 6.4.3. Copy names for FIP, zones and relays from configuration sheets.

8. **Global Parameters**
   Enter any global parameters different from the defaults such as auto-test inhibit dates, FIP MCP zone (if other than Zone 1), as per Section 6.4. Fig 6.1.2 can be used as a flow chart. Work from top to bottom, left to right.

9. **Enter System Configuration Parameters**
   Refer to Fig 7.1.1. Enter all the circuit, zone, output logic, relay supervision and RZDU parameters from the configuration sheets that differ from the defaults. Start at the left side of Fig 7.1.1 (circuits), and work from left to right through each branch, starting at the lowest numbered item (e.g. zone, relay) and stepping through to the largest number for each item configured.

6.1.5 RECOMMENDED PROCEDURE FOR CONFIGURATION & PROGRAMMING (CONTINUED)

10 Checking

When all parameters are entered, either:

1. Print the database (as per Section 6.3.4) and compare the printout against the configuration sheets (check each parameter for each item and tick off).

or

2. If a printer is not available, de-access the database as per Section 6.3.3, enter "View Parameter" mode and check each parameter of each item (tick off) noting any mistakes. Re-access database and correct mistakes.

11. Update RDU Programming

Update the programming (including zone names) of any connected RDUs. F3200 V2.03 (or later) software allows the sending of zone names to an RDU through the RDU comms link. This is initiated with a command at the FIP and requires the RDU to have its database link (Lk7) in the write enable position. RDU software V2.01 or later supports this feature. Refer Section 6.2.1.

12. Testing

As part of commissioning, with test loads rather than real ones (e.g. for airconditioning shut-down and gas flood). Check the operation of detectors (including LED brightness and remote LEDs). Check the operation of logic and timers from inputs to outputs.

13. Save Database

When satisfied that the configuration parameters and logic are correct, save the database onto a disk (if a computer is available) and keep it in case the database ever needs to be restored, or in case a future FIP has similar logic and could be copied from this one and edited.

After saving the database a verify operation should be done as described in Section 6.3.7.

6.2 SET MENU & OPERATOR PROGRAMMING FUNCTIONS

6.2.1 GENERAL

From the base display, pressing the "SET" key enters the programming menu as shown in Fig 6.1.2. This gives the Operator programming options as follows:

1 Set Time; 2 Set Date; 3 View Data; 4 Program Data; 5 Bds Present;
6 More

Operator Accessible Options

Options 1,2 and 5 are Operator accessible and do not affect the database.

Set Time and Set Date are self-explanatory (they are described in the Operator's Manual, Sections 6.9 and 6.10 respectively).

Option 5, Boards Present, allows temporary removal/re-instalment of one or more modules and is described in the Operator's Manual, Section 10.2.

Database Options

Option 3:view data, and 4:program data, require an access code to be entered.

View Data is described below. Program Data selects the database configuration menu and is described in Section 6.4.

Options to print and save the database are accessed using the PRINT key from the base display and allow the database to be printed or saved in a computer file are described in Section 6.3.4.

Option 6:more produces a second menu of 1:RZDU zone name transmit.

This option is used to initiate the transmission of all zone and module relay names to any RDUs. This is described in Section 7.6.

6.2.2 VIEW DATA PARAMETERS

The View Data option has a menu structure parallel to the program data menu structure and allows the user to view the FIP database configuration without possibly changing it. To alter the database the Program Data option must be used. Refer to Section 6.4.

View Data mode does not stop processing of alarms (as Program Mode does) and, thus, should be used to view programmed information on an operational FIP.

NOTE

Access to this menu can only be gained by entering the correct access code.
Refer to Section 6.3.2.

6.3 INITIALISING, ACCESSING, DE-ACCESSING, PRINTING, SAVING, LOADING & VERIFYING THE DATABASE

6.3.1 INITIALISING THE DATABASE

The E2 INIT (initialisation) sequence causes the FIP to accept the module configuration found and store this in its database. Note that this also sets all other parameters to the default option and erases all other programmable data in the database e.g. zone names, output logic equations. It should, therefore, only be done on an unprogrammed system. Whenever the panel is powered up or down, Lk7 should always be in the write protect position.

Steps

1. Fit the minijump on the DATABASE link, Lk7 (top right of Controller/Display) in the WRITE PROTECT position, (i.e. NOT write enabled).

2. With the batteries disconnected, turn the FIP mains power off.

3. Short circuit pins SW1 (top centre of Controller/Display) with the minijump, then turn the power on.

4. When the start up sequence is completed the LCD prompts you to write enable the database by moving Lk7 to the write enable position.

   Move Lk7 to the write enable position.

   You will then be prompted on the LCD to remove SW1 and press "ACK".

   Remove the minijump from SW1 (place it on one pin only), and press "ACK" to complete the sequence, or "CLEAR-ESC" to abort it.

6.3.2 ACCESSING THE DATABASE

When programming the database the **DATABASE** link (Lk7 on Controller/Display) must be in the WRITE ENABLE position. **At all other times it must be in the WRITE PROTECT position.**

With Lk7 on the Controller in the WRITE ENABLE position, selecting "Program Data" from the SET menu prompts for entry of the 6 digit access code. The default access code is 0 0 0 0 0 0.

When access has been granted, the Program data menu is displayed and a new access code can be entered (option 1, refer to Section 6.4.2).

The access code for the FIP should be recorded in the FIP contract file to enable future reconfiguration. Where multiple users have individual codes then they should have a system for remembering their own code.

ACCESSING THE DATABASE (CONTINUED)

WARNINGS

1. When the database is accessed the Controller de-energises the Standby relay (i.e. transmits Standby) and stops processing. If this signals "Alarm" to the Brigade the appropriate arrangements should be made.

2. On a FIP that has been commissioned, if there is concern that changes made to the database (e.g. programming circuits) may cause a false alarm, then either the Brigade should be isolated or the appropriate zones should be isolated before entering "Program Mode".

6.3.3 DE-ACCESSING THE DATABASE

It is important to make an orderly exit from programming mode (by use of "CLEAR ESC") before replacing Lk7 in the WRITE PROTECT position or turning the FIP power off.

This allows the Controller to calculate the checksum for the revised database.

If an orderly exit is not made and the Controller finds its checksum does not match the checksum stored it will remain in Standby with I/O processing inactive. It is then necessary to re-access the database, and re-exit to allow it to calculate a new checksum. When this is "Acknowledged", I/O processing re-starts, and the Standby relay is re-energised (but not while all zones are isolated unless programmed to do so).

NOTES

1. Lk7 must be fitted to the WRITE PROTECT position after the database has been de-accessed.

2. If zones were de-isolated before programming commenced, they should be checked for status before being de-isolated after programming has finished. If any show "alarm" then these must be checked to see if the alarm is genuine.

3. All zones and relays associated with any new modules configured (including E2 Initialisation) will be automatically isolated when the database is de-accessed, and need to be checked and de-isolated as per note 2. above.

6.3.4 PRINTING & SAVING THE DATABASE

Once a FIP is programmed and commissioned, it is recommended that a disk containing both a copy of the database in binary format and a printout of the database be kept in the contract file. The printout should be carefully checked against the original configuration setup sheets. A new database printout should be done after any subsequent modification to the database.

The printer or computer is connected to the PRINTER/PROGRAMMER connector (J1) at the bottom left corner of the Controller/Display. Suitable cables for connection are described in Section 3.5.4.

When programming the FIP, remember to set the correct data for the printer (default is 60 lines per page, 9600 Baud).

Set the computer serial port for the same Baud rate. The computer serial port should also be set to 8 data bits, no parity, 1 stop bit, and Xon/Xoff handshaking should be enabled.

PRINTING & SAVING THE DATABASE (CONTINUED)

To print or save the database, use the PRINT key from the base display (i.e. press CLEAR/ESC repeatedly until the base display is showing then press PRINT) and select option 3 to print the database or option 5 to save the database, then enter the access code. To print just the output logic part of the database, select option 4.

> **NOTE**
> These functions do **not** require the DATABASE link (Lk7) to be fitted in the WRITE ENABLE position.

Saving the Database on a Computer

The FIP database may be saved (in binary format) on a computer (e.g. a laptop PC). The saved database can then be reloaded into the FIP (or another F3200) at some future time and this is much faster than reprogramming the entire database from the FIP keypad.

To initiate a database save, first setup the PC to capture the data to a disk file using a program such as PROCOMM. From the "print" menu (press the PRINT key from the base display as described above), select option 5:save database, enter the access code, then press the "ENTER" key to initiate the save.

The FIP display will show:
"Print in Progress. Press RESET to Cancel"
while the database save is in progress.

With V2.08 or later software, the operator will then be prompted to do a database verify.

> **NOTE**
> The F3200 FIP responds to XON (CTRL Q) and XOFF (CTRL S) handshake characters for both the save database and print database. If it receives an XOFF character it will suspend transmitting data until it receives an XON character.
>
> If the print or save database operation does not appear to be working, try typing Control Q on the PC.

6.3.5 RESTORING THE DATABASE FROM A COMPUTER

The database saved in a disk file on a computer may be restored as follows:

Enter program mode as described in section 6.3.2 and select option 5:DBload from the main program mode menu, then select Option 1 : load database.

The message:
“Press ACK, then start sending the new database”
will appear.

Connect the computer to the FIP as described in Section 6.3.4. Press the "ACK" key on the FIP keypad and then initiate the transmission of the database file from the computer.

The FIP must receive a complete database with the correct number of records or it will display an error message.

RESTORING THE DATABASE FROM A COMPUTER (CONTINUED)

Note: The FIP will transmit XON, XOFF characters for handshaking if it needs to slow down the rate of data being sent to it. So, where possible, the computer should be set up for XON XOFF handshaking. If XON/XOFF handshaking is not available, or if errors occur, then a slower baud rate (2400) should be used.

6.3.6 DATABASE CONVERSION

An F3200 database in EEPROM created with F3200 V1.10 software (or earlier) is not directly usable in F3200 V2.00 (onwards) software, but may be made usable by running a conversion process. The conversion may be done either on powerup, or after loading a V1.10 format database. Before performing the conversion it is desirable to save a copy of the V1.10 database and check it carefully against the converted database at the completion of the conversion.

<u>At Powerup</u>

Install V2.xx software, set the database write protect link to write protect, ensure EEPROM initialise link SW1 is not installed and power the panel up. After power-up the operator will be prompted to write enable the database and press ACK to initiate the conversion. After the conversion has been completed, the panel will perform a watchdog reset and reboot itself.

<u>After Database Load</u>

If a V1.10 format database is loaded into V2.00 or later software, the operator will be prompted to initiate the conversion process. After the conversion is complete the panel will perform a watchdog reset and reboot itself.

<u>Output Logic</u>

There is slightly less EEPROM available for output logic in a V2.XX format database than a V1.10 database. If the V1.10 database output logic memory is very full, it is possible that some equations will be deleted during the conversion process. If this happens, it will be indicated to the operator on the LCD with the message "Some output logic lost!".

6.3.7 VERIFYING A SAVED DATABASE

With V2.07 or earlier software, a database verify operation can be initiated by entering program mode, selecting Option 5 : DBload from the main program menu, then Option 2 : Database Verify.

With V2.08 or later software, a database verify can also be initialised without entering program mode – press the SET key from the base display, then press the SET key again to select the second menu and selection Option 3 : Database Verify. With V2.08 or later software, following a database save, the operator is immediately prompted to do a database verify.

After the database verify has been initiated on the keypad, the database should be sent from the computer to the panel. The success or failure of the verify will be indicated on the LCD. The RESET key can be pressed to terminate the verify operation at any time.

6.4 PROGRAM DATA MENU, TEXT & GLOBAL PARAMETERS

6.4.1 GENERAL

The Program Data menu (refer to Fig 6.1.2) allows the user to program the following options:

1:Access Codes; 2:Text; 3:Global Data; 4:System Configuration; and 5:DBload.

Option 5:DBload is described in Section 6.3.5, and System Configuration is described in Chapter 7. Option 3:Global Data is described in Section 6.4.4. The other options are described in the following sections.

A summary of the programmable options and their default values is shown in Table 6.4.1 at the end of this chapter.

6.4.2 ACCESS CODES

Up to 10 separate 6 digit access codes are available (numbered 0-9), and each one has provision for the users' initials (3 characters). The initials of the last user to change the database are stored in the database. When the database is de-accessed, the user number and initials are logged with the event.

The default access code for user 0 is 000000. There is no default code for users 1-9. User 0 can change any access codes (users 0-9), but users 1-9 can change only their own access code.

To enter or edit an access code, enter the user number (0-9) from the keypad. This gives the options of: 1 : Access Code; 2 : Initials; 3 : Delete.

1. To enter a New Access Code, select Option 1. Enter the new six digits, and then re-enter them to confirm.

2. To enter The New Three initials, select Option 2.
   The LCD will display the alphabet on the bottom line. Move the █ cursor through the alphabet using the ≺ ≻ cursor keys. Press "ENTER" when the desired letter is selected. Press "ACK" to save the entered initials.
   "DELETE" will delete an entry. "EDIT" will toggle the █ cursor between the top line (initials) and the bottom line (alphabet).

3. To Delete an Access Code, select Option 3 for that user. Press "ACK" to remove the code for that user. The initials remain but can be edited as in 2 above.

Note that no two users should have the same code. Access code 000000 should not be used for any user as it will be known by all service people familiar with F3200.

6.4.3 TEXT ENTRY

The Text option allows entry of the following:

1. a 40 character name for the site
2. a 30 character name for each zone
3. a 30 character name for each module relay
4. a 30 character name for each ancillary relay
5. a 6 character name for each of the 9 programmable alarm text messages.
6. a 40 character fault action text.
7. a 12 character Tandem LCD password.

Text can be programmed with the keypad or with a PC connected to the Printer/Programmer port (refer Section 6.4.3.2).

6.4.3.1 PROGRAMMING TEXT WITH THE KEYPAD

When an item (e.g. Zone 01) is selected, press "EDIT", "ENTER" or "➢" to enable text entry for that item.

Text entry has two fields. The top field contains the text which has been entered and the bottom field contains an array of characters which may be entered.

Each field has one of two cursors. The active cursor █ may be moved through the field it is in by use of the ≺ ➢ cursor keys to select a character, or position in text. The inactive cursor ■ shows where the active cursor would be if it was in that field.

Holding the ≺ ➢ keys down causes rapid movement.

There is a choice of 3 lines of characters in the bottom field (upper case letters, lower case letters, numbers and symbols). These may be scrolled by use of the ⅄ and ⋎ cursor keys when the active cursor is in the bottom line. Note that numbers can be entered directly from the keypad, and the "NOT" key inserts a blank space.

"EDIT" swaps the cursors between the two fields.

"INSERT" toggles entry between "insert" and "typeover" modes.

"DELETE" acts as backspace for a character just entered, or deletes any character in the text selected by the cursor (active or inactive).

"ACK" saves the text and returns the cursor to the item number.

"NEXT" & "PREV" step through items (e.g. zones).

"RECALL" allows copying of the text from any zone or relay to any other zone or relay. (Select zone/relay to be copied into. Press "RECALL" and select zone/relay and number of zone/relay to be copied from. "ENTER" transfers the text. This can then be edited).

PROGRAMMING TEXT WITH THE KEYPAD (CONTINUED)

Example of Entry of Site Name

Enter the site name "Penrose No 1 Store".
From the Text Entry menu select option 1, Site.

The LCD has the inactive cursor in the first position of the top field and the active cursor on A in the bottom field.

Move the cursor right with the ➢ key until the letter P is selected.
Press "ENTER". The letter P should appear in the top field.

Scroll the bottom line with the ⮟ key to the lower case alphabet.

Move the cursor with the ➢ key until the letter e is selected.

Press "ENTER".

Repeat for the other letters in Penrose.

To put a space after "Penrose" press the "NOT" key.

To enter the number 1 in "No 1" press the "1" key.

Mistakes can be corrected by use of the "EDIT", "DELETE", and "INSERT" keys.

When the correct name is entered in the top field press "ACK".

Alarm Text Message

The Alarm Text Message (Detector type) has 7 default options as specified in AS1603.4 and shown in Fig 7.1.1. These include Smoke, Heat, FSW, etc (where FSW = flow switch).

There are 2 blank options (8 and 9) off the end of the bottom field which may be accessed by the ➢ key.

All of these messages may be edited by the user. However, it is recommended that where non-default messages are required (e.g. flame, sub-FIP), then options 8 and 9 are used first.

Fault Action Text

When a fault occurs at the panel, the buzzer is turned on steady and if the LCD is currently showing the base display then the text "A fault is present in the system" is shown on the top line of the LCD and a 40 character user programmed text message is shown on the bottom line of the LCD. The fault action text is cleared from the LCD when any key is pressed or when the buzzer is turned off.

The 40 character user programmed text message could be used to show the name and phone number of the local service company. When an EEPROM (database) reinitialise is done, default fault action text of "Contact your service company" is assigned.

6.4.3.2 TEXT PROGRAMMING WITH A PC

F3200 allows the text names for zones, relays, etc, to be entered from a PC using the F3200 printer port.

F3200 software V1.00 does not support this feature at all. Software V1.10 and V2.00 support all the commands with the exception of the fault action text (F command). Software V2.01 onwards adds support for the F command. This feature is present in standard F3200 panels, networked F3200 panels, and the NDU. V2.07 adds the Tandem LCD password.

To program text from a PC enter program mode using the keypad and LCD in the usual way and select programming of text.

When the LCD is showing the Text entry menu:

Text 1:Site 2:Zone 3:Relay 4:Anc relay 5:Alarm text 6:Fault text 7:Tandem pwd

the PC connected to the printer/programmer serial port is able to enter text.

The LCD must remain showing this menu. Pressing any keys on the F3200 front panel keypad will terminate the entry of text from the PC. To initiate the entry of text, the ENTER key must first be pressed on the PC. A Tandem LCD user with a local connection must press the EDIT key to get into text entry mode at this point and terminate the text entry by typing Q ENTER.

This will give a prompt of: Enter Znn, Rnn, An, S, Tn, In, F, P, Q :

The type of text being entered must first be selected by entering one of the options listed followed by the ENTER key. Lower case z, r, a, s, t, i, f, p or q may be used if desired. Any other characters entered will be ignored.

To exit from the serial port text
Programming process type: Q ENTER
or press the CLEAR key on the F3200 keypad.

To enter a zone name type: Znn ENTER
where nn is the zone number (1-64).

To enter a module relay name type: Rnn ENTER
where nn is the module relay number (1-64).

To enter an ancillary relay name type: An ENTER
where n = 1, 2 or 3.

To enter the site name type: S ENTER

To enter an alarm text type: Tn ENTER
where n is the alarm text number (1 to 9).

To enter an access code user initials type: In ENTER
where n is the access code (user number 0 to 9).

To enter Fault action text type: F ENTER

To enter the Tandem LCD password type: P ENTER

If a valid selection is entered the message:
"Enter Text :"
will appear. The desired text should now be entered, followed by ENTER.

TEXT PROGRAMMING WITH A PC (CONTINUED)

The DELETE or BACKSPACE keys may be used to delete the last character typed, and the ESCAPE key may be used to abort the text entry for the selected item.

After the ENTER key is pressed the message "Saved OK" will appear if the text has been saved correctly into EEPROM.

To load a file of text names from the PC into the F3200 panel, the file should be set up as shown in the following example. The names may actually be in any order, and it is not necessary to have a name for every zone or relay, etc.

Ensure that the last name in the file is followed by a carriage return before the end of the file, i.e. put a blank line at the end of the file.

The characters S, Z, R, etc, must always be in column 1 and the text names must also start in column 1 (unless leading spaces are required, but this is unlikely).

```
S
40 character site name
                                                        (blank lines are allowed)
Z1
Example text name for zone 1
Z2
Name for zone 2
Z3
        This name has leading spaces
Z4
This name does not have leading spaces
.
.
.
Z23
This name will be cut at 30 characters as it is too long
Z24
Name for zone 24
R1
Name for module relay 1
.
.
.
R64
Name for module relay 64
A1
Name for ancillary 1 relay
A2

Name for ancillary 2 relay
A3
Name for ancillary 3 relay
T1
Smoke
T4
Manual
T9
Therml                                                  (limited to six characters)
```

TEXT PROGRAMMING WITH A PC (CONTINUED)

I0
JEH (three characters)
I1
MJS
.
.
I9
BAC
F
Phone VIGILANT FIRE 7903600 (40 characters max)

To initiate the loading of the file into the F3200 panel, enable remote text entry as described above. Run a terminal emulation program on the PC and press ENTER on the PC.

When the message:
Enter Znn, Rnn, An, S, Tn, In, F, P, Q :
appears, send the file containing the text names to the F3200 panel using the "transmit file" command of the terminal emulator.

If possible set the terminal emulator to use XON/XOFF flow control or else set the line transmit delay to 100 milliseconds.

After loading the text names into F3200, do a database printout to check that all names have been assigned correctly.

Refer to Section 6.3.4 for information on the setup of the F3200 serial port. Remember to set the baud rate of the PC to that programmed into the F3200 for its printer port.

6.4.4 GLOBAL DATA

Option 3:Global data from the main Program menu, or Option 2:Global data from the view menu provides a tree of menus that allow many options to be set.

The options provided in the global data menu tree depend on the version of software being used.

There are two different menu trees listed below, the first of which is for V2.06 or earlier software, and the second is for V2.07 and later software.

For V2.06 or earlier software

Some options shown in these menus are not available in earlier versions of software.

1:Auto Test; 2:FIP MCP Zone; 3:FFCIF Mode; 4:All zones isolated; 5:More.

Option 5:more gives the following menu.

1:Brigade Test Relay Activate; 2:Printer Setup; 3:Country Coder; 4:more

Option 4:more gives a further menu.

1:Daylight saving start 2:Daylight saving end
3:Mains 50/60Hz 4:Keys enable

GLOBAL DATA (CONTINUED)

For V2.07 and later software

1:Auto test; 2:FIP MCP; 3:FFCIF options; 4:All zones isolated; 5:More

3:FFCIF options provides the following:
FFCIF zones (MAF only, all, none)
Auto Ack enable/disable
FFCIF type 2/3
Remote Ack enable/disable
FFCIF alarm = bells on enable/disable
Display cause by default enable/disable
Always flash non-MAF alarm LEDs – enable/disable
Always send non-MAF FF alarm to RDU – enable/disable

5:more selects the following menu
1:Brigade test relay activate; 2:Printer setup;
3:Country coder; 4:more

4:More selects the following menu
1:Daylight saving start; 3:Mains/battery
2:Daylight saving end; 4:More

3:Mains/battery provides the following
Mains frequency 50/60Hz
Mains fail action
Battery low monitor enable
Battery tests enable
Charger fault monitor

4:More selects the following menu
1:Keys enable; 2:Remote sounder silence
3:Buzzer mode; 4:New Zealand mode options

The above items are described in more detail in the following pages.

Auto Test
The automatic test of memory, AZCs, etc, occurs at a programmed time every day except on weekends or programmed inhibit dates. This is to reduce the cost of callouts should the auto-test discover a "fault". Only the basic statutory holidays, 25/12, 26/12, 01/01, 02/01 & weekends are inhibited by default. Other state/company specific ones should be added. Note that the default programming does not include an alarm test of each AZC (zone) and to disable the Auto Test completely set the Auto Test start time to 24:00:00.

FIP MCP
The default mapping for the FIP MCP is to zone 1, but any configured zone may be selected. Note that in "special" FIPs which do not have an MCP fitted it should be disabled to prevent Fault occurring on the zone it is mapped to. To disable it, select zone 0.

WARNING
It is possible to map the FIP MCP to a zone which is not configured.
This would not be displayed or logged and the MCP is disabled.

GLOBAL DATA (CONTINUED)

FFCIF options
The parameters which can be programmed to configure the FFCIF operation are:

FFCIF type
The default type of FFCIF operation is, 3 where an alarm is automatically displayed on the LCD and alarms must be individually acknowledged. Where LED displays are fitted for each zone and the automatic display with individual acknowledgement is not required, type 2 may alternatively be selected. This is described in Section 5.10 of the Operator's Manual. Selecting this option forces the FFCIF queue to accept MAF zones only.

FFCIF zones
The FFCIF operation as described in the Operator's Manual Chapter 5 is Type 3 and normally only puts zones which are mapped to the MAF into the FFCIF queue. Alternatively, the FFCIF queue can be programmed to accept all zones, or no zones (disabled).

An **example** of an alternative follows:

Assume an owner has two buildings, each with its own Brigade connected FIP. It is required that any alarm on one FIP must show as a single alarm on the other, but this repeat indication must not initiate a second alarm call to the Brigade.

The zone on each FIP which indicates alarm for the other FIP cannot be mapped to the MAF (and probably Bells or Anc1, Anc2) so that it will not call the Brigade.

To make the alarm sound the buzzer, be displayed in the FFCIF, etc, the FFCIF should be programmed as "All Zones" rather than "MAF Only". This assumes that there are no other non-MAF mapped zones for which alarms are not to be displayed in the FFCIF).

FFCIF RDU remote ack
If enabled this allows FFCIF alarms to be acknowledged by RZDUs. If disabled, acknowledgement commands from RZDU devices will not be accepted but reset and isolate commands from RZDU devices will still be accepted. For network systems refer also to Section 11.7.

FFCIF auto ack.
If enabled, all alarms entered into the local FFCIF alarm list will be flagged as "acknowledged" automatically. This does not result in the alarm being acknowledged at any RZDUs or, for network systems at other network devices.

Bells on for FFCIF Alarm
If enabled, the bells will be activated whenever there is any entry in the local FFCIF alarm queue. This can be used, for example, to activate the bells if an alarm is received from another networked panel. Regardless of whether this option is enabled or disabled, the bells are still activated if any local zone mapped to the bells is in alarm.

FFCIF Display cause by default
As standard, the first line of the F3200 FFCIF Alarm display shows:

Alarm Time, Alarm Type, Acknowledge State, Number of Alarms.

When the "AND" key is pressed, the first line changes to:

Cause, Number of Alarms.

If the Display cause by default option is enabled, the first line is shown as:

GLOBAL DATA (CONTINUED)

Cause Preview, Alarm Type, Acknowledge State, Number of Alarms.

and when the "AND." key is pressed, the first line changes to:

Full Cause, Alarm Time, Number of Alarms.

The Cause Preview consists of the first section of the Full Cause.

Note: This setting affects ALL events, network or local, shown on the local F3200. It does not affect the format of information sent to other F3200s on a network, or to RDUs. Each of those devices will display alarms consistent with their own programming options and capabilities.

FFCIF option Always flash non-MAF alarm LEDs – enable/disable
This option is available with V2.07 or later software. By default this is disabled. If enabled the zone LED (if any) for a non-MAF zone will flash when a new alarm occurs on the zone. This allows the alarm to appear as an unacknowledged alarm at an RDU which may be showing the alarm in its FF alarm list. At an RDU, each zone can be programmed as to whether it should be entered into the RDU FF alarm list when the zone goes into alarm. This allows the choice of whereabouts in the system particular zone alarms are displayed.

FFCIF option Always send RDU non-MAF FF alarms – enable/disable
This option is available with V2.07 or later software. This is disabled by default.
If enabled, alarms on all zones are sent to the RDU as displayable FF alarms. The RDU then has the choice of which alarms it displays. In V2.06 or earlier software, a displayable FF alarm was sent to an RDU only if the alarm was entered into the F3200's FF alarm list.

All zones isolated (Standby Operation)
AS1603.4 suggests that the Standby relay should de-energise if all zones are isolated. This function may be disabled if allowed by the local Fire Brigade.

Brigade Test
Brigade Test normally energises the MAF Alarm relay when the Brigade Test key on the FIP (or RZDU) is pressed for 2 seconds. This function may be disabled if the Fire Brigade does not permit it.

Note that if an output logic equation is programmed for the Alarm relay, (e.g. a special test sequence) this parameter has no effect (except for networked systems). (Refer to BGT token in Section 7.4.3).

For network systems, if the MAF alarm relay is programmed to operate for local brigade test then this also means that the MAF status transmitted onto the network will include a brigade test state of TRUE when a local FIP (or RZDU) brigade test is done. If the local MAF alarm relay is programmed not to operate for local brigade test then the brigade test state transmitted onto the network is always FALSE. If a brigade test state of TRUE is received from another panel on the network and this panel is programmed to use the MAF status of that panel then the local MAF alarm relay and LED will operate regardless of the programming of the local brigade test parameter.

GLOBAL DATA (CONTINUED)

Country Coder (alarm signalling)
This is only required for FIPs connected to Brigades with NSW Country Coder equipment.

It allows the selection of a code of 1 to 6 pulses to be signalled on the FIP Brigade Alarm relay. These occur in a repeated sequence of 3 seconds off followed by 1 second on for each pulse, with a space of 1 second between pulses.

Select the coder option and enter the digit for the required number of pulses.

The default code (0) programs standard Alarm relay operation.

Printer setup
The printer setup menu options are:
1:Lines per page; 2:Baud Rate; 3:Print relay controls; 4:more

Option 1:lines per page, determines how often a new page/page heading is printed and option 2:baud rate allows the baud rate of the printer serial port to be selected.

Option 3 allows the enabling/disabling of the printing of relay control events (activate/deactivate).

Option 4:more gives a further menu: 1:Event printing; 2:Select print evt; 3:Select history evt

> Option 1 allows event printing to be enabled or disabled. When event printing is disabled no events at all are printed and the size of the history queue is doubled.
>
> Options 2 and 3 allow the selection of which types of events are to be printed and which type are to be logged to history. There are six different types which can be individually enabled or disabled, and these are shown as
> 1:Zone 2:System 3:Sys run 4:Cct 5:Pnt 6:Relay.
>
> Numeric keys 1 to 6 are used to enable or disable each type. A 'Y' character is shown if the type is enabled and 'N' for disabled.
> Zone events include zone alarm, reset, isolate etc.
> System events include "system test passed", "system power up" etc, and includes all events which are not one of the other 5 types.
> Sys run (system running), is for the daily "auto test passed" event (or for network systems the daily "system running" event).
>
> Cct (circuit) and pnt (point) apply only to network systems.
> Relay events include local ancillary and module relay events such as isolate, fault, operate test, and (de)activate. If relay events are enabled then local relay activate and relay deactivate events may be separately disabled (as described in the previous menu). For network systems, module relay and ancillary relay events are sent onto the network as zone events and hence the printing and history logging of them is controlled by the zone type option and not the relay event type option. However, it is possible to disable the transmission of relay activate and deactivate events onto the network - refer to section 11.8.

GLOBAL DATA (CONTINUED)

Daylight saving start/end

This allows the selection of a date and time and a time difference for the start and end of daylight saving to allow the panel to automatically set the time forward or back. The programming of the start and end is identical and is described jointly here. At the programmed start date/time the time will be put forward by the programmed start time difference and at the programmed end date/time the time will be put back by the programmed end time difference. There are two menus used, and to swap between the two menus the cursor right/left keys are used.

The first menu gives options of 1:month; 2:hour; 3:minute; 4:day.

Setting the month to zero disables the daylight saving process for either the start or end, whichever is selected i.e. they can be disabled independently and the month must be set to zero for both the start and end to disable them both. Otherwise, set the month to a value 1-12 to select months JANUARY to DECEMBER.

Options 2:hour and 3:minute determine the time of day that the daylight saving process is to change the time. The hour is set to a value 0-23 to select midnight through to 11pm. The minute is set to 0-59.

Option 4:day gives a menu which allows the setting of which day of the month the time is to be changed.
The menu gives options 1:last weekday of; 2:Nth weekday of; 3:date.

Only one of options 1,2,3 can be chosen, but the daylight saving start setting may be different to the end setting.
Option 1:last weekday of, will prompt for the entry of a weekday selection, 1 to 7 (1=Sunday, 7=Saturday) so that the day selected is then the last Sunday (say) of the month. This will mean that the daylight saving change will occur on the last Sunday (say) of the month regardless of the month or year.

Option 2:Nth weekday of, will prompt firstly for a value 1-4, to select the first, second, third or fourth weekday, and then prompt for a weekday selection, 1 to 7 (1=Sunday, 7=Saturday) so that the day selected is then, say, the third Sunday of the month - regardless of the month or year.

Option 3:date allows the entry of a specific day 1-31 to select the day of the month i.e. 1 being the first day of the month etc.

The second of the two daylight saving menus has options of 1:hour and 2:minute. This allows the setting of the time difference in hours (0-23) and minutes (0-59) which is the amount of time to be added or subtracted when the daylight saving change occurs. These values must be programmed for both daylight saving start and end and will most likely be the same but do not have to be.

Daylight saving will start and end on different dates and times, depending on the country or state the FIP is located in.

GLOBAL DATA (CONTINUED)

The following table indicates suitable settings:

COUNTRY/STATE		FORWARD			BACKWARD		
	ENABLED	MONTH	SUNDAY	HOUR	MONTH	SUNDAY	HOUR
NSW, ACT, VIC, SA	Y	10	L	2	3	L	3
TAS (1)	Y	10	L	2	3	L	3
NZ	Y	10	1	2	3	3	2
WA, NT, QLD (2)	N	-	-	-	-	-	-

NOTE: (1) Tasmania may start Daylight Saving earlier at their discretion.
(2) WA, NT and QLD do not have Daylight Saving.

Mains/Battery Options

Most of these options are available only in V2.07 or later software and are intended for installations which have to meet the requirements of the Australian Standard AS4428.1 1998.

Mains fail = fault after 8 hours
If this is enabled, then when mains has been failed continuously for 8 hours a fault will be signalled.

Charger fault monitor – if enabled, signals a fault when the charger is high or low.

Battery low monitoring – if enabled, a fault is signalled when a battery low voltage occurs. For a slimline NDU with no MAF board, the battery very low threshold is used as the battery low threshold. Battery low monitoring and battery connection tests are not required for AS1603.4 but are required for AS4428.1.

Battery connection test – if enabled, the battery connection will be checked every 30 seconds by reducing the charger voltage.

Hourly battery capacity test – if enabled, a 60 second battery test will be done automatically on the hour.

Daily battery capacity test – if enabled, a 40 minute battery test will be done automatically at the start of the daily auto test or at 9am if there is no auto test. WARNING: older versions of F3200 must have the battery test resistors R52, R53 removed from the MAF board if this test is enabled.

Keys Enable

V2.06 or earlier software
V2.06 or earlier software allows two specific keys – BELLS ISOL and ANCIL ISOL- to be programmed as enabled or disabled. When disabled, the key will be ignored but the isolate functions that are normally accessible with these keys can be done using zones 193 to 197.

GLOBAL DATA (CONTINUED)

V2.07 or later software

- **Enablement of Keys in 4 Operating States**

  V2.07 or later software allows each keyboard key to be enabled or disabled in each of 4 operating states. This allows the keyboard functionality to be configured for each different installation. It is recommended that the key enablement feature in V2.07 not be used (upgrade to V2.08 or higher).

  A use for this feature might be to disable specific keys such as BELLS ISOL and ANCIL ISOL where they are not required, or to disable RESET and ISOL keys in FF mode so that the user cannot reset or isolate the alarms. The options for disabling the BELLS ISOL and ANCIL ISOL keys in earlier software have been removed in V2.07 onwards.

  Another use is for an NDU to have selected keys enabled when the door is closed.

  The four states and the default key enablements are :

1	- FF mode with door open	- default all keys enabled
2	- FF mode with door closed	- default all keys disabled
3	- Non FF mode with door open	- default all keys enabled
4	- Non FF mode with door closed	- default all keys disabled

  "FF mode" refers to when the FFCIF alarm list is being displayed. When FF mode is active, the principal keys used are those enclosed in the red border on the keypad - ACK, RESET, ISOL, NEXT and PREV. BELLS ISOL and ANCIL ISOL are possibly also used in FF mode.

Non-FF mode refers to operation when the FF alarm list is not being displayed.

When the panel is in program mode or has a database checksum error, all keys are automatically enabled. Also, if the database write protect link is in the enable position then the SET key, NUMERIC keys and CLEAR key are automatically enabled to allow entry to program mode. For a Tandem LCD connection, all "remote" keys are automatically enabled.

Note that disabling a particular key does not prevent a particular function from being done another way e.g. if the ISOL key is disabled, a zone can still be isolated by pressing the ZONE key from the base display and using the menu option. Enabling RECALL, NEXT, PREV, CLEAR, ACK and NUMERIC keys and disabling ZONE, ISOL, RESET, RELAY, TEST, ALARM TEST, and FAULT TEST keys allows recall of information without allowing reset, isolate, test or programming functions. Enabling the SET key allows the time and date to be set but also allows access to the "boards present" function which may not be desirable.

The RECALL key generally allows recall of off-normal states but can also be used to display the status of any zone or point by selecting zone or point from the menu then selecting the "status" option.

After the keys enable option has been selected from the menu, one of the four modes can then be chosen. There are 5 "pages" of options for each mode which can be stepped through using the NEXT and PREV keys. Pressing the EDIT key at this point displays the currently selected mode and allows all keys for the selected mode to be enabled or disabled with a single command.

GLOBAL DATA (CONTINUED)

Remote Sounder Silence

This option is available in V2.07 or later software. Selecting this option shows a menu of:

1:sysflt reset [Y/N]
2:ffcif actions [Y/N] 3:all commands [Y/N]

These options determine whether a remote networked panel or RDU can silence the buzzer at this panel. If "sysflt reset" is set to "Y" the buzzer is turned off when a Reset System Faults command is received from a remote panel. If "FF actions" is set to yes then FF commands of ACK, RESET or ISOLATE received from RDUs or network panels will silence the buzzer.
If "all commands" is set to yes then all zone reset and isolate commands sent to this panel will silence the buzzer.

For V2.09 or later software, pressing the right arrow key from the above menu selects a further menu as follows.

Global network sounder silence
1:Any Key Tx 2:Cmd Tx 3:Receive

These options apply only to network systems. "Any key TX" when enabled, means that if the buzzer is sounding locally and is silenced by pressing a key (any key) then a buzzer silence command is sent to all panels on the network. Option "3:receive" is used to select whether this panel obeys a buzzer silence command received from another panel on the network. Option"2:Cmd Tx", selects whether an operator can initiate the sending of a buzzer silence command onto the network using a specific command. This operator command is accessed by pressing the System key from the base display and selecting option 3:Silence All.

Buzzer Mode

NOTE: Some of these options are not available in "older" software.

Selecting the "Buzzer Mode" option shows the following menu.

Buzzer enable 1:Alarms Y/N 2:Zone faults Y/N 3:System faults Y/N

These options allow the selection of whether the buzzer sounds for alarms, zone faults or system faults.

Pressing the right arrow key from the above menu shows a further menu.

1:Buzzer sound for non-MAF zone faults [Y/N]
2:Fault sounder after 8 hrs fault [Y/N]

Pressing the right arrow key from this menu shows

1:Fault sounder after 8 hrs isolate [Y/N]

The parameter "Buzzer sound for non-MAF zone faults" is used to select whether a fault on a non-MAF zone should cause the fault buzzer to come on.

Enabling "Fault sounder after 8 hrs fault" re-activates the buzzer if the buzzer has been silenced due after a fault and the fault has remained for 8 hours. The AS4428.1 Standard requires this to be enabled.

GLOBAL DATA (CONTINUED)

The parameter "Fault sounder after 8 hrs isolate" enables the fault buzzer to be activated if an isolate state (zone or relay) has been present for 8 hours with no operator intervention. The AS4428.1 Standard requires this to be enabled.

New Zealand Mode

This option is available with V2.08 or later software and only for an NDU (not for F3200).

The programmable options that are specifically for New Zealand mode are described in Chapter 12, and are as follows:

1. New Zealand mode enabled Y/N
2. Display bd Y/N
3. Batt vlow = alarm Y/N
4. Evac defect is fault Y/N
5. External defect is fault Y/N

When New Zealand mode is changed from disabled to enabled, a number of parameters are set to New Zealand settings. When New Zealand mode is changed from enabled to disabled, these parameters are set to Australian settings and are as follows:

PARAMETER	AUSTRALIAN DEFAULT	NEW ZEALAND DEFAULT
New Zealand mode enabled	N	Y
Batt vlow is alarm	N	N
Evac defect is fault	N	Y
External defect is fault	N	Y
Zone alarm buzzer enabled	Y	Y
Zone fault buzzer enabled	Y	N
System fault buzzer enabled	Y	N
Fault sounder after 8 hours fault	N	N
Fault sounder after 8 hours isolate	N	N
Mains fail is fault after 8 hours	N	N
Battery low is fault	N	Y
Battery connection test enabled	N	Y
Hourly battery test enabled	N	N
Daily 40 minute battery test enabled	N	Y
Charger high/low is fault	N	N
MCP maps to zone	1	None

The Australian default settings are to comply with AS1603.4. Compliance with AS4428.1 has different settings.

The following table lists all of the programmable non-network parameters. The defaults listed are for Australian operation. The previous section lists items that have defaults specific to New Zealand operation.

Item	Options	Default
Access Codes	Qty 1-10	1 (User 0)
	6 Digits	000000 (User 0)
Autotest Time	Time	9:00am
Autotest Inhibit	Dates For No Test	Stat Holidays, weekends
Autotest Alarm	Alarm Test Yes/No	No alarm test
FIP MCP	Zone, Disable	Zone 1, Enabled
FFCIF Type	2/3	Type 3
FFCIF Mode	MAF Zones Only/ All Zones/Disabled	MAF Zones Only
FFCIF RZDU Remote Ack	Enabled/Disabled	Enabled
FFCIF Auto Ack	Enabled/Disabled	Disabled
FFCIF Alarm Bells	Enabled/Disabled	Disabled
FFCIF Display Cause	Enabled/Disabled	Disabled
FFCIF always flash non-maf alarm LEDs	Enabled/Disabled	Disabled
FFCIF always send non-maf alarm to RDU	Enabled/Disabled	Disabled
All zones isolated = Standby	Standby operate/not operate	operates
Brig Test	Operate/Not MAF Alarm Relay	Operates Alm Relay (V2.07 or earlier) No operation (V2.08 or later)
Printer	Lines Per Page	60
	Baud Rate	9600
	Print Relay Operates	Enabled
	Event printing	Enabled
Printer and history	Event type selections for history & printer - - zone, system, sys run, circuit, point, relay.	All types enabled
Coder (NSW Cty)	Disabled/1-6 Pulses	Disabled
Daylight saving start	Start time/date/diff	Last SUN, OCT, 2am, 1 hr
Daylight saving end	End time/date/diff	Last SUN, MAR, 3am, 1 hr
Mains 50/60Hz	50/60Hz	50Hz
Mains fault is fault after 8 hours	Enable/Disable	Disabled
Battery low monitor	Enable/Disable	Disabled
Battery connection monitor	Enable/Disable	Disabled
Hourly battery test	Enable/Disable	Disabled
Daily 40 minute battery test	Enable/Disable	Disabled
Charger high/low = Fault	Enable/Disable	Disabled
Alarm buzzer	Enable/Disable	Enabled
Zone fault buzzer	Enable/Disable	Enabled
System fault buzzer	Enable/Disable	Enabled
Buzzer for non-MAF zone faults	Enable/Disable	Disabled
Fault sounder after 8 hours fault	Enable/Disable	Disabled
Fault sounder after 8 hours isolate	Enable/Disable	Disabled

TABLE 6.4.1
PROGRAMMABLE PARAMETERS

Continued ....

Item	Options	Default
Bells Isol Key (V2.06 or earlier)	Enable/Disable	Enabled (V2.06 or earlier)
Ancil Isol Key (V2.06 or earlier)	Enable/Disable	Enabled (V2.06 or earlier)
Keys enable	Enable/Disable	
	All keypad keys for:	
	Door open/Door closed	Door open – all enabled
	FF mode/non-FF mode	Door closed – all disabled
Remote sounder silence options	Enable/Disable sysflt reset,	Sysflt reset – enabled
	ffcif actions, all commands	ffcif actions – enabled
Global network sounder silence	Any KeyTX	Enabled
	Cmd TX	Enabled
	Receive	Enabled
MAF board (NDU only)	Present/not present	
8 Zone Modules	Number Fitted 0-8	
8 Relay Modules	Number Fitted 0-8	
16 LED Display	Number Fitted 0-4	
Display LEDs	Zones/Relays to LEDs	1-1 in order
Alarm Text	1 Smoke	1 Smoke
(Detector Type)	2 Heat	
	3 FSW (Flowswitch)	
	4 Manual	
	5 Valve	
	6 PSW (Pressure Switch)	
	7 SPKLR (Sprinkler)	
	8 & 9 Blank - All Programmable	
Inst Alarm Text	As per Alarm Text	4 Manual
AZC Mode	1 (Standard)	1 Std
	2 (Hi Current)	
	3 (Lo Current)	
	4 (Tamper)	
	5 (Disabled)	

TABLE 6.4.1
PROGRAMMABLE PARAMETERS

Continued ....

Item	Options	Default
AZC Time Delay	1 (Std) 2 (AVF/RAD) 3 (SAD) 4 (Delay)	1 Std (2.3 Sec)
Delay (4)	T1 into Alarm T2 out of Alarm	30 Seconds 0 Seconds
Cct B1 (0-3V)	1 (Inst Alarm) 2 (Alarm) 3 (Normal) 4 (Fault)	1 Inst Alarm
Cct B3 (13-17.5V)	1 (Inst Alarm) 2 (Alarm) 3 (Normal) 4 (Fault)	1 Inst alarm (V2.XX software) For V1.XX software the default is Normal (3).
Zones	Latch/Non Latch Mapped/Not Mapped to MAF/Status Only Mapped/Not Mapped to ANC1, ANC2, BELLS	Latch Mapped Mapped
MAF Brig Relays	Operation on Logic Function	As Named
Open collector 1-64	Operation on Logic Function	Zone 1-64 Non Iso Alarm Respectively
Variables		
Timers	Type/Delay	No Operation
Module relays 1-64	Configuration and logic equation, Text name	Supervision: disabled Latching: No Map to MAF: Yes LED: Yes Isolatable: Yes Testable: Yes Sup Act: Yes No logic equation
Anc 1 Relay	Configuration, logic equation Text name	Supervision: disabled Latching: No Map to MAF: Yes Doorholder mode Isolatable: Yes Testable: Yes Sup Act: Yes No logic equation
Anc 2 Relay	Configuration, logic equation, Text name	Supervision: disabled Latching: No Map to MAF: Yes Load mode Isolatable: Yes Testable: Yes Sup Act: Yes No logic equation

TABLE 6.4.1
PROGRAMMABLE PARAMETERS (CONTINUED)

Continued ....

Item	Options	Default
Anc 3 Relay	Configuration, logic equation, Text name	Supervision: disabled Latching: No Map to MAF: Yes Isolatable: Yes Testable: Yes Sup ACT: Yes No logic equation
RDU Protocol	LCD/non-LCD	LCD
RDU 1-8	Enabled/Disabled	Disabled
	Protocol A/B	A
	MCP Zone	1

TABLE 6.4.1
PROGRAMMABLE PARAMETERS (CONTINUED)

New Zealand mode	Enable/Disable	Enabled if NZ Display present
Display extender board	Installed/Not installed	
Battery very low alarm	Enable/Disable	Disabled
Evac defect fault	Enable/Disable	Enabled in NZ mode
External defect fault	Enable/Disable	Enabled in NZ mode

TABLE 6.4.2
PROGRAMMABLE PARAMETERS (NEW ZEALAND ONLY)

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CHAPTER 7
PROGRAMMING SYSTEM CONFIGURATION

7.1 SYSTEM CONFIGURATION MENU

The System Configuration menu is Option 4 in the Program Data menu (as shown in Fig 6.1.2). It allows programming of the parameters which determine the way the F3200 hardware operates. The menu includes the following:

1 Circuits (AZCs); 2 Zones; 3 Modules; 4 Output Logic; 5 Relay (Supervision); 6 RZDUs and will also include option 7:Network for a networked system.

Fig 7.1.1A shows the System Configuration menu and its hierarchial structure for V1.10 software, Figure 7.1.1B for V2.00 to V2.08 software and Figure 7.1.1C for V2.09 or later. The diagram may be used in two ways as follows:

1. When a user needs to change one particular parameter in an existing FIP, Fig's 6.1.2 and 7.1.1 act as a "road map" that show the path required to access that parameter.

2. When initially programming a new FIP, these diagrams may be used as a flowchart.

   Working from top to bottom, left to right, on first Fig 6.1.2 and then Fig 7.1.1, the entire database can be programmed.

   This shows that modules should be configured before circuits, zones or relays.

Detail on each is shown in the following sections.

CONFIGURING MODULES

Selecting the modules option causes the LCD to display the modules configured and the modules present. E.g. Relay 1/2 means that 1 8RM is configured, but 2 are present.

Select: 1 (Zone) to change the number of 8ZMs;
2 (Relay) to change the number of 8RMs;
3 (Display) to change the number of LED Display Bds.
4 (MAF) to enable/disable the MAF board (NDU only)

Acknowledge the warning ("ACK") and then enter the new number of that particular module to be configured (e.g. press "2", "ENTER" to configure 2 modules).

WARNING

Changing the number of 8 zone or relay modules configured will automatically change the number of zones or relays allocated in the database. The mapping of zones/relays to LEDs on an LED Display may well be altered. It needs to be manually checked, and adjusted if necessary. Refer to Sections 7.3.3 and 7.5.3.

F3200 PROGRAMMING MENU STRUCTURE
SYSTEM CONFIGURATION

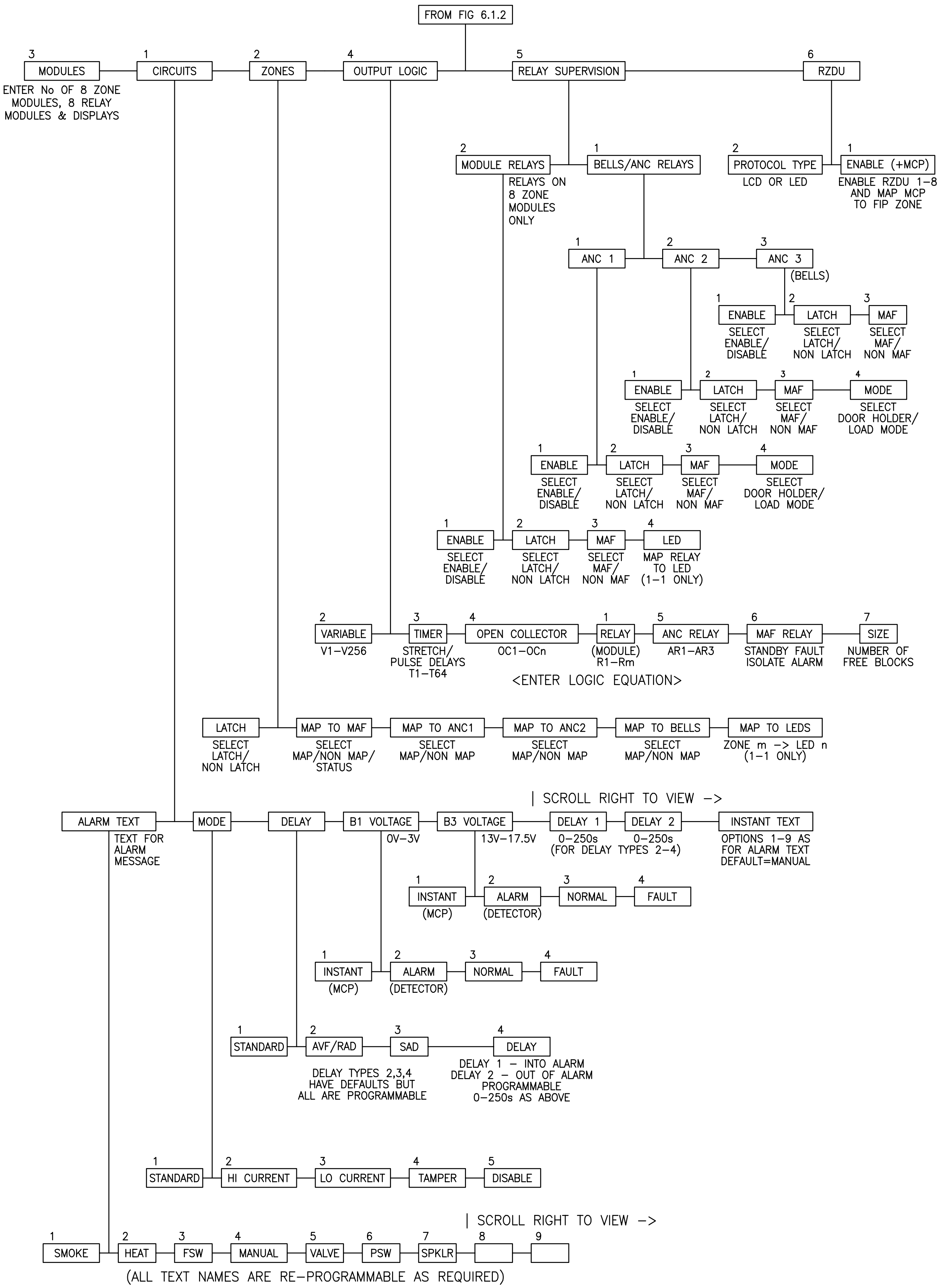


FIG 7.1.1A PROGRAMMING MENU STRUCTURE FOR SYSTEM CONFIGURATION
V1.10

F3200 PROGRAMMING MENU STRUCTURE
SYSTEM CONFIGURATION

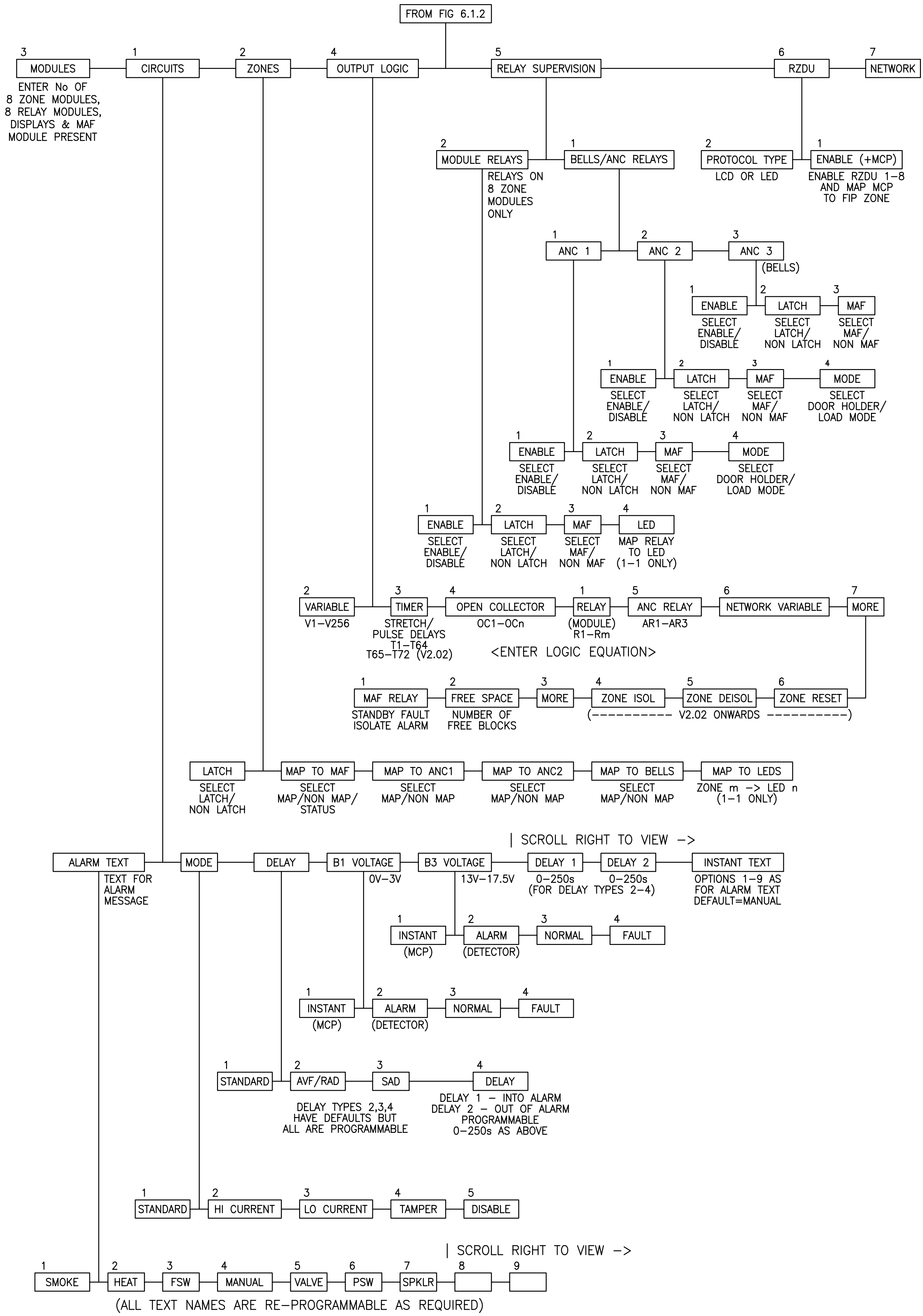


FIG 7.1.1B PROGRAMMING MENU STRUCTURE FOR SYSTEM CONFIGURATION V2.0X

F3200 PROGRAMMING MENU STRUCTURE
SYSTEM CONFIGURATION

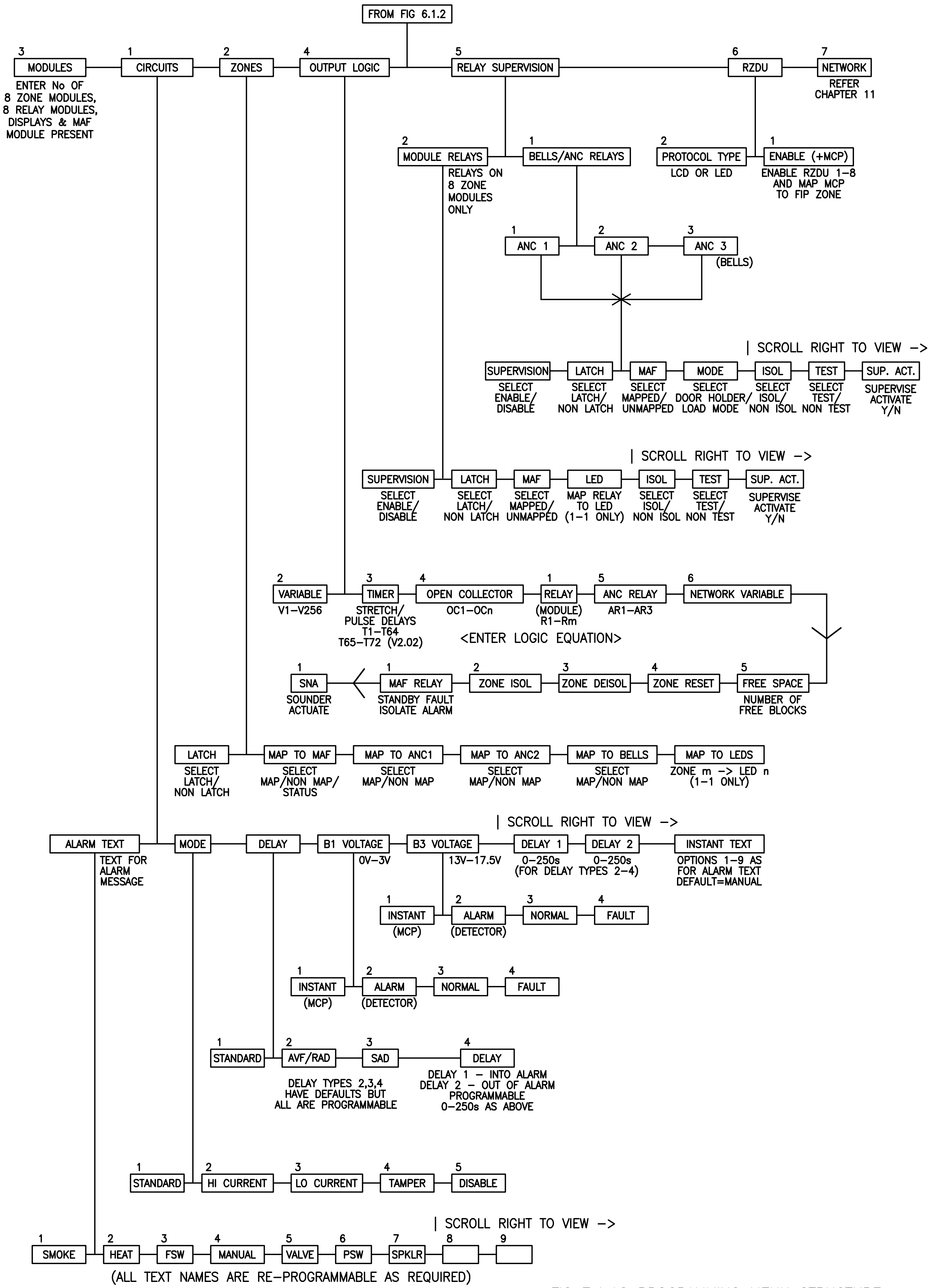


FIG 7.1.1C PROGRAMMING MENU STRUCTURE FOR SYSTEM CONFIGURATION V2.09 ONWARDS

7.2 CONFIGURING CIRCUITS (AZCS)

7.2.1 GENERAL

When the configure circuits option is selected, the LCD displays a message, and then automatically selects AZC 01, or the last AZC programmed. For the selected AZC it displays a list of attributes which can be programmed, and the option that is currently selected for that attribute. The list may be stepped through by use of ≺ ≻ keys. As each attribute is selected, the options for it are displayed on the bottom line.

Attributes include:
Alarm Text; Mode; Delay; Voltage Band B1; Voltage Band B3; Delay 1; Delay 2; Instant Alarm Text.

When all the desired attribute options have been selected, press "ACK" to save the data, and then use "NEXT" or "PREV".

7.2.2 ALARM TEXT

The Alarm text (detector type) selected is displayed as part of the Alarm message on the LCD and printer. The software makes allowance for the fact that MCPs may be connected to a circuit with detectors. For example, if an AZC has both smoke detectors and MCPs on it, then the alarm text should be Smoke.

An AZC Alarm (see Section 7.2.5) will be displayed as a "SMOKE" Alarm, but an AZC Instant Alarm (MCP) will be displayed as a "MANUAL" Alarm (see below).

Of the 9 options of alarm text, 1-7 have default text as shown on Fig 7.1.1 (i.e. 1 smoke, 2 heat, etc) but 8 and 9 are blank. All are programmable as described in Section 6.4.3.

The default alarm text is "SMOKE".

Instant Alarm Text

The Instant Alarm text is also programmable with the same options. The default is "MANUAL".

7.2.3 MODE

The electronics on the 8 Zone Module which interfaces to an AZC (i.e. detector circuit) has a 15mA current limited supply from +22V, and a pull up resistor to +22V. These are software controlled (i.e. turned on or off) and different combinations are used for different applications, giving five modes of operation as follows.

Select the correct mode for the particular type of detectors being used on the AZC (refer to Appendix A2).

Mode 1 Standard
15mA current limit from +22V supply.
2k7 EOL.
Suits most detectors.

Mode 2 High Current
15mA current limit from +22V supply.
2k7 EOL.

MODE (CONTINUED)

Switches in additional pull up resistor to +22V in Alarm.
Suits detectors with high alarm current requirement or remote LED indicators. (Refer to Appendix A2).

Mode 3 Low Current
680 Ohm pull up resistor to +22V supply.
10k EOL.
Suits high resistance, low current circuit e.g. sub-indicator panel monitoring.

Mode 4 Tamper
680 Ohm pull up resistor to +22V supply.
Requires EOL002Z active EOL.
Suits supervision of "tamper-protected" sprinkler valves.

Mode 5 Disabled
Current limit and pull up disabled.
No EOL required.
Suits unused AZCs (saves quiescent current).

7.2.4 TIME DELAYS

The standard time delay on any change of state is 2.3 secs (2.0-2.6 secs) i.e. to Alarm, to Fault, to Normal. During this time the input conditions are continually read (and debounced). The input must be continuously in the new state for the duration of the time delay to cause a change of state.

There are two programmable time delays assigned to each circuit i.e. delay into alarm Delay 1 (D1) and delay out of alarm Delay 2 (D2). One, or both of these are also used to generate the other time delay types as follows, AVF = Alarm Verification, RAD = Return Air Detector, SAD = Supply Air Detector.

Note that the actual time delay also depends on the new condition (i.e. alarm or instant alarm). The operation of the SAD type was changed in V2.09 software.

Delay Type	Delay To Alarm	Delay to Normal (applies to cct not zone)
1 Std	Inst Alarm 2.3	2.3
	Alarm 2.3	2.3
2 AVF/RAD	Inst Alarm 2.3	2.3
	Alarm (AVF/RAD sequence using D1)	2.3
3 SAD	**For V2.08 or earlier**	
	Inst. Alarm 2.3	2.3
	Alarm (AVF/RAD sequence Using D1)	D2
	For V2.09 or later	
	Inst. Alarm 2.3	2.3
	If D1 is zero (default) the into Alarm time is 2.3 seconds If D1 is non-zero the delay into Alarm is AVF (using D1).	D2

TIME DELAYS (CONTINUED)

4 Delay	Depends on "into alarm time"	
	For D1 > 0	
	Inst Alarm 2.3	2.3
	Alarm 2.3 + D1	D2
	For D1 = 0	
	Inst alarm .2-.8 seconds	.2-.8 seconds
	Alarm .2-.8 seconds	D2 + .2

Default Settings for Delays

Delay Type	D1	D2
2 AVF/RAD	11	-
3 SAD	11 (V2.08 or earlier)	65
	0 (V2.09 or later)	65
4 DELAY	30	0 (2.3)

All times are in seconds.

There is a minimum time delay of 2.3 seconds before acceptance of any new state except for a type 4 (DELAY) circuit with an into alarm time of zero, (D1=0), where the minimum time is reduced to .4 seconds (typically .4, minimum .2, maximum .8 seconds).

D1 and D2 are programmable to 0-250 seconds but if set to zero, a minimum delay of 2.3 seconds (or .4) is still applied.
Hence for a type 4 circuit with D1=0, D2=5, the into alarm delay is .2 to .8 seconds and the out of alarm delay is 5.2 - 5.8 seconds. For a type 4 circuit with D1=30 and D2=0, the into alarm delay is 32.3 seconds and the out of alarm delay is 2.3 seconds.

Type 4 circuit with into alarm delay of zero
The into alarm time for both detector operated (alarm) and for mcp (instant alarm) is .2 to .8 seconds (typically .4 seconds). The delay into and out of fault and out of instant alarm is also .2-.8 seconds. The delay out of alarm is the out of alarm delay (D2) with a minimum of .2-.8 seconds.

Note that programming an AZC for any time delay type resets programming of voltage bands B1 and B3 for that AZC to the default options. (These can be subsequently re-programmed, see Section 7.2.5).

SAD & Delay Types

SAD and Delay circuits (types 3 & 4) with D2 greater than zero, require non-latching detectors. The corresponding zones must also be programmed as non-latching.

AVF/RAD Sequence

Recognition of a detector's first operation occurs after 2.3 seconds. However, with AVF this does not generate alarm immediately.

A delay of 3.4 seconds occurs and then the circuit is reset for 5.3 seconds. The circuit is then re-energised and ignored for 2.3 seconds. The sum of the delay, reset and ignore periods (default = 11 seconds) equals the D1 value, with alteration of D1 only affecting the delay period. E.g. setting D1 to 30 will provide a 22.4 second delay, followed by the reset and ignore period.

If the detector re-operates in the following 150 seconds then an alarm is generated immediately. If it does not the sequence re-starts.

Reset Delay

When an AZC is reset, automatically (during AVF), manually, or from an output logic command, the AZC is turned off for a period of 5.1 - 5.7 seconds.

7.2.5 VOLTAGE BANDS

The F3200 monitors the AZC voltage and decides the circuit status on the basis of which one of 5 voltage bands it is in, as shown in Table 7.2.1.

Voltage band B2 (3V to 13V) always generates Alarm (detector operated). B1 (0V to 3V) and B2 (13V to 17.5V) are programmable as to whether they generate Instant Alarm (MCP operated), Alarm (Detector Operated), Normal or Fault.

This allows:

1. Detectors with high alarm voltages (13V to 17.5V) to be used by programming B3 to be Alarm (detector operated);

2. High current mode to be used on detectors with resistive bases (e.g. for LED brightness, remote LED) even though this may increase alarm voltage above band B2 if the LED was to become disconnected;

3. MCPs to be distinguished from operated detectors on the same AZC e.g. by programming B1 to be Instant Alarm for MCPs shorting the circuit.

4. MCPs to be used with a 15V Zener diode (program B3 to be Instant Alarm) so that MCP operation does not reset an operated detector.

Notes

1. Point 3 above allows operation of a time delay (e.g. AVF) on the detectors, while MCPs cause an Instant Alarm (i.e. 2 second delay only).

2. If two devices with different Alarm voltages on the same circuit both operate, then the one with the lowest Alarm voltage will determine the voltage (and hence state) of the AZC. E.g. for MCPs wired to short a detector circuit, MCP operation will cause the AZC to see voltage band B1.

   Where detector operation has caused Alarm (Detector operated) on the zone, subsequent MCP operation will not initiate a new event (Instant Alarm) on the same zone unless the zone has been reset between events.

3. When testing operation of detectors with Auto-Reset mode, the voltage state of the AZC (B1, etc) is continuously displayed on the LCD (ref Operators Manual, Section 7.4).

4. Programming an AZC for any time delay type (refer to Time Delays in Section 7.2.4) resets B1 & B3 to the default options for that time delay.

VOLTAGE BANDS (CONTINUED)

Voltage bands and their interpretation for modes 1, 2 and 3 are shown in Table 7.2.1 following.

Band	Voltage	Status	Default Status
B5	21-22VFault	(Open Circuit)	Fault (Open Circuit)
B4	17.5-21V	Normal	Normal
B3	13-17.5V	Programmable	Normal (V1.XX software) Instant alarm (V2.XX software)
B2	3-13V	Alarm (Detector Operated)	Alarm (Detector Operated)
B1	0-3V	Programmable	Instant Alarm (Manual)

TABLE 7.2.1
AZC VOLTAGE BANDS FOR MODES 1-3

In Mode 4, for AZC normal the voltage is in B5 with pulses into B4 due to the active end-of-line device. B2 is Alarm (valve operated). B3 is programmable to Alarm or Fault only (default is Alarm). B1 is programmable (default is Fault). All other conditions are Fault (Tamper).

7.3 CONFIGURING ZONES

7.3.1 GENERAL

The programmable options for each zone as shown in Fig 7.1.1 are:

Latch/Non-Latch; Map/Non Map to MAF/Status Only; Map/Non-Map to Anc1; Map/Non-Map to Anc2; Map/Non-Map to Bells; Map to LED.

Mapping a zone to an output e.g. to ANC1 (Ancillary Relay 1) causes the output to operate when that zone goes into alarm. Mapping will only be effective if the output retains its default programming (i.e. does not have a logic equation programmed for it).

A non-latching zone will return to normal from Fault or Alarm if the AZC returns to normal. It is, therefore, only meaningful when used with a non-latching detector e.g. as is used in some air conditioning ducts, or flow switches.

7.3.2 MAPPING TO MAF

Mapping to the MAF allows 1 of 3 options as follows:

Mapped to MAF
Not mapped to MAF
Status Only

A zone mapped to the MAF causes the Brigade relays (Alarm, Fault, Isolate) to turn on for the corresponding condition on the zone. It also enters the Alarm (FFCIF) queue on Alarm and is included in the Alarms, Faults and Isolated totals.

Zones not mapped to the MAF will not do this, unless the FFCIF is programmed for "All Zones".

Status Only Zone

A zone programmed as "Status Only" will NOT:

Operate the Brigade relays;
Enter the FFCIF queue;
Operate the common LEDs or buzzer on alarm or fault;
Add to the totals in the base display (not even "other");
Be logged in the printer or history queues;
Be tested by System or Auto Test.

Status zones may be mapped to Anc1, etc, and may be used in output logic equations, but will not be included in the output logic tokens NML, ALM, FLT, NMA, NMF, MUA and ISO.

Status zones can be mapped to LEDs on a LED Display Board where fitted.

7.3.3 MAPPING ZONES TO LEDS

Where 16 Zone LED Displays are fitted, zones and relays have a default mapping to the LEDs as described in Section 2.3.2. Other mappings are programmable but currently only 1-1 mapping of zones/relays to LEDs is supported (i.e. only one zone or one relay can be mapped to the one set of LEDs). Also a zone or relay can be mapped to only one set of LEDs (or not shown on LEDs at all, i.e. LED = 0).

MAPPING ZONES TO LEDS (CONTINUED)

For this reason, when changing zone to LED mapping it is necessary to disable the LED mapping of the zone/relays (by selecting LED 0) which have a default mapping to the LEDs which other zones are to be mapped to. (It is suggested that the programmer works from largest zone number to smallest for this).

The LEDs on the 16 Zone LED display board may also be controlled by an output logic equation. This is described in section 7.4.8. Any of the LEDs which are controlled by output logic should not be mapped to by zones or relays.

7.4 PROGRAMMING OUTPUTS

7.4.1 GENERAL

The F3200 outputs (Ancillary Relays, MAF Brigade Relays, 8 Zone Module open collectors and 8 Relay Module relays) may be programmed to operate on a logic equation of zone and FIP status. Zone LEDs may also be controlled by an output logic equation. Output logic equations may also be used to isolate, de-isolate or reset zones. The Ancillary Relays (including Anc3 /Bells) and the Open Collector outputs each have a default logic equation but the module relays do not. By default, Ancillary Relays and Bells operate on an alarm on any zone mapped to operate that output. By default, open collector output n is active when zone n is in alarm. The LEDs on the 16 zone LED display boards may be controlled by output logic using a relay equation where the relay number is in the range 65 to 256.

The outputs which can be programmed are shown in the Output Logic Menu in Fig 7.1.1 and described in Section 7.4.6.

The logic equation takes the form of:
Output = [operand] operator [operand] operator [operand] ...

E.g. RL1 = Z3A + Z4A means that Module relay number 1 will energise when zone 3 is in alarm or zone 4 is in alarm (or both). Zone 3 alarm and zone 4 alarm are operands (inputs) and the logic operator is OR (+).

Some examples of equations are shown in Section 7.4.4.

Output Logic	:	Number of "small" equations	289 maximum
		Number of "()" per equation	14 maximum
		Equation Size (note 1)	100 bytes max
		Number of variables available	256
		Number of network variables	128 per SID
		Number of seconds timers available	64 (1-64)
		Number of minutes timers available	8 (65-72)
		Type of timer (see following)	Stretch/Pulse
		Time range of timers	0-250 seconds/minutes
		Error margin of seconds timers 1-64	0-1 sec plus O/P Logic Time
		Error margin of minutes timers 65-72	0-1 Minute
		Output Logic Processing Time (refer to note 2 following)	0-1 second

1. The maximum size of an equation is approximately 30-40 operands plus operators. It is 100 token bytes, where most operands use 2 bytes, and operators use 1 byte.

2. The Controller continually "updates" the status of the inputs to the output logic equations, processes the equations, and updates the resultant outputs. The processing time taken is dependent on the number and size of the equations.

   A timer is started by a logic equation, and then operates the output via another logic equation. There is a processing delay added to the timer delay.

   For a system with only 10-20 small to medium sized equations, the processing delay should be of the order of 100 msec, and an approximate 1 second timer can be used.

   For a system with the maximum number of equations the processing time may delay beyond the 1 second stated, so that a delay programmed as "1 second" would cause a real delay (from input event to output options) in excess of 3 seconds.

GENERAL (CONT'D)

3. When programming logic equations, the amount of programming memory left can be viewed by using the "free space" option of the OUTPUT LOGIC menu.

7.4.2 LOGIC OPERATORS

The logic operators allowed are as follows:

OR (+) logical or
C = A + B C is active if A is active or B is active.

AND (.) logical and
C = A . B C is active if A is active and B is active.

XOR (@) exclusive or
C = A @ B C is active if A is active and B is not, or B is active and A is not (i.e. if A and B are in opposite states).

NOT (^) Logical inverse
B = ^ A B is active if A is not active
B is not active if A is active.

These Operators each have a key in the right hand column of the 4 x 4 keypad.

Using "1" to represent a "true" condition or "on" (active) state and "0" to represent a "false" condition or "off" (inactive) state, the following tables show the function of the logic operators for the various combinations of inputs (operands) A and B.

A	B	A + B	A . B	A @ B	^ A	^ B
0	0	0	0	0	1	1
0	1	1	0	1	1	0
1	0	1	0	1	0	1
1	1	1	1	0	0	0

TRUTH TABLE

Priorities & Evaluation

Equations are evaluated from left to right with the following priority:

Brackets > NOT > AND > OR, XOR (within brackets the priority is the same).

Example: R1 = (Z1A + Z2A) . ^ Z3F means relay 1 is active if:
Zone 1 is in alarm or Zone 2 is in alarm; and Zone 3 is not in fault

This is different to R1 = Z1A + Z2A . ^Z3F which means relay 1 is active if :
Zone 1 is in alarm, or if
Zone 2 is in alarm and Zone 3 is not in fault.

Brackets "(" and ")" are used to group parts of an equation together so that the default operator priority can be overridden.

In an equation, the number of "(" must always equal the number of ")".

"(" and ")" are a second function of the "RECALL" and "PRINT" keys.

7.4.3 LOGIC OPERANDS

Two types of operand exist. (Operands are items that can be used within an equation i.e. as inputs).

The first is an item which requires a further qualifier e.g. Zone requires a zone number (1-64) and a condition e.g. Alarm. (The zone item and alarm condition are abbreviated to ZN and Alm in the LCD option menu, but become Z and A when entered into an equation). Hence, when entering a zone operand, it must be qualified by entering first the zone number, and then the zone condition e.g. Z14A is zone 14 in alarm.

The second type of operand is a token which needs no further qualification e.g. BLO which is Battery Voltage Low.

In the following documentation the first type of operand (when qualified e.g. Z1A) and the second type of operand, are both called "tokens".

7.4.3.1 Operands Type 1

Abbr	Name	In Equation	Example (Token)
AR	Ancillary Relay	AR	AR2F
RL	Module Relay	R	R4I
VL	Variable	V	V7
ZN	Zone	Z	Z3A
TM	Timer	T	T15
OC	Open Collector Output	OC	OC32
ZR	Zone Range (n of m)	Z:()	Z1:8(2)A
NA	New Alarm	NA[r1..;s1..]	NA[ACK;Z1F,Z5F,Z7F]
NV	Network variable	NVsid:varnum	NV3:120

Zone (ZN)

Zxxq
where xx = 1 - 64, (see note 1 below), q can be A,F,I,N,D,M,R as follows :

A - Alarm . ^ (Isolated + Auto-reset mode) (i.e. Alarm in a zone which is not isolated or in Auto-reset mode).

F - Fault . ^ (Isolated + Auto-reset mode).

I - Isolated + Auto-reset mode.

N - Normal - true when none of A, F or I are true.

D - True if the current state of the circuit input is "Detector Operated" (Alarm). I.e. the voltage is in voltage band B2, or B1 or B3 and these are programmed as "Alarm". (See note 4 and warning below).

M - True if the current state of the circuit input is "MCP Operated" (Instant Alarm) i.e. the voltage is in voltage band B1 or B3 and these are programmed as "Instant Alarm". (See note 4 and warning below).

R - True if a reset is currently being applied to the zone. This is true for the duration of the 5 second reset applied to the circuit when the zone is reset by an Operator; for the 5 second AVF reset; and also for the 15 second Auto-reset mode reset.

Following the reset of a zone there is a 2 second ignore period during which time this token returns false.

OPERANDS TYPE 1 (CONTINUED)

Notes:

1. When entering numbers, leading zeros need not be entered.

2. Alarm and Fault refer to the latched status for a latching zone and the current status for a non-latching zone.

3. None of these zone tokens are affected by the programming of a zone as MAF mapped, non-MAF or status only.

4. The circuit input refers to the "debounced" circuit input prior to the 2.3 second filter and zone "latch". That is, it takes 80-240 milliseconds to change state, is a non-latching condition, and is independent of zone programming or isolation (including the automatic isolation in Auto-Reset mode). Refer also to Section 7.4.10.

WARNING

The zone operands ZnD (detector operated) and ZnM (MCP operated) can return a value which is not the true condition of the circuit input in a number of situations as follows:

1. During zone reset (other than AVF reset or Auto-Reset mode reset) the ZnD and ZnM operands will be the value that existed at the start of the reset. This includes the 2 second post reset delay, a total of 7 seconds. After this they will be the current state of the circuit input. This is true only for V1.10 software onwards. For earlier V1.0X versions of software ZnD and ZnM are both FALSE for the duration of the reset.

2. During AVF reset and Auto-Reset mode reset the state of the circuit input is forced to be B1 (Band 1) during the actual 5 second/15 second circuit reset and at the end of this period may temporarily be any of the values B1, B2, B3, B4 or B5 until the circuit and detectors power up again.

   Thus the operands ZnD and ZnM may be true during these times depending on the programming of the circuit.

   Band B2 always maps to detector operated/alarm. Bands B1 and B3 may be programmed to map to any of MCP operated (instant alarm), Detector Operated (alarm), fault and normal. During AVF Reset and Auto-Reset mode reset the tokens ZnD and ZnM will follow the state of the circuit. E.g. If B1 is programmed as instant alarm then ZnM will return true during the reset when the state of the circuit is B1.

3. During System Test and Auto-Test circuit alarm testing, any circuit which has an alarm test applied to it will be in band B3. Operands ZnD and ZnM will return true or false according to the programming of band B3.

   Note that not all zones are tested by System Test and Auto-Test. Zones which are not tested include:

   1. Isolated zones.
   2. Zones which are already in alarm or fault at the start of the test.
   3. Status only zones.
   4. Zones where the current input state is B1 and B1 is programmed to be normal.

4. During zone alarm test the ZnD operand will return true if the test operates correctly.

OPERANDS TYPE 1 (CONTINUED)

Zone Range (ZR)

Zxx:yy(zz)q
where xx, yy, zz = 1 - 64, yy > xx , (yy - xx) + 1 $\geq$ zz
q can be A,F,I,N,D,M,R as above.

The operand returns true if the number of zones in the range xx to yy in the specified condition is zz or greater. If zz is zero at least one zone must be in the specified condition for the operand to be true (i.e. 0 and 1 are the same).

Example
R4 = Z2:6(2)A means that relay number 4 will energise when at least any two zones in the range 2 to 6 go into the alarm state simultaneously.

Note that the range includes the zones from xx to yy so allocation of zones is important when using this operand.

Note also that a zone range with zz = 1 is simply the OR of all the zones in the range and that a range of xx..yy with zz = yy - xx + 1 is simply an AND function.

Z1:10(1)A = Z1A + Z2A + Z3A + Z4A + Z5A + Z6A + Z7A + Z8A + Z9A + Z10A
Z11:13(3)F = Z11F . Z12F . Z13F

Relay (RL) (i.e. Module Relay)

Rxxq
where xx = 1 - 64
q can be A,F,I,N as follows

- A - True if the relay is currently activated and not isolated.
- F - True if the supervision is currently in fault and not isolated.
- I - True if the relay is isolated.
- N - True if none of A,F or I are true.

The module relay tokens are not affected by whether the relay is mapped to the MAF or not. The F condition may be latching or non-latching (as programmed under relay supervision for that relay).

Ancillary Relay (AR)

ARxq
where x is 1,2,3 for Ancillary Relay 1,2,3
q can be A, F, I or N as for the module relays

For Ancillary 3 (which can be Bells, refer to Section 3.5.3) the conditions of A, F, I and N are not affected by whether the relay is used as Ancillary 3 (i.e. controlled by output logic) or used as Bells (controlled by zone alarm and Auto-reset mode).

The relay tokens are not affected by whether the relay is mapped to the MAF or not. The F condition may be latching or non-latching (as programmed under relay supervision for that relay).

OPERANDS TYPE 1 (CONTINUED)

Open Collector (OC)

OCxx
where xx = 1-64

OCxx is true if OCxx is active from its own logic equation and false if OCxx is inactive.

New Alarm (NA)

The New Alarm token (NA) is a set/reset latch, which incorporates two lists of tokens. One list of tokens "sets" the latch i.e. when a token goes true the latch goes true and stays true, even if the token returns to false. The other list of tokens "resets" the latch i.e. when a token goes true the latch returns to false and stays false until a token in the "set" list goes from false to true. On power up, NA is false. NA takes the form:

NA[r1,r2,....rn;s1,s2,....sm]
where r1-rn is the list of tokens which reset the latch and
s1-sm is the list of tokens which set the latch.

Entry of an NA token into an equation is described in Section 7.4.5.

If a set and a reset token were to both go true at the same time, then reset will override set, ie. the latch will turn off.

Variables

Vxxx
where xxx = 1 - 256

A variable is a "label" operand which may be equated to a common block of logic that occurs in the equations of more than one output. Using a variable saves re-entering and repeating the execution of the identical portion of the logic equations.

Note that all variables are set to "false" on power up.

Network Variables

NVsss:nnn
where sss = SID number 1-254 and nnn = variable number 0-127.
A networked F3200 or NDU has 128 network variables of its own that it may assign values to with an equation e.g. NV5=Z1A+Z2A

The state of the 128 local network variables is transmitted onto the network for use by other systems. This panel receives network variables from other systems and may use their values in equations but may not assign values to network variables from other systems.
All network variables are set to FALSE on power up.

OPERANDS TYPE 1 (CONTINUED)

Timers

Txx where xx = 1 - 64 for seconds timers and 65-72 for minutes timers.

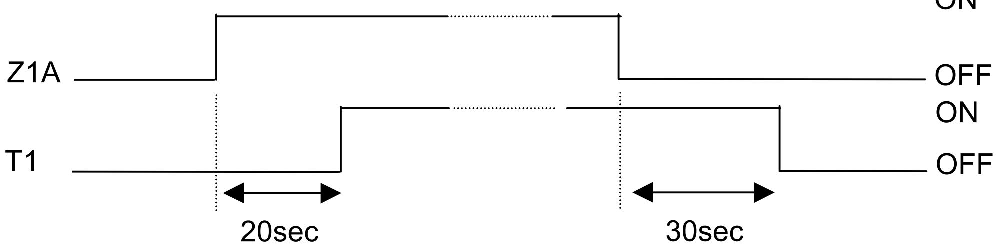
Timers allow outputs to be timed from inputs. They all have two time delays associated with them and can be "stretch" timers or "pulse" timers, and the default configuration sets both delays to zero, and all timers are set to "false" on power up.

A stretch timer (S) follows the programmed input with two programmable periods i.e. Input on to Output on, and Input off to Output off.

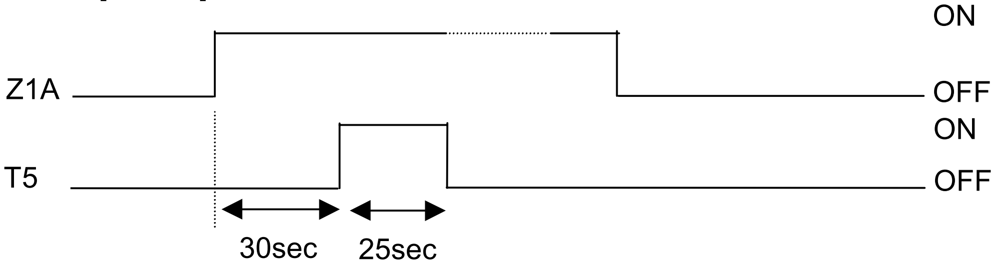
A pulse timer (P) is initiated by the input with two programmable delays, i.e. Input on to Output on, and Output "on" duration.

Examples: These examples show a seconds based timer 1-64, but the same logic applies to the minutes based timers.

1. T1 [S20:30] = Z1A (Alarm State on Zone 1)



2. T5 [P30:25] = Z1A



<u>Notes</u>

1. If the input turns off before the first delay has expired, the timer is reset. Timing will restart from zero when the input next turns on.

2. Any changes to the input while a pulse timer output is on will not affect the output.

3. For a pulse time of 0, the output may or may not momentarily turn on.

7.4.3.2 Operands Type 2

ACK When the "ACK" key is pressed with the base display selected this returns true for between 1 and 2 complete passes of all output logic equations.

ALM True if 1 or more local MAF zones is in alarm, or true in New Zealand mode if a latched battery very low alarm is present.

BEL See discussion on Bells/Anc3 in Ancillary Relay Tokens.
Always false if Bells is isolated or silenced by network silence - otherwise , true if:

1. Non isolated zone mapped to Bells is in alarm, or
2. Bell test in progress
3. 2 second ring for Auto-reset mode for non isolated zone mapped to bells.
4. For networked systems, a network MAF alarm state received from another panel and this panel is programmed to use it and this panel is also programmed with "receive network bells control" enabled.
5. In New Zealand mode, true if Trial Evac operated.

BFT This is available in V2.07 or later software and is true when there is a battery connection fault or a battery capacity fault. Note the battery connection tests and battery capacity tests must be enabled for them to produce faults.

BGT True if the brigade test key on the local FIP or an RZDU has been held down for 2 seconds - at which point this token returns true while the key remains down (even if the brigade test has been programmed to not operate the Brigade Alarm relay). For networked systems, this token is not true for a brigade test initiated at another panel on the network.

BLI Bells Isolate. For V2.07 or earlier software, BLI is true if the bells are isolated locally. For V2.08 or later, BLI is time if the bells are isolated locally or if they are silenced by a received network silence state. Note: for the bells to be silenced locally by a received network silence state, this panel must have “receive network bells silence” enabled and must also have “use MAF status” enabled for the particular SID sending the network silence. For New Zealand mode, BLI is not set time by the local silence alarms keyswitch (refer NSA).

BLO Battery low. True if the last battery test failed. Remains true until a successful test has been completed. If battery low fault monitoring is enabled it will also be set true by a battery low fault.

BSR New Zealand mode local services restore operated.

BTS True if a battery test is currently in progress.

CGF This is available in V2.07 or later software and is true when there is a charger fault and charger fault monitoring is enabled.

FLT True if 1 or more local MAF-mapped zones or module/ancillary relays are in fault.

ISO True if 1 or more local MAF-mapped zones or module/ancillary relays are isolated.

MFL True if the mains is currently failed. If it is desired to detect a condition of mains failed continuously for 8 hours then timer logic must be used in conjunction with this token.

MUA True if there are 1 or more unacknowledged alarms in the FFCIF queue.

NED New Zealand mode external defect input true.

OPERANDS TYPE 2 (CONTINUED)

NEV New Zealand mode evac defect input true.

NMA True if 1 or more non MAF-mapped zones are in alarm.

NMF True if 1 or more non MAF-mapped zones or non MAF-mapped module/ancillary relays are in fault.

NML For Australian operation, the NML token is false if any of the conditions (including network states) which cause either the Brigade Alarm or Brigade Fault relay to operate (if not controlled by output logic) are true. Note this does not include conditions which cause the standby relay to de-energise and do not energise Brigade Defect (e.g. fuse blown, database checksum error). The SFT token includes conditions which de-energise standby but not Brigade Fault.

For New Zealand operation the NML token is true if there are no abnormal conditions.

NSA New Zealand mode local silence alarms operated.

ODR True if the outer door is currently open.

PLI True if the "Plant" flag is set to isolated.

The PLI token may be used to isolate a set of relays from the single option on the Ancillary Isolate key menu. The equation of each relay to be isolated must take the form Rn = (eqn) .^PLI.

The PLI token is not mapped to the MAF (i.e. Plant Isolate does not operate the Brigade Isolate relay, common Isolate LEDs, etc). To have the Isolate relay operate on PLI it is necessary to program it as follows: ISO = ISO + PLI.
When PLI is true, the Ancillary Isolated LED is on (as it is if either ancillary relay 1 or 2 is isolated, or any module relay is isolated).

RST When the "RESET" key is pressed with the base display selected this returns true for between 1 and 2 complete passes of all output logic equations.

STS True if a system test or auto test is currently in progress.

SOA This is available in V2.07 or later software and is true when the alarm buzzer is currently sounding.

SOF This is available in V2.07 or later software and is true when the fault buzzer is currently sounding.

SFT True if any system fault is present (refer to Operator's Manual Section 6.6.3).

TEV New Zealand mode local trial evac operated.

7.4.4 EXAMPLES OF LOGIC EQUATIONS

Example 1 - Use of Variables

Assume that two relays are required with similar logic equations, as follows:

R1 = (Z1A + Z2A + Z9A + Z10A) .^ Z3A
R9 = (Z1A + Z2A + Z9A + Z10A) .^ Z11A

Rather than enter both equations in full, it is easier to assign a variable to the common section of logic and enter three equations as follows:

V2 = Z1A + Z2A + Z9A + Z10A
R1 = V2.^Z3A
R9 = V2.^Z11A

Example 2 - Use of Zone Range and Timers In a Deluge System

A manned area in a building has a high risk of fire but some chance of false operation of a smoke detector. The area is protected by a solenoid operated deluge system. It is considered best to run three separate smoke detector circuits through the area, and have a "voting" system. Also, there is to be one circuit with heat detectors and mcps, and a circuit of different coloured mcps which function as "Inhibit Deluge".

The logic specified by the consultants is that any smoke, heat or mcp operation sounds an Alert warning tone in the area.

If any 2 of the 3 smoke circuits operate, an Evacuate tone is sounded, and 20 seconds later the deluge is to operate if no one has operated "Inhibit".

If an mcp or heat detector operates, the Evacuate tone and timer are to start and "Inhibit" must not prevent the deluge from operating.

Solution:

By assigning the smoke and thermal circuits consecutively, the zone range operand can be used. Inhibit is assigned a separate zone which is configured as non-mapped to MAF, ANC1, ANC2 and BELLS.

The "zones" could be assigned as follows:

Zones Z9, Z10, Z11 are the smoke circuits
Zone Z12 is the heat/mcp circuit
Zone Z13 is the "Inhibit" circuit
Relay R4 switches the "Zone Alert"
Relay R5 switches the "Zone Evacuate"
Relay R6 switches the "Zone Deluge" solenoid.

The appropriate names for zones and relays would be entered as text. For thermal detectors with electronic bases and all mcps "shorting" the circuits, the AZCs would be configured with:
AZC 12 as "Heat", with B1 = Alarm;
AZC 13 as "Manual" with B1 = Instant Alarm.

EXAMPLES OF LOGIC EQUATIONS (CONTINUED)

The logic may be entered using the zone range (ZR) option as follows:

R4 = Z9:12(1)A (i.e. alert on any of zones 9-12 in alarm)
V1 = (Z9:11(2)A.^Z13A)+Z12A (i.e. any two of zones 9-11 in alarm
with Zone 13 not in alarm, or Zone 12 in alarm).
R5 = V1 (evacuate tone)
T1[S20:0]=V1 (stretch timer, input delay 20 sec)
R6 = T1 (deluge)

The variable, V1 is used to start the timer rather than relay R5, so that if someone operates R5 e.g. by the Test Relay function, there is no chance of it starting the time delay and initiating the deluge (R6).

Example 3 - Use of Timers

Timers have been partly described already in Section 3.8. Timers 1 to 64 are "seconds based" with a range of 0 to 250 seconds, and timers 65 to 72 are "minutes based" with a range of 0 to 250 minutes.

A certain building has an outdoor yard with a very loud sounder. It is too loud to be left on continuously. For any alarm in the premises it is desired to give one set of three 5 second bursts on the sounder with 5 second delays between the bursts (Bells must operate as standard).

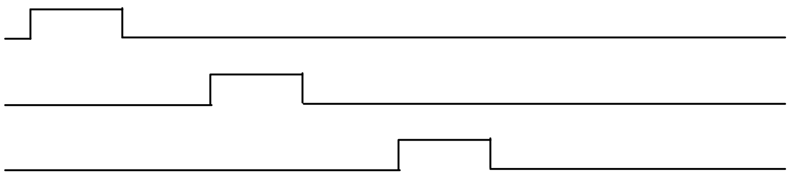
Solution:

A relay (say R7) is assigned to switch the sounder. Three pulse timers (say T5, T6, T7) are required.

T5[P0:5] = ALM

T6[P10:5] = ALM

T7[P20:5] = ALM



R7 = T5 + T6 + T7

EXAMPLES OF LOGIC EQUATIONS (CONTINUED)

Example 4 - Use of Timer To Make Continuous Pulsing

A building has a loud "hooter" to attract the operator to the FIP. The hooter is relay driven and must pulse 1 second on, 1 second off, on occurrence of any alarm until it is acknowledged.

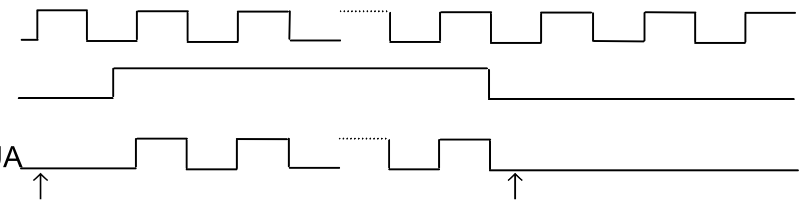
Solution:

Use a timer to make a 1 second on, 1 second off oscillator. A relay (say Anc2) and a timer (say T1) are assigned. The MUA (MAF unacknowledged alarm) is used as follows:

T1[S1:1] = ^T1

MUA

ANC2 = T1.MUA



ALARM ACKNOWLEDGE

7.4.5 ENTERING EQUATIONS

Entering equations from the keypad is similar to entering text, but includes entering logical operators and brackets from specific keys.

When an output (e.g. Relay 01) is selected, press "EDIT", "ENTER" or "➢" to enable equation entry for that output.

Equation entry has two fields. The top field contains the equation which has been entered and the bottom field contains an array of operands which may be entered. "NOT" or "(" may also be entered directly from their keys.

Each field has one of two cursors. The active cursor █ may be moved through the field it is in by use of the ≺ ➢ cursors to select an operand or position in the equation. The inactive cursor ■ shows where the active cursor would be if it was in that field.

There is a choice of 5 lines of operands in the bottom field. These may be scrolled by use of the ⋏ and ⋎ keys. Note that numbers and operators can be entered directly from the keypad.

"EDIT"	toggles the cursor between the two fields.
"DELETE"	acts as backspace for a token just entered, or deletes any token/operator in the equation selected by the cursor (active or inactive).
"ACK"	saves the equation.
"NEXT" & "PREV"	step through outputs (e.g. relays).

Notes:

1. Observe the priorities specified in Section 7.4.2.

2. It is recommended that brackets be used when entering a string of operands to make checking easier.

ENTERING EQUATIONS (CONTINUED)

3. When an equation has been entered, check it, and count the number of "(" and the number of ")" to ensure they are the same.

4. It is recommended that all equations be written on forms (such as in Appendix B) before they are entered, and then checked against the forms after they have been entered).

Example

Enter an equation to program module relay 5 to activate if Zones 9 or 10 go into alarm, but not if Open Collector 4 is active (say open collector 4 drives a status LED and has a logic equation entered to do this).

The equation is:
R5 = (Z9A + Z10A).^OC4

From the "System Configuration" menu (4), select "Output Logic" (4) followed by "relay" (1).

Use "NEXT" to step onto Relay 5 (R5)

<u>Press</u>	<u>LCD Shows</u>
"➢"	R5 = ■ (NOT AR RL VL █N TM OC ZR NA NV
"("	R5 = (■ (NOT AR RL VL █N TM OC ZR NA NV
"ENTER"	R5 = (Z █
"9", "ENTER"	R5 = (Z9 █
"1"	R5 = (Z9A ■
"OR"	R5 = (Z9A + ■ (NOT AR RL VL █N TM OC ZR NA NV
"ENTER"	R5 = (Z9A + Z █
"1" "0" "ENTER"	R5 = (Z9A + Z10 █
"1"	R5 = (Z9A + Z10A ■
")"	R5 = (Z9A + Z10A) ■
"AND" "NOT"	R5 = (Z9A + Z10A).^ ■ (NOT AR RL VL █N TM OC ZR NA NV
"➢" "➢"	(NOT AR RL VL ZN TM █C ZR NA NV
"ENTER"	R5 = (Z9A + Z10A) .^OC █
"4" "ENTER"	R5 = (Z9A + Z10a) .^ OC4 █
"ACK"	R█ = (Z9A + Z10A) .^ OC4 Equation Saved OK

ENTERING EQUATIONS (CONTINUED)

The next relay can be selected. Note that Z9A and Z10A could have been entered as zone range ZR9:10(1)A.

Entering an NA Operand

To enter an NA operand, do the following:

1. Select NA with the █ in the bottom line and press "ENTER".
2. Select the first token in the "RESET" group with the cursor keys and enter it.
3. Select the next token in the "RESET" group and enter it (the , will automatically be inserted when this token is entered).
4. When all the "RESET" tokens are entered, press one of the Operator keys ("AND", "OR", etc) then enter the "SET" tokens (on the right side of the ;).
5. Select the desired token with the cursor keys.
6. When all the "SET" tokens are entered, press "AND", "OR", "XOR" or "NOT" to exit from NA. If the NA is the last token in an equation and the operand just entered is not required, press "DELETE".

Notes:

1. A logic equation or another NA token cannot be entered directly into an NA operand. If they are required they must be entered as a variable (i.e. equate a variable to the desired equation).
2. Multiple NA tokens can be used, but each one must be qualified by listing the group of tokens as it is entered. Should the same latch be desired as an operand in various equations, it would be expedient to assign a variable as the NA, and then call up the variable in equations. This saves re-entering the NA with its lists of operands.

7.4.6 THE OUTPUT LOGIC PROGRAMMING MENUS

The Output Logic programming menus are shown in Fig 7.1.1 and include the following:

Menu 1
Relay (module relay); Variable; Timer; Open Collector; Ancillary Relay; Net Var;

Menu 2
MAF Relay; Zone Isol; Zone De-Isol; Zone Reset; free space

Menu 3
SNA (sounder activate - software V2.09 onwards)

Menu 1

Relay - this option is used to enter equations for the physical module relays (relay numbers 1 - 64) and to control zone LEDs (relay numbers 65 - 256).

Variable - for variables 1 - 256

Timer - timers 1 to 64 are seconds based and 65 to 72 are minutes based.

THE OUTPUT LOGIC PROGRAMMING MENUS (CONTINUED)

Open Collectors - 1 to 64 corresponding to the AZC boards installed.

Ancillary Relay - MAF ancillary relays 1,2,3.

Net Var - network variables 1 - 256 (network systems only).

Menu 2

MAF Relay - Standby, Fault, Isolate, Alarm

Zone Isol, Zone De-isol, Zone Reset - these commands can be applied to alarm zones (zones 1-64), module relays (zones 65 - 128), ancillary relays (zones 193-196) and plant (zone 197). These are described in section 7.4.9.

free space - this option is used to display the number of free and used output logic blocks - output logic storage memory is organised into 16 byte blocks.

Menu 3

SNA - for V2.09 or later software, this is used to control the fault sounder. When the equation changes from false to true, the fault sounder is activated and the SOF token becomes true. Pressing any key will silence the sounder. SNA must go false then true again to re-activate the sounder. The fault sounder will also be activated by any conditions in the system that normally activate it.

7.4.7 PROGRAMMING RELAYS

When programming relays, the following points should be observed:

1. The default operation of the F3200 **MAF Brigade relays** conform to AS1603.4. Programming relays for operation, other than default, may contravene the standard.

2. If programming the **Alarm relay** with a logic equation and it is desired to have it operate during Brigade Test, then the equation entered should include the BGT token. For network systems, note that the ALM token does not include any alarm status received from other panels on the network.

3. Although the **MAF Standby relay** may be programmed to operate off a logic equation, it is still de-energised (by hardware) for the Battery Very Low condition.

4. If it is desired to use the **Plant Isolate** option of the "ANCIL ISOL" function menu, all relays to be isolated must include the PLI token in their equations. E.g. R3 = (Z5A + Z6A) . ^PLI.

5. It is **not** recommended to program **normally energised relays** because **Global Isolate** and **Plant Isolate** de-energise them. Also, they increase FIP quiescent current. All relays have normally closed contacts (i.e. for relay de-energised).

6. If **Anc3** has a logic equation entered for it, it no longer operates as "Bells" and is not affected by the **"BELLS ISOL"** key. The key does still set the BLI token and so, if desired, another relay (e.g. a module relay) could be programmed to operate on a logic equation which includes BEL or BLI (and hence be isolated by "BELLS ISOL").

   The BELLS ISOLATED LED operates from BLI and is not affected by the programming of Anc3.

7. Equations may be entered for relays 1-64 even through the appropriate 8 Relay Modules are not fitted. The resulting states could be sent to an RDU or another device on the RZDU bus.

8. When driving the fault relay with logic, the following should be noted.

   The fault relay can be controlled with logic by the equation
   FLT = ...   - some logic

   It is recommended that the SFT token is included in the equation for the fault relay.
   e.g.
   FLT = FLT + SFT + …

   The FLT token is true when one or more MAF mapped non-isolated zones or module/ancillary relays are in fault.

   The SFT token is true for system faults - these are listed in detail in section 6.6 of the F3200 Operator's Manual LT0119.

   With no logic equation driving the brigade fault relay, the relay will energise for the following things.

   1. non isolated maf zone/relay faults
   2. all battery/ mains/ charger faults
   3. RZDU system faults
   4. circuit failed system auto test
   5. network associated faults (discards, scan fails, zone or system faults received from other panels)
   6. NZ mode defects (NDU only)

   If you drive the fault relay with logic
   FLT = FLT + SFT
   then the fault relay will energise for some additional conditions which don't cause the fault relay to operate when there is no equation FLT = …
   These include the conditions which normally cause the Standby relay to de-energise rather than energising the fault relay e.g. EEPROM database checksum error or LED display board fault.

   For network systems, FLT = FLT + SFT does not include zone or system faults received from other panels.

9. For network systems, when driving the isolate relay from logic, the equation
   ISO = ISO
   does not include any maf isolate conditions received from other network panels.

7.4.8 CONTROLLING ZONE LEDS

An output logic equation controlling a "module relay" where the relay number is in the range 65 to 256 is used to control a zone LED. F3200 allows a maximum of four 16 zone LED display boards corresponding to 64 zones. Relay equations with relay numbers 65-128 are used to control the alarm LEDs 1 to 64. Relay equations with relay numbers 129-192 are used to control the fault LEDs 1 to 64. Relay equations with relay numbers 193-256 are used to control the isolate LEDs 1 to 64. Relay numbers 65-256 cannot be used in the "right hand side" part of an equation as an operand. The LEDs being controlled will be either on steady or off - they cannot be selected to flash.

It is necessary to ensure that no zone or module relay is mapped to any LED being controlled by logic (mapping of zones to LEDs is described in section 7.3.3).

CONTROLLING ZONE LEDS (CONTINUED)

For example, an equation of R65=Z1:20(1)A

will result in alarm LED 1 turning on steady whenever one or more zones in the range 1 to 20 has an **unisolated** alarm.

An equation of R256=PLI , will result in isolate LED 64 turning on steady when PLANT is isolated.

An equation of R129=SFT , will result in fault LED 1 turning on steady whenever there is a system fault.

RDU Zones 129-192

If any output logic equations are used to control zone LEDs, then the status transmitted to an RZDU will include data for "zones" 129 to 192 (otherwise zones 129 to 192 are not sent to an RZDU). The status of zones 129 to 192 as sent to an RZDU is generated from the output logic equations which control the LEDs, where zones 129-192 correspond to LEDs 1 to 64. For example, with equations

R65=Z1:20(1)A, R129=Z1:20(1)F and R193=Z1:20(1)I

then the status of zone 129 at an RZDU would show alarm if any of zones 1 to 20 at the F3200 controller had an unisolated alarm, and similarly for fault and isolate.

NOTE At the F3200 controller, zones 129 to 192 actually correspond to open collector outputs and are NOT the same as zones 129 to 192 at an RZDU.

7.4.9 PROGRAMMING ZONE ISOLATE/DE-ISOLATE/RESET COMMANDS

F3200 allows the programming of equations which initiate zone isolate, zone deisolate or zone reset commands. These commands have the same effect as if the operator initiated the command using the keypad. With V2.08 or earlier software, these commands can be used with alarm zones only (zones 1 to 64). With V2.09 or later, these commands can be used with module relays (using zone numbers 65 to 128), ancillary relays (zones 193 to 196) and plant (zone 197).

7.4.9.1 ENTERING OUTPUT LOGIC ZONE COMMANDS

Selecting one of the menu options from output logic menu two "4:Zone isol 5:Zone deisol 6:Zone reset" will show the first programmed equation of that type. Pressing NEXT and PREV steps forward and back through the list of equations of that type. The equation is shown with a "first zone" and "last zone" and the command is applied to the range of zones specified inclusively. If the first zone is the same as the last zone then the command applies to that zone only. If there are no equations of the selected type then a "blank" equation is shown with the first zone and last zone equal to zero. A "blank" equation is also shown after stepping through all existing equations of the selected type and this can be used to enter a new equation.

ENTERING OUTPUT LOGIC ZONE COMMANDS (CONTINUED)

When an existing equation (call it "E1") is shown, the first and/or last zone may be modified and if an equation with the new first and last zone does not already exist then the "right hand side" of equation "E1" will be copied into the new equation (call it E2). Equation E2 may then be modified if desired, or immediately saved. When equation E2 is saved the user will be given the choice of either deleting/overwriting the prior equation E1 or of keeping the existing equation E1 and creating a completely new equation E2. This allows the user to modify the first or last zone of an existing equation (E1) and save it without having to then go back and delete the previously existing equation E1 (and perhaps forgetting to). It also allows the "right hand side" of an existing equation to be copied to a new equation with a different range of zones. The DELETE and INSERT keys may be used to modify the copied equation as with normal equation editing.

The logic equations for zone commands are entered as:

ZRn:m="equation" to reset zones n to m inclusive
ZIn:m="equation" to isolate zones n to m inclusive
ZDn:m="equation" to deisolate zones n to m inclusive

If n and m have the same value then the command applies to that single zone.

There may be only one equation of each type (reset/isolate/deisolate) with the same first zone/last zone. E.g. it is not possible to have both ZI3:7=BLI and ZI3:7=Z1I as two separate equations. The logic should be combined into one equation.

When an existing equation is recalled or has just been saved, the cursor will be positioned on the "I", "D" or "R" immediately to the left of the "first zone" number. The "up arrow" key may be used to cycle through "I" (isolate), "D" (deisolate), or "R" (reset) and if the equation of the new type exists it will be recalled otherwise it will be created and the "right hand side" of the previously shown equation will be copied into the new equation.

After entering all of the zone isolate/deisolate/reset equations it is recommended that they be checked by printing the database to a printer or computer, or by stepping through the list of equations on the LCD. Check that the equations are correct and that no unwanted equations have been inadvertently left in the list. An entire equation may be deleted using the DELETE key when the cursor is on the left hand side of the equals (=) sign of the equation.

W A R N I N G

To view the zone command logic equations that have been programmed, the preferred method is to “PRINT” the database or output logic to a computer or printer. If this is not possible then the equations can be viewed on the LCD. To do this, select one of the options 4:Zone Isol, 5:Zone deisol or 6:Zone reset and use the NEXT and PREV keys to step through the entire list. DO NOT use the up arrow/down arrow keys to swap between isolate, de-isolate or reset types and do not enter explicit zone numbers as this may create a new equation where one did not previously exist (as a convenience, the previously displayed equation is copied to the new one if there is no equation already defined for the new type or zone numbers).

Hence if you wish to view existing equations, use only the NEXT and PREV keys.

7.4.9.2 OPERATION OF OUTPUT LOGIC ZONE COMMANDS

Reset Command

A single zone or a range of zones may be reset. All zones in the specified range will be reset, regardless of whether they are in alarm or not, as if the zones had been reset by an operator from the keypad.

The output logic initiates the reset command whenever the equation on the right hand side is true. If the equation is still true at the end of the reset then another reset will be immediately initiated, and this will repeat until the equation becomes false. Therefore, to avoid repeated resets the equation should be arranged so that it becomes false before the end of the reset. The equation needs to be true for only one pass of the output logic for the zone reset to be initiated.

Isolate / Deisolate Commands

A single zone or a range of zones may be isolated/deisolated. The command will be applied to all zones in the specified range regardless of the type of zone.

Whenever the right hand side of the equation is true, the zones will immediately be isolated/deisolated if they are not already isolated/ deisolated.

If an equation to isolate/deisolate a zone is continually true, and an operator enters the opposite command using the LCD/keypad, then the zone will briefly change but will quickly revert back due to the output logic.

Therefore the logic equation should be arranged so that the equation is only true for a brief time or on a change of state. The NA operator may be used for this purpose.

7.4.9.3 EXAMPLE EQUATIONS

(i) The equation ZI3:7=BLI will cause zones 3 to 7 (inclusive) to be isolated whenever BLI is true, i.e. the bells are isolated. If the operator manually deisolates any of zones 3 to 7 then the output logic will immediately isolate them again if BLI is true.

(ii) An external switch is used to isolate or deisolate a group of zones. The equation ZI5:8=Z16M will result in zones 5, 6, 7 and 8 being isolated when zone 16 (the switch) is in a short circuit state. If it is necessary to deisolate the zones again when zone 16 is taken out of short circuit then a second equation is needed, perhaps ZD5:8=^Z16M.

However, including these two equations would prevent an operator from isolating or deisolating the zones using the keypad because one or other of the two equations (whichever has a TRUE "right hand side") is continually attempting to isolate or deisolate the zones. An "NA" function can be used to overcome this as follows.

```
V1=NA(V1;Z16M)
V2=^Z16M
V3=NA(V3;V2)
ZI5:8=V1
ZD5:8=V3
```

The output logic will isolate/deisolate the zones only when a transition of zone 16 into/out of the short circuit state occurs. Only one of variables V1 or V3 is true for exactly one complete pass of the output logic after a transition of zone 16.

EXAMPLE EQUATIONS (CONTINUED)

(iii) To reset a zone after it has been in alarm for 30 seconds.
T1[S30:0]=Z1A
ZR1:1=T1

After zone 1 alarm (Z1A) has been true for 30 seconds, timer T1 will become true and a reset command will be issued to zone 1. This will immediately cause Z1A to become false, resulting in timer T1 becoming false and removing the reset command initiation. If the zone subsequently goes back into alarm, then after a further 30 seconds it will be reset again.

Note: If the zone is isolated then it will NOT be reset 30 seconds after being in alarm due to the fact that the Z1A token is false for an isolated zone.

7.4.10 USING THE ZND AND ZNM TOKENS

Some applications require the use of a switch, where the state of the switch can be accessed in output logic. One of the zone output logic tokens listed in Section 7.4.3.1 would normally be used to access the state of the switch - ZnA, ZnF, ZnN, ZnD, ZnM, ZnI or ZnR. For example if a short circuit state is produced when the switch closes then band B1 could be programmed as instant alarm and the ZnM token will become true when the state of the circuit is short circuit/B1.

The ZnD and ZnM tokens have a faster "response" time (80-240 millisecs) than ZnA or ZnF. As described in section 7.2.4 "Time Delays", for V2.XX software a type 4 circuit with an into alarm delay of zero has an actual delay of 200 to 800 millisecs (typically 400 millisecs) which means that the ZnA and ZnF tokens become true within 200 to 800 millisecs. Otherwise the time delay for the ZnA and ZnF tokens is 2.0 to 2.3 seconds. The ZnD and ZnM tokens are not affected by whether the zone is isolated or not (unlike ZnA and ZnF) but the ZnI token can be used in an equation to qualify the ZnD and ZnM tokens if necessary.

Which zone token to use and which circuit delay type to program depends on the response time required for the switch.

There are some other special considerations to note when using the ZnD and ZnM tokens. In particular, during system or auto test or at the termination of a zone alarm test the circuit input may be briefly in the band B3 state long enough for ZnD or ZnM token to become briefly true. During system/auto test if band B3 is programmed as "detector operated" or as "instant alarm" then the ZnD or ZnM tokens will be true for the 1 to 2 seconds that the circuit is in band B3 during the test.

A "status only zone" (refer Section 7.3.2 configuring zones), does not get tested during system or auto test and hence will not have the problem of the circuit going into band B3 during system test.

During zone alarm test the state of the circuit will appear to be in band B2 (unlike system/auto test). However, if the zone test is terminated by pressing the ACK key without resetting the zone, then the circuit will appear to be in band B3 for a short time (approx 200 millisecs) - long enough to cause the ZnD or ZnM tokens to return true for a short time, depending on the programming of band B3. When a zone is reset the ZnD and ZnM tokens are prevented from changing during the 7 second reset operation as described in section 7.4.3.1.

Therefore for a "status only zone" it is recommended that band B3 be programmed as normal rather than instant alarm.

Note that for V2.XX software the default mapping for band B3 is "instant alarm" which is the state that causes the ZnM token to be true.

7.5 RELAY SUPERVISION

7.5.1 GENERAL

The Ancillary relays (Anc1 and Anc2) and Bells relay on the MAF/PSU, and the Module relays all have the option of supervision (i.e. checking the wiring from a relay to its load to see that it is not "short" or "open" circuited).

In F3200, the supervision also includes a "confirmation" function i.e. it expects to "see" a different state after a relay has been activated. If an incorrect state is "seen" by the supervision, before or after relay activation, then it generates a "fault" condition for that relay. Supervision in the activated state can be disabled for “load” mode if it is not required, for example when the relay switches the load to 0V.

For each relay the supervision can be disabled if not required, mapped to the MAF, and made latching or non-latching. Anc 1 + 2 relays can be programmed for two different modes of supervision - door holder or load mode. All relays can also be individually made non-isolatable (stops the Operator isolating them) and non-testable.

The Relay (Supervision) menu (Option 5 on the System Configuration menu) has two options as follows: 1 Bells/Ancillary Relays; 2 Module Relays. The options for selecting relays as Isolatable, Testable and Supervise Activated state are available in V2.09 or later software.

7.5.2 BELLS & ANCILLARY RELAY SUPERVISION

This is option 1 in the Relay Supervision menu.

Refer to Section 3.4.2 for the electrical characteristics of the Bells and Anc1, Anc2 relay supervision.

Ancillary Relay Supervision

The options which may be entered for Anc1, 2 and Anc3 are:

Supervision enabled (E) or disabled (D).
Supervision latching (L) or non-latching (N) (i.e. the fault condition).
Fault and isolate mapped (M) or not mapped (N) to the MAF.
Supervision is load (L) or door holder (D) mode (not for ANC3).
Isolatable (yes/no)
Testable (yes/no)
Supervise Activated State (yes/no)

The default setup (by EEPROM initialise) is.

ANC 1: supervision disabled, non-latching, mapped to MAF, Door holder, isolatable, testable, activated state supervised.
ANC 2: supervision disabled, non-latching, mapped to MAF, Load mode, isolatable, testable, activated state supervised.
ANC 3: supervision disabled, non-latching, mapped to MAF, isolatable, testable, activated state supervised.

7.5.3 MODULE RELAY SUPERVISION

This is option 2 of the Relay Supervision menu.

To program module relay supervision the desired relay number is selected by use of the "NEXT" and "PREV" keys.

The options which may be selected are:

Supervision enabled (E) or disabled (D).
Supervision latching (L) or non-latching (N) (i.e. the fault condition).
Fault and isolate mapped (M) or not mapped to the MAF.
Supervision and relay status mapped to LED n on an LED Display (where fitted).
Isolatable (yes/no)
Testable (yes/no)
Supervise Activated State (yes/no)

The mode of monitoring is always "load" (refer to Sections 3.4.4 and 8.6).

The mapping of the relay status (activated, isolated, fault or normal) to LEDs on an LED Display is described in Sections 2.3.2 and 7.3.3.

7.6 RDU

The connection of RDUs (RZDUs, Remote LCDs) to a FIP is described in Sections 2.1.6 and 8.9.

An F3200 panel transmits the status of its alarm zones and module relay zones to an RDU. The F3200 panel may have from zero to 64 alarm zones and these zones are always mapped to zones 1 to 64 at the RZDU. The F3200 panel may have from zero to 64 module relays and for F3200 V2.00 and later software these relays are always mapped to zones 65 to 128 at the RZDU. **NOTE :-** In F3200 V1.10 this was not the case. F3200 V1.10 mapped the module relays to zones in the range 1-64 and the first module relay mapped to the first free zone after the alarm zones.

In F3200 V2.00 or later software, the first module relay always maps to zone 65 at the RZDU. i.e. at an RDU, a recall of zone 65 on the LCD will show the status of the first module relay in the F3200 panel and a recall of zone 1 on the LCD at an RDU will show the status of the first alarm zone in the F3200 panel. This numbering is not affected by the mapping of zones to LEDs at either the panel or at the RDU. e.g the first module relay in the F3200 panel could map to LED 1 in the panel and to LED 33 at the RDU but is still recalled onto the RDU LCD as zone 65.

F3200 V2.07 and later software allows equations for relays 1 to 64 to be entered even if there is no physical relay installed at the FIP. The logic state calculated for the equation is sent as the alarm state for the corresponding zone 65 to 128 sent to the RDU.

F3200 V2.00 and later software will also transmit the status of "zones" 129-192 to the RZDU if it has any output logic equations controlling a relay where the relay number is greater than 64. An output logic equation controlling a relay with a relay number in the range 65 to 192 is actually controlling one of the 64 zone LEDs and is mapped to zones 129-192 for transmission to an RZDU. Refer to section 7.4 for further information.

The **RZDU menu** (option 6 in the System Configuration menu) has two options as follows: 1 Protocol Type; 2 RZDU config

Protocol Type

The two protocols available for communication between the F3200 FIP and RZDUs are:

LCD - the newer Vigilant protocol with greater flexibility.
Non-LCD - the older Vigilant protocol that may need to be used with some old version RZDUs, IO-NET or Colour Graphic software version.

The default protocol is LCD. Non-LCD can be selected by pressing "ENTER". If LCD protocol is used, each RZDU may then be programmed as using either LCD-A or LCD-B. LCD-A is normally used but LCD-B may be used with some versions of RDU and will allow a bell test command to be initiated at an RDU. The selection of LCD-A or LCD-B must be done in both the panel and the RZDU. A mixture of LCD-A and LCD-B type RZDUs may be used on the same panel.

RZDU config

RZDUs 1-8 can be selected by use of the "NEXT" key. The cursor left and right keys are used to step through the items that can be programmed for each RZDU. The cursor up key is used to enable or disable each rzdu and to select LCD-A or LCD-B.

RDU (CONTINUED)

The **RZDU MCP** can be mapped to a FIP zone by entering a zone number.

Transmitting Zone Names to an RDU

F3200 V2.03 software or later and RDU V2.01 software or later allow the downloading of zone and module relay names to connected RDUs using the comms link to the RDU. This is initiated from the SET menu described in Section 6.2.1. A password is required to initiate this command.

To save the zone names at an RDU, it must have its database write protect link in the write enable position.

After the command is initiated the FIP will send up to 8 zone names to the RDUs every 2 seconds. The current zone number being sent is displayed on the LCD. The CLEAR key may be used to terminate the process at any time. The FIP will send the names of up to 64 alarm zones and 64 module relays.

The F3200 FIP (all software versions) will also send the name of a zone to an RDU whenever an FFCIF alarm is generated for that zone. If programmed to, the RDU will save the zone name received with an FFCIF alarm event into its database.

Some RDUs support software write protection of their database, which allows them to have their database write protect link permanently left in the write enable position and thus receive the new zone names from the F3200.

CHAPTER 8
INSTALLATION & WIRING

8.1 INSTALLATION

8.1.1 CABINET INSTALLATION

The location of the F3200 FIP is chosen by the Fire Authority and building owner (or owner's representative) in accordance with the Australian Standard AS1670.1.

> If the cardframe needs to be made removable to allow fitting/removing of large batteries, this should be done **prior** to cabinet installation. (Refer to Section 8.1.2).

The cabinet is normally fixed to a wall with four 6 mm screws or bolts. The drilling details are shown in Fig 8.1.1.

The following conditions are required:

1. Dry Area, moderate ambient temperature, 45°C absolute maximum.
2. Not exposed to direct sunlight.
3. Not subject to outdoor conditions without suitable protection.
4. The LCD should be at average eye level and must not be higher than1850 mm or lower than 750 mm above floor level (see Fig 8.1.1).
5. Clear access and viewing for Firefighters and operators.
6. At least 1 metre free space should be provided in front of and on sides of the FIP for installation and maintenance.
7. Must not be installed in hazardous areas as defined in AS3000.
8. If recessed into a wall:
   i. Allow for the door to open at least 145°.
   ii. Prevent water entering the cabinet - seal unused knockouts and any top cable entries. Preferably use bottom cable entry, with cables going down 100 mm below cabinet before rising.

> It should not be necessary to drill within the cabinet, but if drilling or filing is required, remove the PCBs first. **Clean out all swarf before replacing the PCBs.**

> **Use antistatic precautions when handling the PCBs.**

> **WARNING**
> The F3200 is a Class A product. In a domestic environment it may cause radio interference in which case the user may be required to take adequate measures.

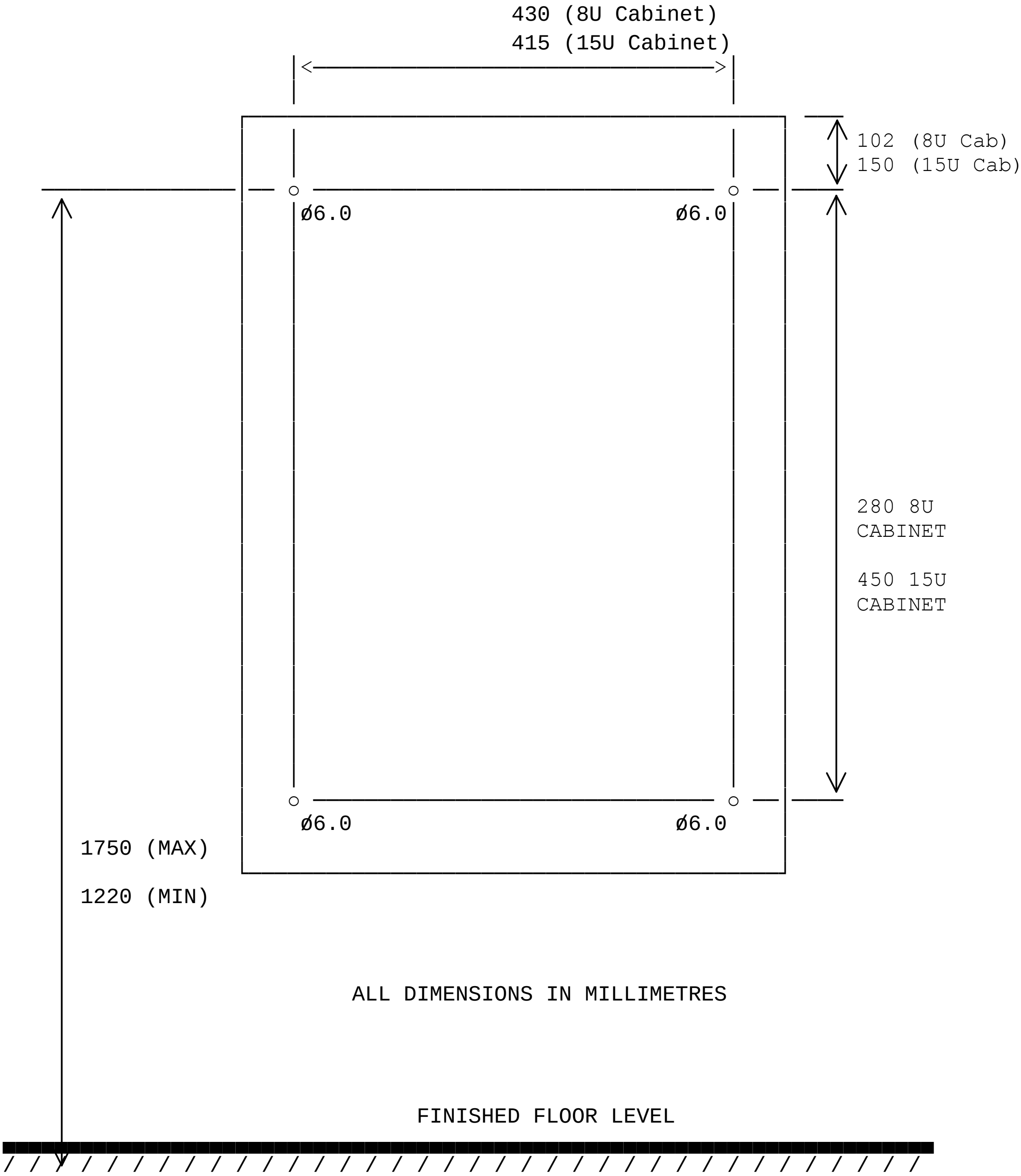


FIG 8.1.1
FIP CABINET MOUNTING DETAILS

8.1.2 CARDFRAME INSTALLATION

A KT0072 Cardframe upgrade kit can be fitted to a 15U F3200 to allow it to take more than three 8 way modules. In older versions, the cardframe mounts directly to the rear of the cabinet. In newer versions, the cardframe is fitted to a gear plate that may be removed when the cabinet is mounted to the wall.

1. **If the system does not require large batteries** (refer to Section 4.3.4) it may be fitted as follows, using a pop rivet gun and M4 nut driver. With FIP power not connected, batteries not fitted.

a. For an older cabinet that is removed from the wall:

   1. Remove all 8 way modules.
   2. Remove the 3 sets of PCB standoffs on the left side rear of the cabinet.
   3. Remove the M4 nuts, washers and PCB spacers from the 3 M4 studs on the left side of the cabinet.
   4. Fit the Cardframe over the studs with the M3 bushes on the right hand side.
   5. Refit the 3 PCB spacers, washers and nuts on the inside (do not yet fully tighten).
   6. From the cabinet rear, with the Cardframe firmly against the cabinet, insert the 3 pop rivets provided into the holes in the Cardframe, and rivet.
   7. Tighten the M4 nuts on the studs.

b. If the cabinet is mounted to the wall the procedure is the same as above except:
In step 2, the standoffs need to be cut off.
In step 6, the rivets need to be inserted from the front.

c. For a newer cabinet with a gear plate, the procedure is similar except that the gear plate is to be removed and the cardframe fitted to it.

2. **If a system requires the Cardframe to be removable to allow the fitting/removing of larger batteries,** then the procedure is similar to that described above, but, instead of pop rivets, M4 screws should be used as follows:

   1. Use three M4 x 10 or M4 x 12 screws, with nuts, and shakeproof washers.
   2. Fit the screws with the heads outside the cabinet rear, washers and nuts inside the Cardframe.
   3. Put some Locktite (or equivalent power glue) under the heads of the screws (but **not** on the threads).
   4. Tighten the nuts on the screws initially holding the heads of screws.
   5. Subsequent removal of the nuts (after the Locktite has dried) should be possible without removing the cabinet from the wall.

8.1.3 MODULE INSTALLATION

The 8 Zone Modules and any 8 Relay Modules are fitted in order, from top to bottom. The FRCs fit under each PCB, from BUS OUT of the top one to Bus IN of the next one (see Fig 8.1.2).

Observe the following:

(a) When mounting to the cabinet the M3 mounting screw per module should be tightened firmly to earth the module.

(b) Modules and FRCs need to be fitted one at a time in the Cardframe. It is easier to start from the bottom module and work up.

(c) Care should be taken not to scrape an FRC against the bottom of the PCB above it.

(d) There are redundant slots in the Cardframe to allow for either 6 module even spacing or 8 module even spacing. Choose the correct slots.

(e) On the Cardframe finger tighten the single M3 screw firmly into the notch in each PCB as this earths the module.

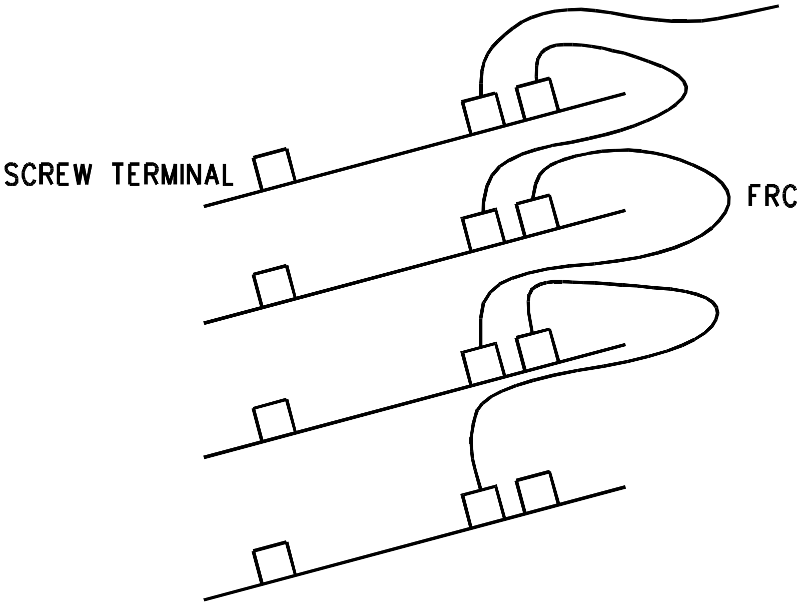


FIG 8.1.2
MODULE CONNECTION WITHIN A CARDFRAME

8.1.4 LED DISPLAY INSTALLATION

When LED Displays are required, the 7U inner door (ME0060) is fitted to the standard cabinet directly below the 4U Operator Display with the M6 screws, washers and cage nuts provided. The hinge is on the right hand side. Click the cage nuts in from the inside. (7U doors cannot be fitted to a small cabinet).

The flat M6 washers have a sharp edge and a rounded edge. Fit washers to the screws with the rounded edge facing the metalwork (to avoid damaging the paint).

The Display Bds mount to the inner door on the standoffs supplied. (FZ3031 for LH position, FP0475 for others, both include the PCB, standoffs, FRC, power leads, diffuser and label master).

Fit the FRCs and Minijump link as shown in Fig 8.1.3.

The LED Display power leads from the MAF/PSU must always be fitted.

8.1.5 ZONE LABELLING

Zone labelling for the LED Displays can be done simply on a typewriter or word processor.

Note: For a typewriter use a photocopy of the label supplied with the Display Bd.

The **type format** is:

(a) 6 lines per inch.

(b) 20 characters at 10 CPI or 24 characters at 12 CPI.

(c) 2 lines per zone window.

(d) 1 line between each zone window.

To install the zone naming label:

(a) Cut the typed label around the border, or cut the word processor sheet to 3mm to the left of the text then 60mm wide and 220mm long.

(b) Loosen the 4 Phillips-Head screws holding the display window.

(c) Align zone text with windows.

(d) Tape top and bottom of zone label.

(e) Align clear, matt finish, light diffuser with the 3 columns of LED holes (next to the label) with matt side in. Tape in place.

(f) Tape blank sheets to unused zone window(s).

(g) Replace display window and fasten the 4 screws.

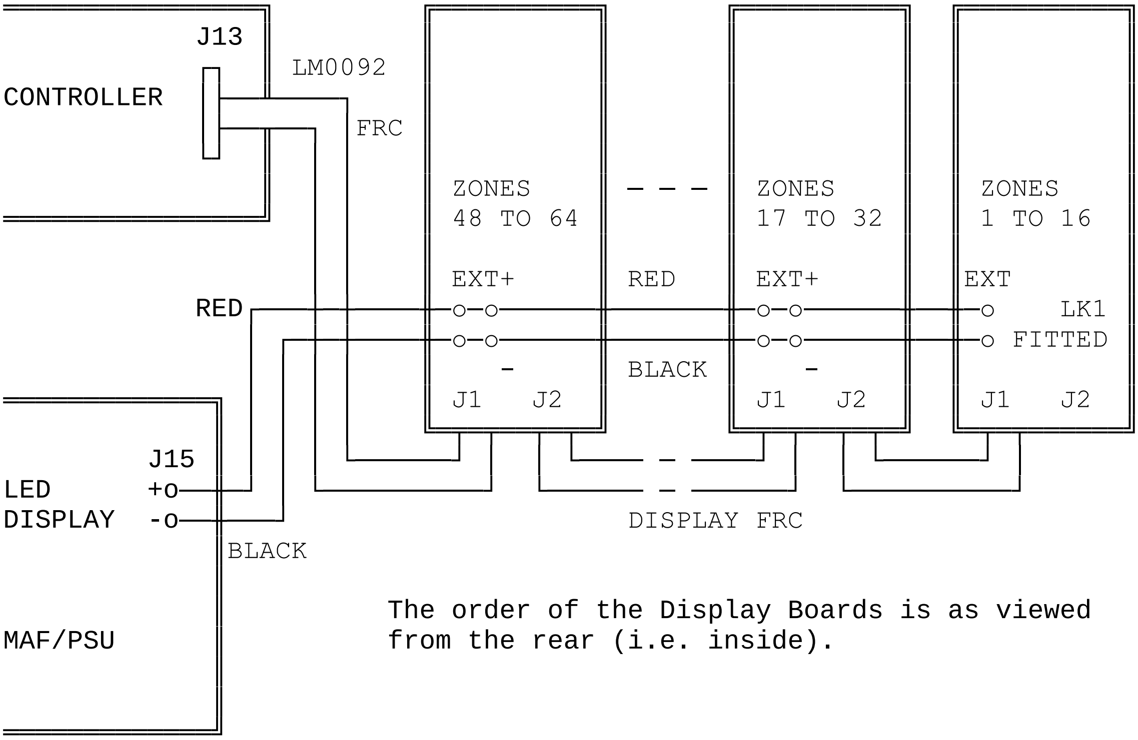


FIG 8.1.3
DISPLAY BOARD CONNECTION

Note that a special loom (LM0092) is required to connect the first Display Board to the Controller Board. This is included in the F3200 LED Display Kit (FZ3031).

For an NDU in New Zealand mode, if a NZ Display Extender board is fitted then it is added to the end of the display board chain after the last 16 zone display board (if any) and link Lk1 on the last 16 zone display board must be NOT fitted. The NZ Display Extender does not need a link fitted to it, its presence indicates to the NDU that it is the last board in the chain. When programming the number of Display Bd, the Display Extender is not counted, but is individually programmed as fitted/not fitted.

The Unprotected Termination board, PA0483, connects to the NZ Display Extender via FRC. The NZ specific wiring connects to this Termination board.

8.2 FIELD WIRING

8.2.1 GENERAL

Cabling should comply with all the points in AS1670.1, Section 8.17. Note the requirements for segregation and identification.

The cabling should, in general, be of not less than 0.75mm² cross sectional area, insulated and have red PVC sheathing. Joins should only occur in enclosed terminal boxes, and it is important that all terminations be good. I.e.

no bare wire protruding from the terminal;
no insulation inside the clamp part of the terminal;
wire not cut or "nicked" during stripping;
wire not soldered;
wire not "doubled back" in the demountable terminals with leaf type strain relief clamps;
all terminals firmly tightened;
neat service loop;
goose neck where servicing requires cable movement;
coil of spare cable in wall/ceiling to allow for mistake/alteration.

Note that it is best to carry out parts of the initial survey during installation, in particular, resistance and insulation testing.

W A R N I N G
Apart from the Mains supply to the FIP, **only ELV cabling should enter the cabinet.**

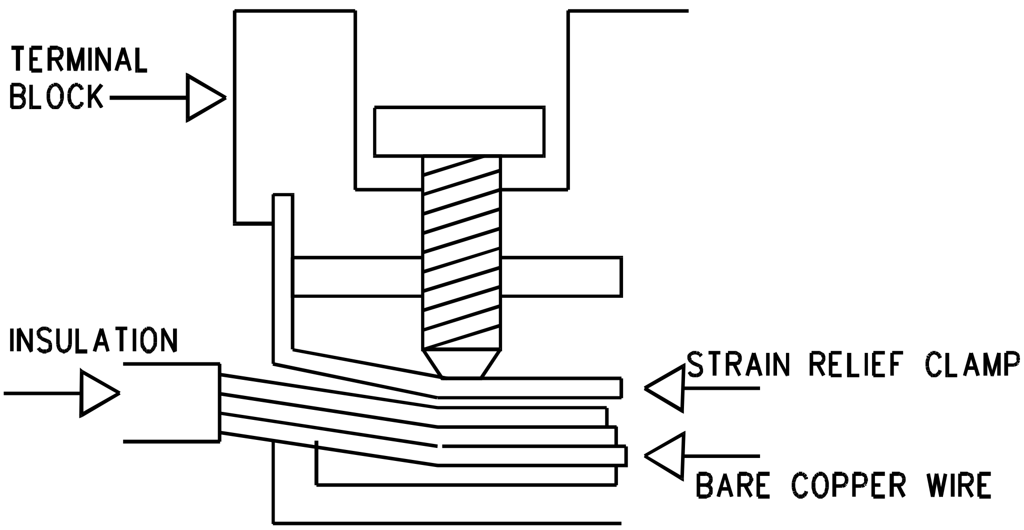


FIG 8.2.1
SCREW TERMINAL CABLE CONNECTION

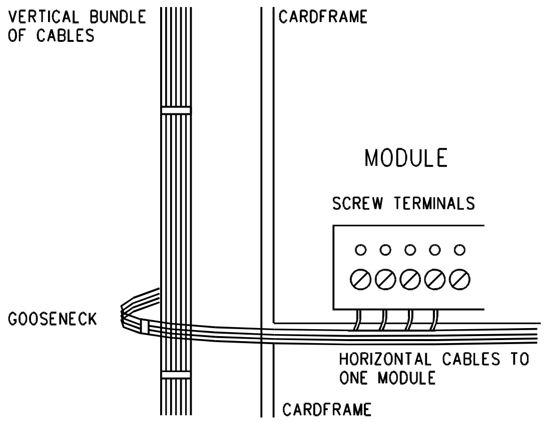


FIG 8.2.2
GOOSENECK CABLING

8.2.2 MAINS WIRING

The mains (240Vac) supply must be connected in accordance with AS1670.1 and AS3000 regulations.

Ensure the mains cables to the FIP are isolated at the Distribution Board before connecting to the FIP.

The mains cable connects to the 3 way terminal block mounted to the cabinet rear behind the mains cover.

(a) Remove the mains cover with a Pozi screw-driver.

(b) Shape the mains cable to fit through the grommet in the slot in the top of the cover, cut to length and strip only 20mm of the PVC cable sheath.

(c) Connect the wires: blue (black) to N
brown (red) to A
green/yellow (green) to E
Take care when stripping not to "nick" wires.

(d) Cable tie the cable to the cabinet.

(e) Refit the mains cover .

8.3 AZC WIRING

Detectors must be installed and wired as per AS1670.1. Observe the requirements for conductor type and size.

Connection to the particular MCPs, detectors or bases must be as specified by the manufacturer. Similarly for remote LED connection.

AZCs must be wired as per Fig 8.3.1 with "In" of the first detector connected to the 8ZM, and the EOLR to the "out" of the furthest detector.

Examples of illegal wiring are shown in Fig 8.3.3.

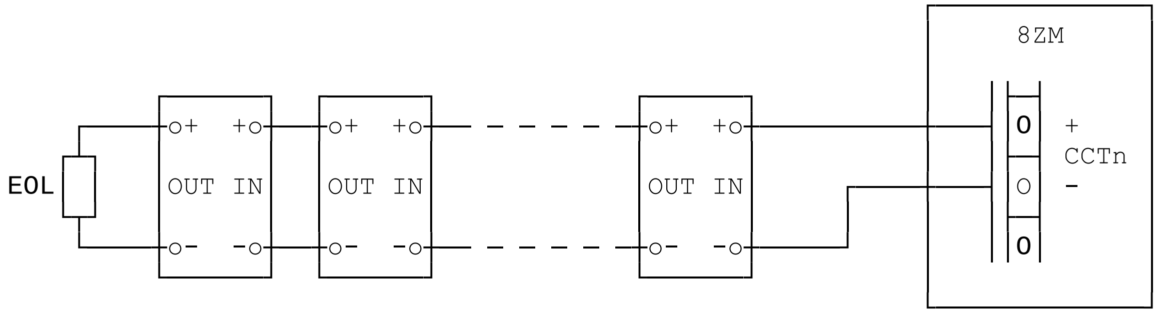


FIG 8.3.1
CORRECT AZC DETECTOR WIRING

The Tyco SU0600 MCP may be used on a circuit that has detectors on it, so that activation of the MCP does not reset the indication on any already activated detector. Wiring of the SU0600 is shown in Fig 8.3.2. The zone must be programmed with B3 = Instant Alarm.

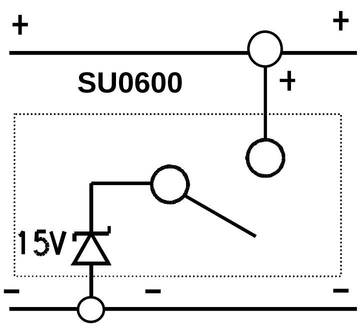


FIG 8.3.2
TYCO SU0600 CONNECTION

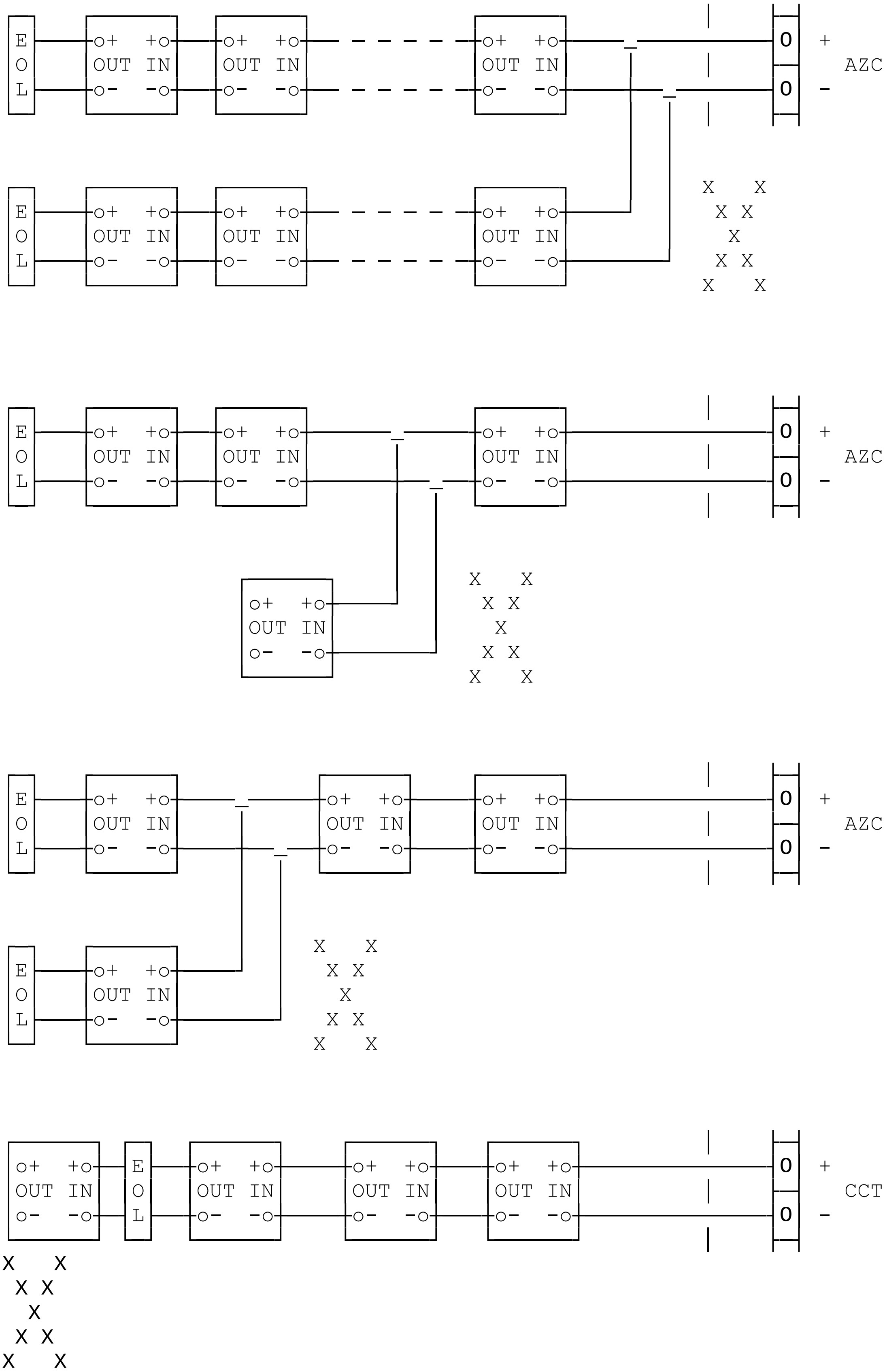


FIG 8.3.3
EXAMPLES OF INCORRECT AZC WIRING

8.4 MAF ANCILLARY RELAY WIRING

The original (AS1603.4) F3200 has a single Warning System output and Isolate Switch, namely the Anc3/Bells relay, configured as Bells +/-, and the “Bells Isolate” key.

It is now typical for FIPs to control two outputs, i.e. a single, External Bell, and a separate building Warning System which produces tones to AS2220 (as specified in AS4428.1).

The MAF module has 3 Ancillary Relays. Typically, Anc 1 is used for door holders, air-conditioning shutdown etc; Anc 2 is used for the External Bell; and Anc 3/Bells is used for the Warning System. Wiring of the External Bell should be as per Fig 8.4.2 using Anc 2. The Warning System is covered in Section 8.5. Anc 1 and Anc 2 each have 1 set of voltage free contacts available on screw terminals, and a second set to which the screw terminals are not fitted as standard. Where supervision of wiring is required, the supervision (SUP) input is used as shown in the following figures.

Door Holder Wiring

Door holders are typically powered through normally closed contacts from the non-battery backed supply (+VNBF). As door holders are inductive, a suppression diode should be fitted between 0V and the door holder positive line.

Where door holders have individual manual release buttons, suppression should be fitted at each device.

Observe polarity, the cathode of the suppression diode is connected to the positive line.

Where supervision is required, the recommended connection is as shown in Fig 8.4.1 A or B with a return from the furthest door holder. The alternative shown in Fig 8.4.1 A does not supervise the loop.

The 24V relay used at the end of the loop in Fig 8.4.1 B only needs to switch low current.

"Door Holder" mode supervision "looks for" the presence of voltage when the ancillary relay is de-energised.

Plant Relay/Solenoid Wiring

Where a plant relay is to be energised on Ancillary Relay operation it would typically be powered through normally open contacts from a battery-backed supply.

If wiring supervision is required, it is connected as shown in Fig 8.4.2. "Load" mode supervision looks for a resistance to 0V when the ancillary relay is de-energised. For a very low resistance load (ref Specifications Section 3.4.2) a series diode must be fitted as shown.

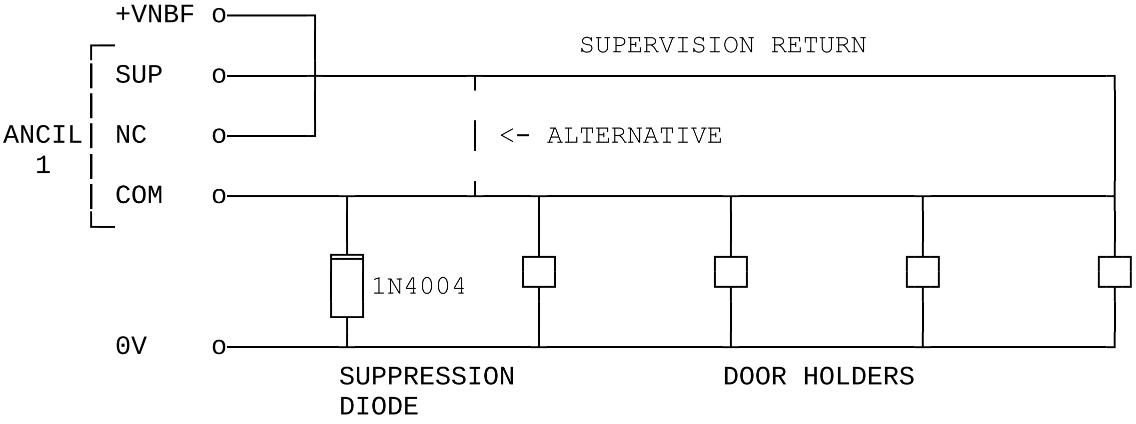
Heavy Load Wiring

If a load greater than 2A resistive (1A dc inductive) needs to be controlled by F3200 then this can be achieved with the addition of a 24V Bell Monitor Board (PA0494). This can switch up to 5A dc (resistive) and supervises the load wiring for open and short circuit faults.

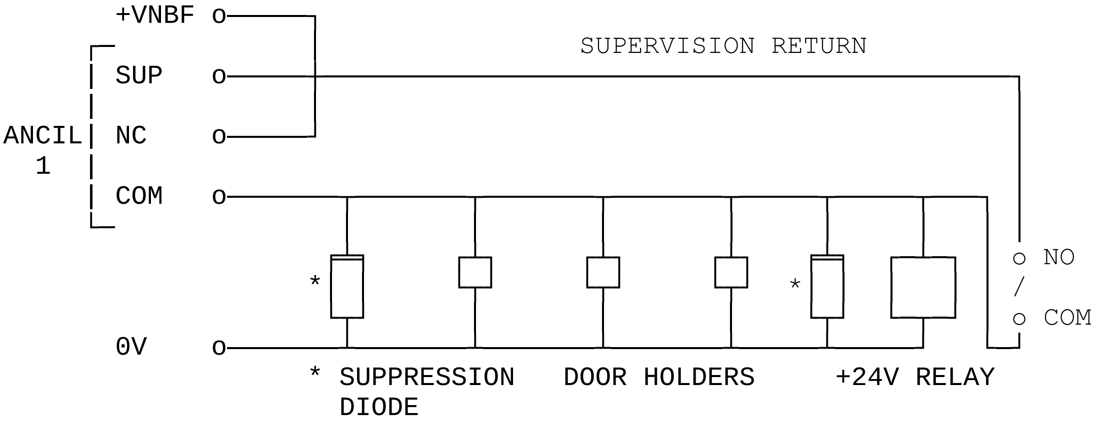
Further details for the Bell Monitor Board are contained in LT0190. A representative wiring diagram is shown in Figure 8.4.3. If the load exceeds 2A dc then the power connection must be taken off +VBF2 or directly off the battery terminals via a suitable fuse (but not the +VBF1 terminal). The fuse and wiring are supervised by the Bell Monitor Board, as it will generate a fault if power to it fails.

W A R N I N G

Apart from the mains supply to the FIP only ELV wiring may enter the cabinet.
Relays must not be used to directly switch medium or high voltage.

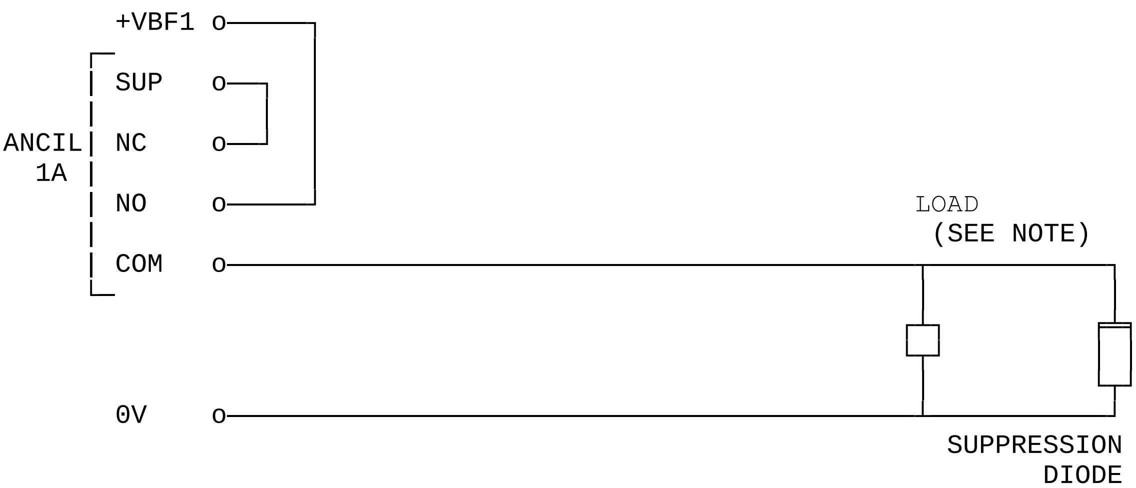


A. WITH SUPERVISION OF LOOP POSITIVE WIRING ONLY



B. WITH SUPERVISION OF LOOP POSITIVE AND NEGATIVE WIRING

FIG 8.4.1
EXAMPLE OF DOOR HOLDER WIRING WITH SUPERVISION



Note: For a load of less than 400 Ohms a diode of suitable current rating must be added in series with the load at the load as shown below.

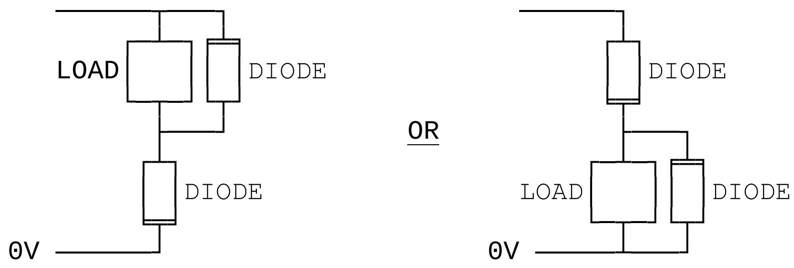


FIG 8.4.2
EXAMPLE OF PLANT RELAY WIRING WITH SUPERVISION

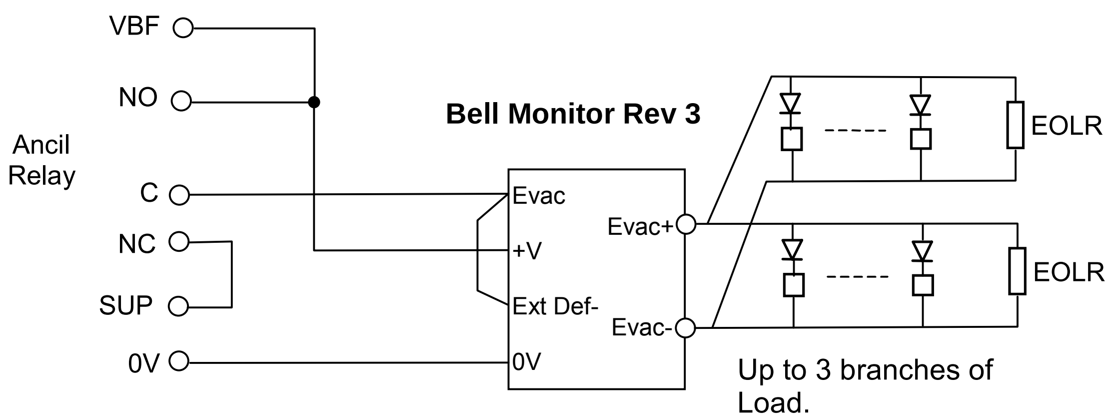


FIGURE 8.4.3
EXAMPLE OF SUPERVISING MULTIPLE BRANCHES OF MULTIPLE LOADS

8.5 WARNING SYSTEM WIRING

The typical configuration allocates the Ancil 3/Bells relay to drive the Warning System, and has links Lk2-4 fitted so that a switched 24V output is available at the +/- terminals. The supervision allows for up to 3 branches of wiring, with each requiring its own end of line resistor (EOLR). The value of the EOLR varies with the number of branches such that the combined total is always 3K3. The EOLR must be fitted at the end of each branch.

Branches	EOLR
1	3k3
2	6k8
3	10k

The Ancil 3/Bells output can be used to directly control alerting devices such as sounders (that generate tones to AS2220), AVIs, strobes etc. If each device does not have an internal series diode then a series diode must be fitted at each device. The diode must be rated to carry the current of the device. Fig 8.5.1 shows a dual branch system with diodes fitted to each device.

Note the Vigilant AVI requires an external series diode to be fitted at each device. Multiple AVIs cannot presently be synchronised because the sync line carries the signal and is not supervised (a revision of this is planned.) Refer to Fig 8.5.1. The AVIs should be used with only two wires (+24V and EVAC-, or +24V and ALERT-), which is 3 Wire mode, but may have to be used in 2-wire mode with the +ve lead connected to ALERT- (EVAC+) and the –ve to EVAC- to get the required selection (e.g. Evac tone, top and bottom lamps both on).

The Bells +/- output is limited to 2A dc resistive max. (Note that loads such as AVIs, Mini-Gens are considered resistive, whereas loads such as Solenoids and bells are inductive). A load of up to 5A dc resistive can be accommodated by use of a Bell Monitor Board and a separate, 6A dc, inline fuse. See Fig 8.5.6.

A relay on an 8 Relay Module can also be used to control and supervise a circuit of evacuation devices. This is shown in Figure 8.5.3. Note that both poles of the relay are needed and the relay needs to be programmed so that it doesn't supervise the wiring when it is activated (requires V2.09 or greater software). Although shown with only 1 circuit of evacuation wiring, it can actually support two branches, using a 27k EOL resistor on each.

The Ancil 3/Bells relay can also be used to activate (and supervise) external tone generation devices such as Mini-Gen, T-GEN, Microvac and QE90 this is covered in following sections.

MINI-GEN

The Vigilant Mini-Gen has an internal diode and can be connected with up to three branches of speakers as per the instructions included with each unit. The 10k EOLR fitted to each speaker line must be rated at 2W and is supplied with the unit. Refer Fig 8.5.2. If less than 3 branches are required, 10K 2W is still fitted to the end of each branch, with the other EOLRs being fitted to the +/- dc input terminals of the furthest Mini-Gen. Refer to the instructions for details.

The Mini-Gen can be link selected to produce an Alert tone, an Evac tone, an automatic change from Alert to Evac after 1 minute, or an automatic change after 3 minutes. If desired, it can be configured to produce Evac, with a relay switching the tone to Alert. For this, a mini-jumper is fitted to link V, and the supplied 3 way connector fitted to link A/B with normally closed relay contacts shorting pin 2 to 3 (position B) to produce Alert. When the contacts open, the tone will change to Evac. Note that this applies only to Mini-Gen Rev 3 bds with V2.00 or greater software, and for internal wiring of the relay to the Mini-Gen (i.e. the Mini-Gen must be mounted within, or adjacent to the FIP.)

T-GEN 50

The Vigilant T-GEN 50 is permanently powered, requiring a supervised Alarm- signal from the FIP rather than switched power. The BELLS- terminal can be used for this unchanged. Alternatively, an open collector output (if the T-GEN is in or adjacent to the F3200 panel), another Ancil relay on the MAF, or an 8RM relay can be used as per Section 3.5 of the T-GEN Installation Instructions, LT0186. Note that a 3k3 EOLR should be used for the BELLS relay, and is also suitable for the other ANCIL and Module relays.

MICROVAC AND QE90

The Anc 3/Bells output can be used to activate a Microvac/QE90 and to supervise the link for a fault condition. A 24V relay (e.g. PA0730 General Purpose Relay Bd) is required to be mounted within the Microvac/QE90, and the wiring as shown in Fig 8.5.4.

Alternatively the Anc 3/Bells output can be made voltage-free (remove Lks 2, 3, 4 on the MAF) and a spare 8 Zone Input can be used to supervise the Microvac/QE90. This arrangement, shown in Fig 8.5.5, does away with the relay, but requires a 4-wire connection and one spare input. The input should be programmed as a status-only zone and the fault state included in the logic equation to generate a Warning System fault. E.g. for zone 16 WSF = Z16F.

A high level link can be achieved between the F3200 and QE90 using the RZDU communications output. This is only suitable for when the F3200 and QE90 are co-located, as there is no duplication of the cable. Details for this wiring are contained in the QE90 Installation and Commissioning Manual LT0088. In addition, the QE90 needs to be supervised for a fault condition. This can be done as shown in Fig 8.5.5 using a spare zone input or as in 8.5.4 using the Ancil 3/Bells output supervision.

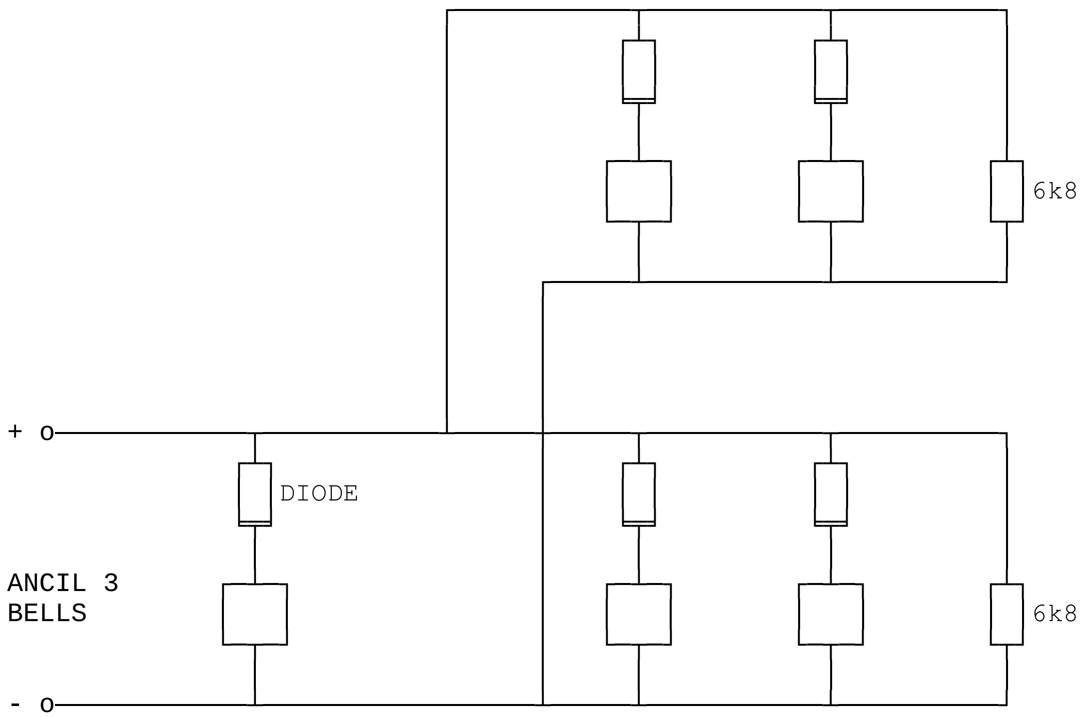


FIG 8.5.1
EXAMPLE OF WIRING WITH 2 SUPERVISED BRANCHES
FOR DEVICES WITH NO INTERNAL SERIES DIODE

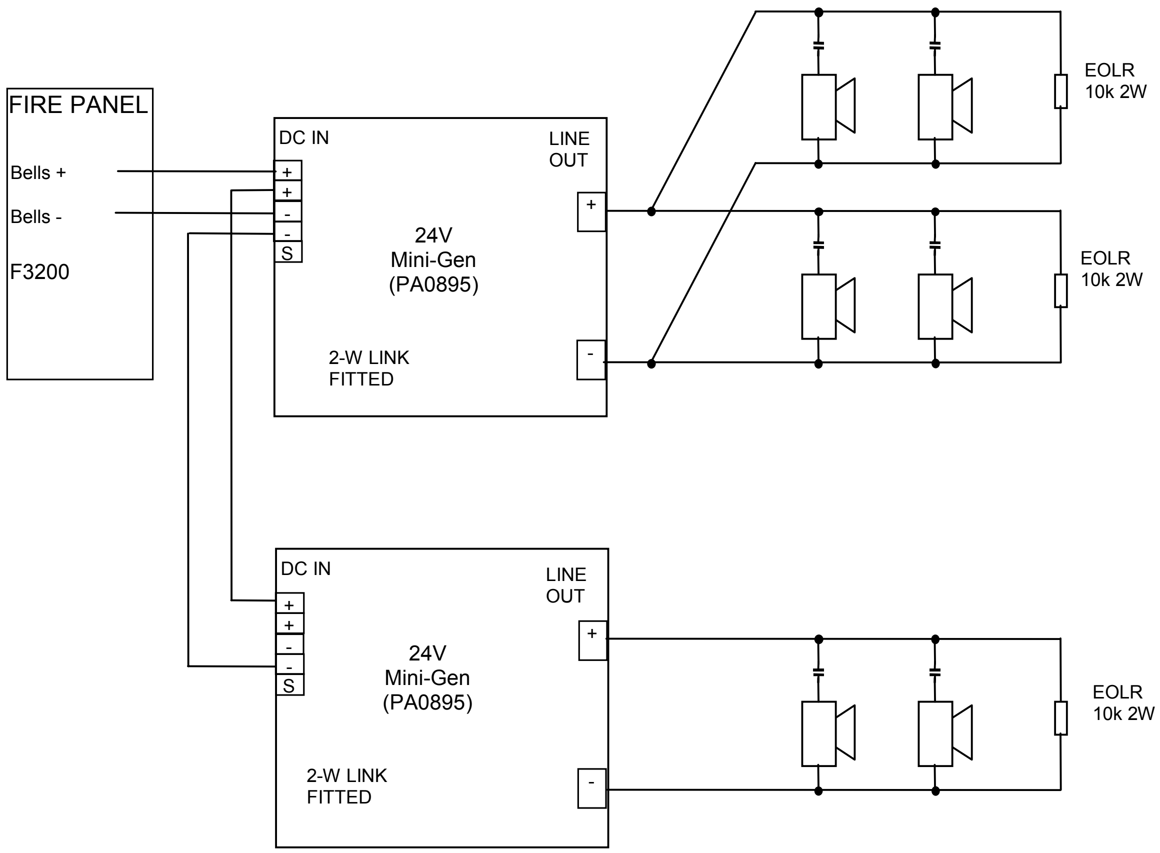
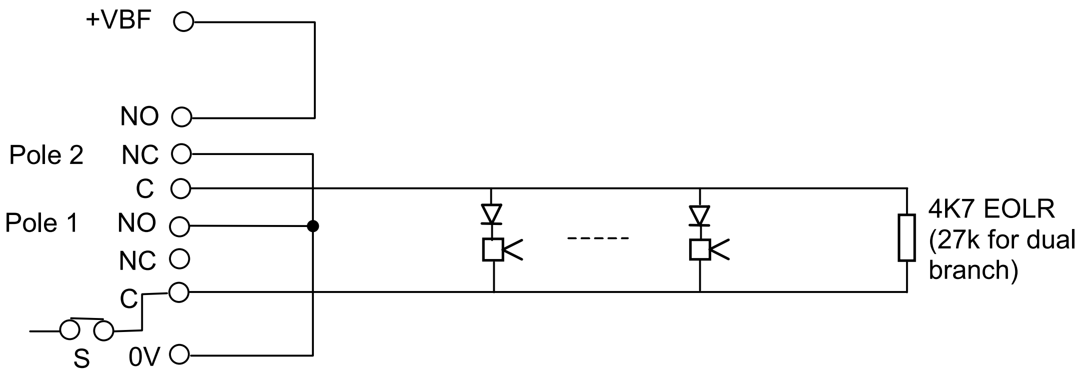


FIG 8.5.2

EXAMPLE OF MULTIPLE MINI-GENS WITH 3 BRANCHES OF SPEAKERS



Note that this configuration requires that the relay confirmation (ACT) be disabled, which requires V2.09 or greater software.

FIG 8.5.3

EXAMPLE OF A SUPERVISED EVAC CCT USING 2 POLES OF AN 8RM RELAY

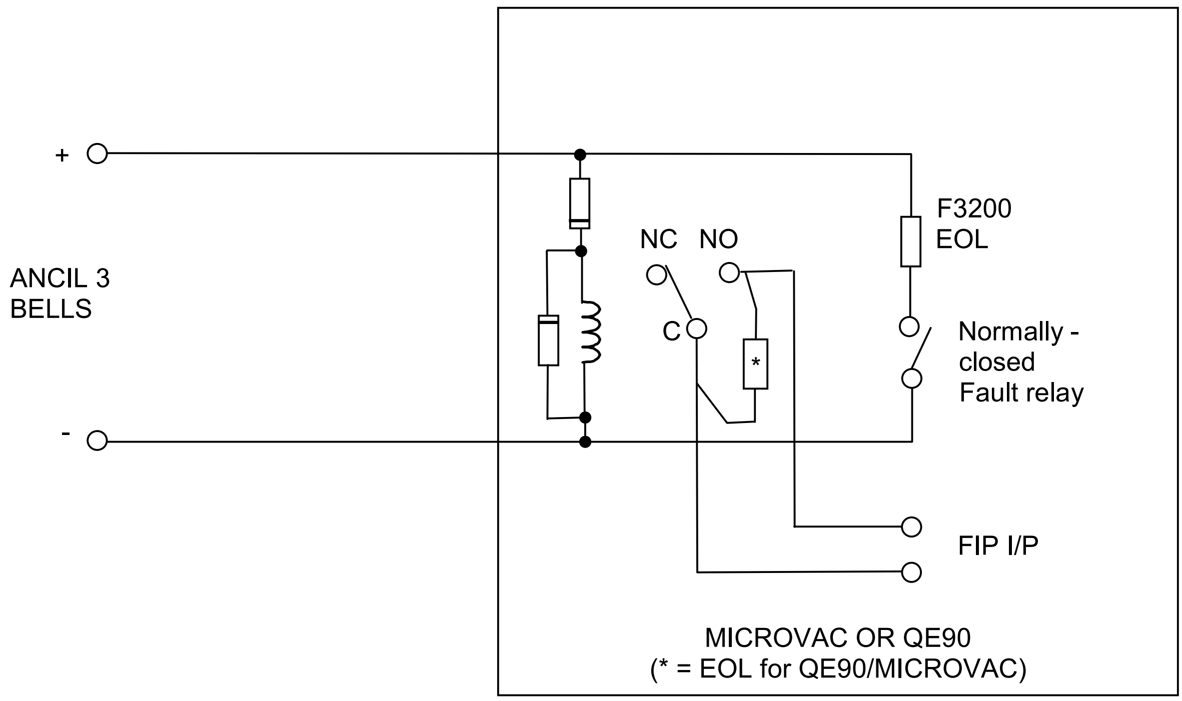


FIG 8.5.4
WIRING ANCIL 3 TO MICROVAC/QE90

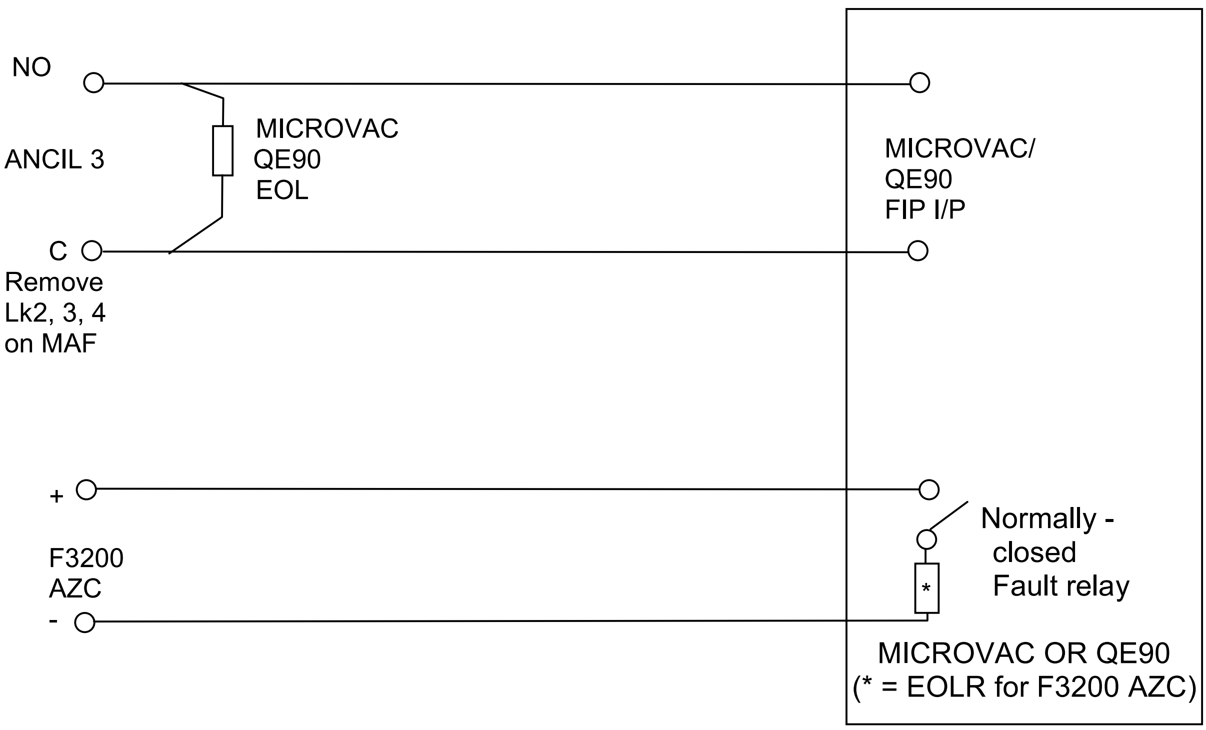
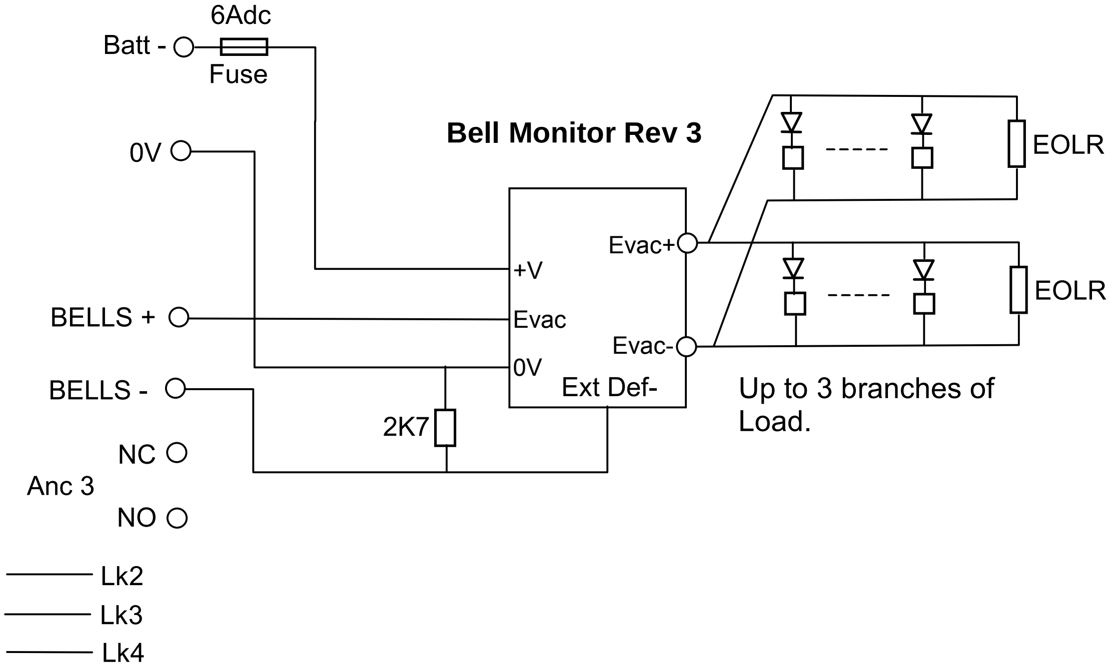


FIG 8.5.5
WIRING ANCIL 3 AND 8ZM INPUT TO MICROVAC/QE90



Notes

1. Wire an in-line fuse holder with 6A fuse from Batt+.
2. The Bell Monitor must be Rev 3 or greater and is supplied with instructions, adhesive based stand-offs, and EOLRs.

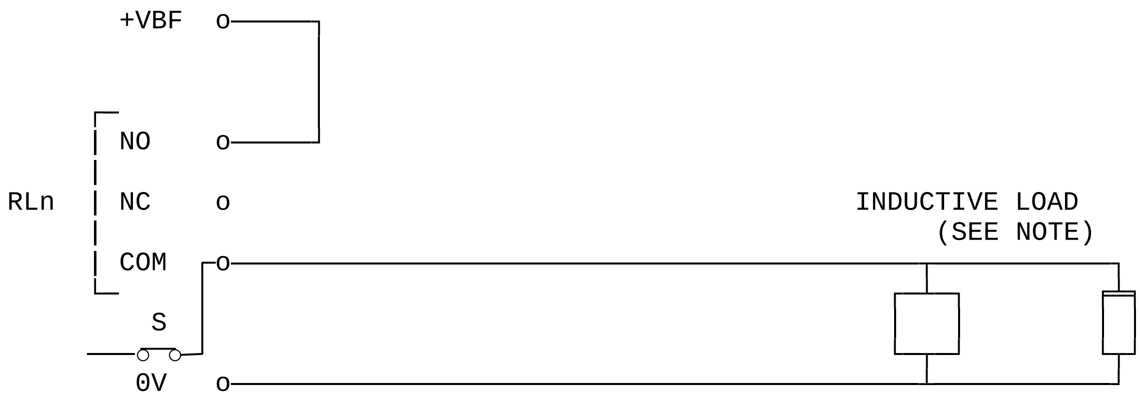
FIGURE 8.5.6
USING BELL MONITOR BOARD ON ANCIL 3/BELLS RELAY

8.6 MODULE RELAY WIRING

The 8 Relay Module relays each have one set of voltage free change-over contacts (ie one pole) accessible via screw terminals, to switch plant equipment. The second pole of each relay can be accessed by fitting a 3-way de-mountable connector block pair CN0488 and CN0206.
There are two sets of four inter-connected, voltage free, looping terminals per module that can be used for looping supplies onto relays or loads.
If the load switched is inductive e.g. a solenoid coil, a suppression diode must be fitted as shown in Fig 8.6.1.

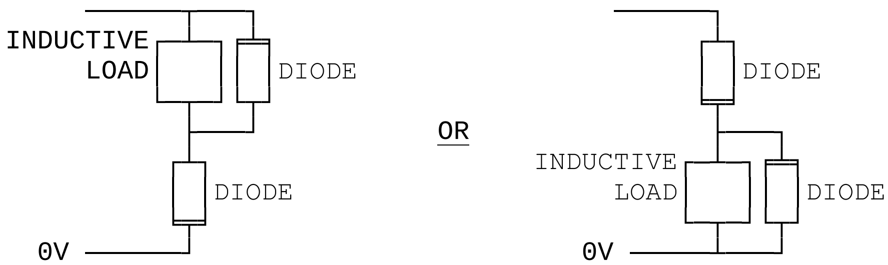
Supervision

Supervision of the field wiring from the FIP to the load is shown in Fig 8.6.1. This only works for a single load, or multiple co-located loads wired in parallel (though for multiple co-located loads, the supervision will not detect a fault if one load becomes disconnected). It requires the load or an EOLR to be connected between the relay COM terminal and the FIP 0V, and the supervision link on the module to be fitted in the "S" position. If the COM output does not ‘see’ a supply voltage or open circuit when the relay is activated, then the relay must be programmed to not supervise the load when actived (requires V2.09 or greater software).
An example of supervising a circuit of multiple, separately located loads using 2 poles of one relay is shown in Fig 8.5.3.



a.

Note: For a load of less than 400 Ohms a diode of suitable current rating must be wired in series with the load at the load as shown in b. below.



b.

FIG 8.6.1
EXAMPLES OF MODULE RELAY WIRING WITH SUPERVISION

8.6.1 DUAL POLE – POLARITY REVERSAL OUTPUT

Two relays; or 1 relay, an open collector output and an external 2 pole relay (e.g. PA0730); can be arranged to provide a supervised dual-polarity output suitable for driving dual strobes (Alert and Evacuate) or some visual warning devices (e.g. an AVI). The output is normally off (supervising voltage only), but can turn on with 24V in one polarity or in the other polarity. This is shown in Figure 8.6.2.

If the dual pole relay is a second 8RM relay then the additional connector blocks need to be fitted (CN0260 and CN0488). Supervision is not enabled on this relay. The supervision on the other relay will detect any short circuit, but may not detect an open circuit with multiple sets of strobes/AVIs. This will depend on the type of strobe/AVI and the quantity remaining connected.

The relay should be programmed to operate when either strobe is required, and the open collector output (or 2nd relay) is programmed to operate for Evacuate.

Note that many strobes have a large capacitor inside them that causes a large in-rush current at power on. Therefore it may be necessary to add some series resistance if the cable length to the first set of strobes is not enough to limit the current. Add 10-20 ohms for a total strobe current of <100mA, 8-10 ohms for 100mA, and 2 x RR1007 NTCs in series for 300mA-1A.

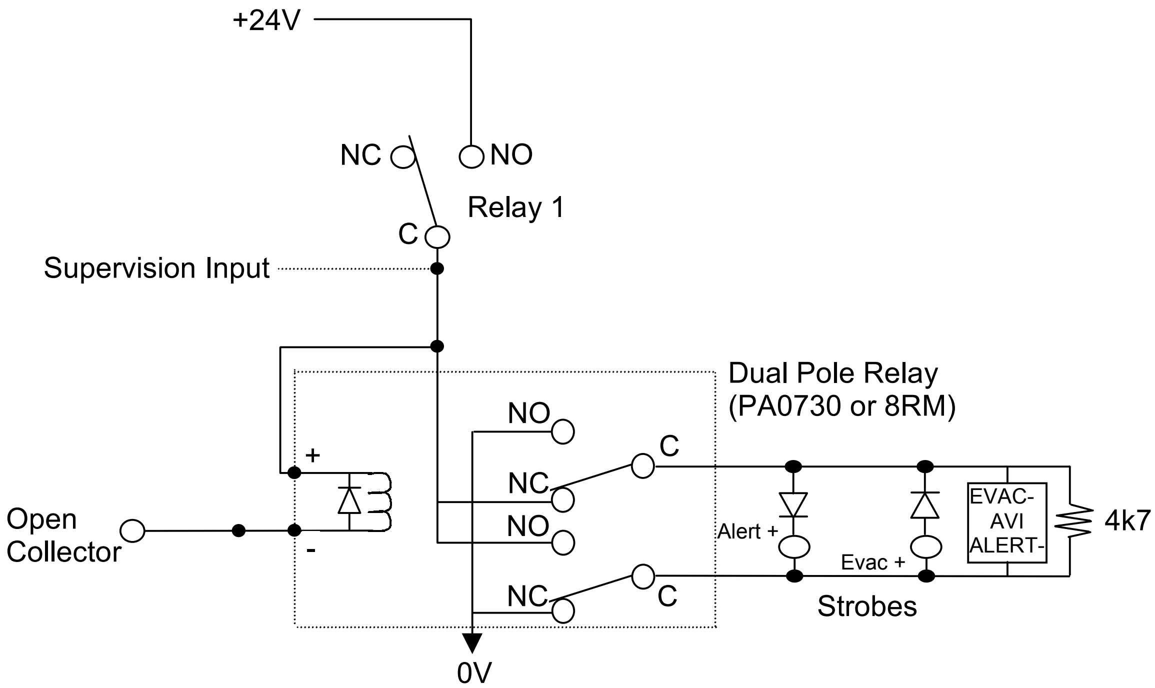


FIGURE 8.6.2
DUAL POLARITY OUTPUT FOR STROBES/AVI

8.7 OPEN COLLECTOR WIRING

8.7.1 LED MIMIC DISPLAYS

It is expected that the most common use the open collector outputs will be to switch LEDs on "mimic" displays. These outputs are approved for field connection, so may be used to "drive" remote mimics. Typical connection is shown in Fig 8.7.1.

8.7.2 INTERFACING TO OTHER EQUIPMENT

Where the open collector outputs are used to switch inputs to other systems, such as an Evacuation System or Plant Computer, there are two main options as follows:

1. Direct Coupling

The open collector output switches the equipment input to less than 1V (typically 0.6V at 1mA). E.g. it may be used to switch a 5V CMOS input, or monitored 5V, 12V or 20V input. Refer to Fig 8.7.2.

Note that for this to work, the 0V supply of the equipment must be connected to the 0V supply of the FIP. This may not be desired, especially if the equipment has a power supply connection to earth.

Note also that the open collector output has protection diodes to the FIP positive and negative supplies and should not connected to inputs that could be "pulled" to a voltage above or below these supplies, even with mains failed and battery voltage low.

2. Isolated Coupling

The open collector output can be used to switch a relay, or an optocoupler as shown in Fig 8.7.3. When the open collector is "on", the optocoupler transistor is also "on".

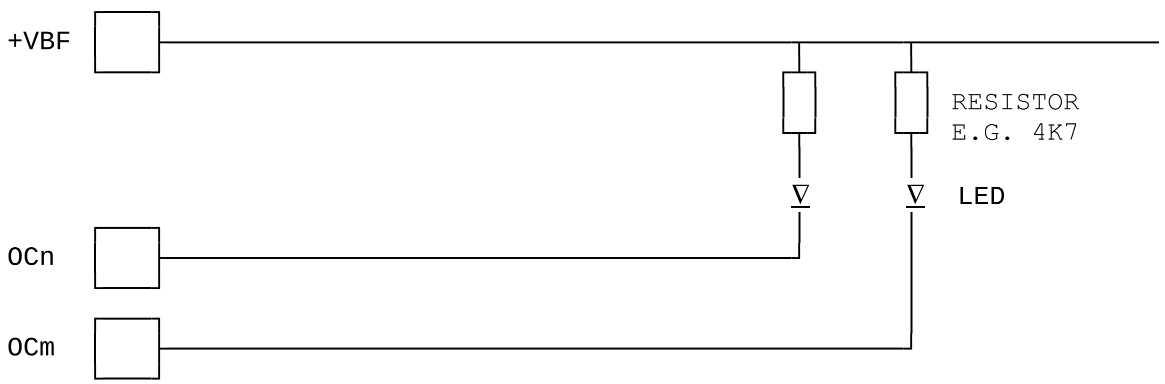


FIG 8.7.1
EXAMPLE OF LED MIMIC WIRING

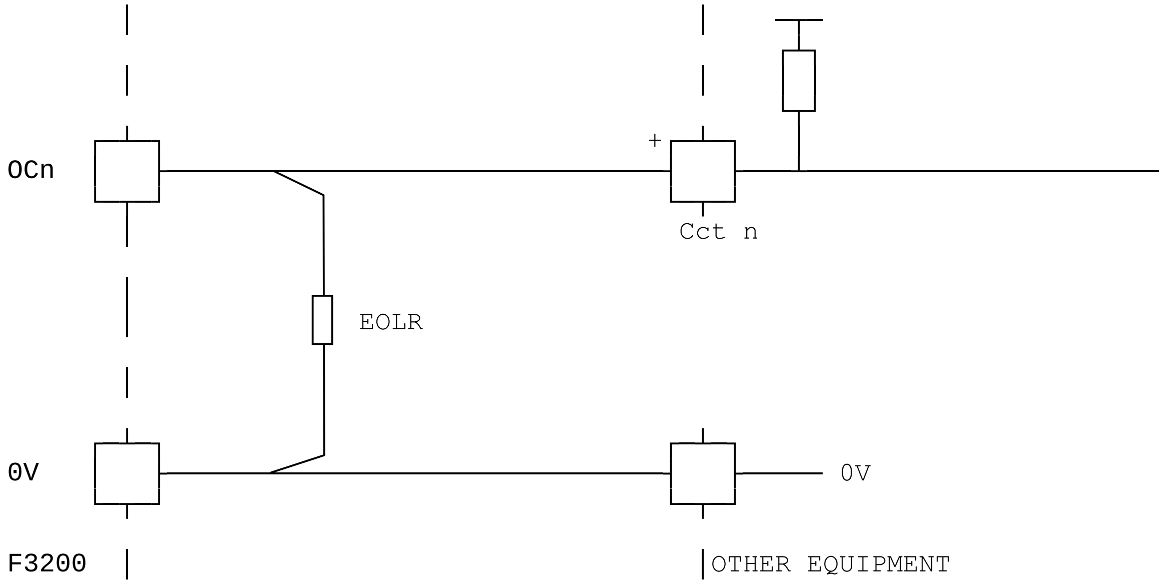


FIG 8.7.2
EXAMPLE OF INTERFACING TO OTHER EQUIPMENT, DIRECT COUPLING

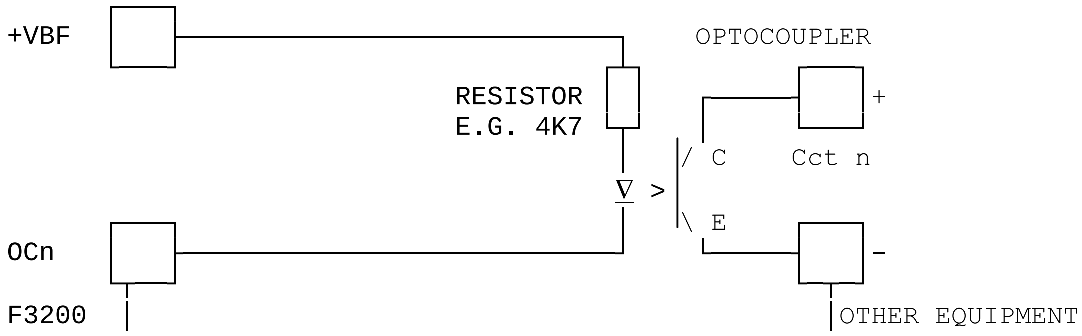


FIG 8.7.3
EXAMPLE OF INTERFACING TO OTHER EQUIPMENT, OPTICAL ISOLATION

8.8 ASE INSTALLATION AND WIRING

A Vigilant ASE may be mounted in an F3200 panel or an NDU in a large cabinet. Two kits are available, namely KT0199 and KT0212. Both are 3U hinged front panels accommodating 1 or 2 ASE or V-Modem units (or a combination) respectively. The kits include mounting parts and fitting instructions.

The ASE should be wired directly off the battery via its own fuse. Wiring of the ASE FP0740 EOL unit is as per the ASE installation instructions. The red wires are wired across the MAF Alarm relay NC and C terminals, the yellow wires across the MAF Fault relay NC and C terminals, and the blue wires across the MAF Isolate relay NC and C terminals. No other connections to these relays are permitted when the ASE EOL unit is used.

Locating the ASE remote from the panel has additional requirements under AS4428.1 (Clause 2.10) that currently cannot be met.

8.9 RDU WIRING

A FIP may drive up to 8 Remote Display Units (RDUs) that are programmed to send information back to the FIP. More "monitoring only" devices may be connected to the FIP RZDU Tx line. Some RDUs have their own power, but others require their power (24Vdc) to be supplied from the FIP or an approved PSU with battery backup.

The RDUs are all connected in parallel on common Tx and Rx circuits. Star and Bus wiring connections are permitted as shown in Fig 8.8.1.

NOTE: TX from the FIP goes to RX on ALL RDUs

RX from the FIP goes to TX on ALL RDUs

Fig 8.8.1 shows an example of interconnection between both MAF and Non-MAF configured RDU(s) and the FIP.

NOTES: To maintain electrical isolation:

(1) Lk1 on the MAF/PSU Board should be cut for RDUs with their own MAF/PSU module.

(2) Non-MAF configured RDUs that are powered by a PSU other than the FIP must have Lk3 on the Remote Termination Board cut and Lk14 on the Controller in the “R” position.

Cable Limitations

The maximum distance to the furthest RDU is determined by the cable type used and the wiring arrangement.

(1) The MAXIMUM line resistance loop (FIP TX out, 0V return must not be greater than 150 Ω.

(2) The MAXIMUM inter-wire capacitance at the FIP RZDU terminals MUST NOT exceed 100 nF. This must be the total of all cables used - not just the length to the furthest RDU. Typically this is 1km of TPS cabling.

(3) The +V and 0V cables must be of sufficient size to avoid excessive voltage drops to RDUs when they are drawing maximum current (e.g. lamp test).

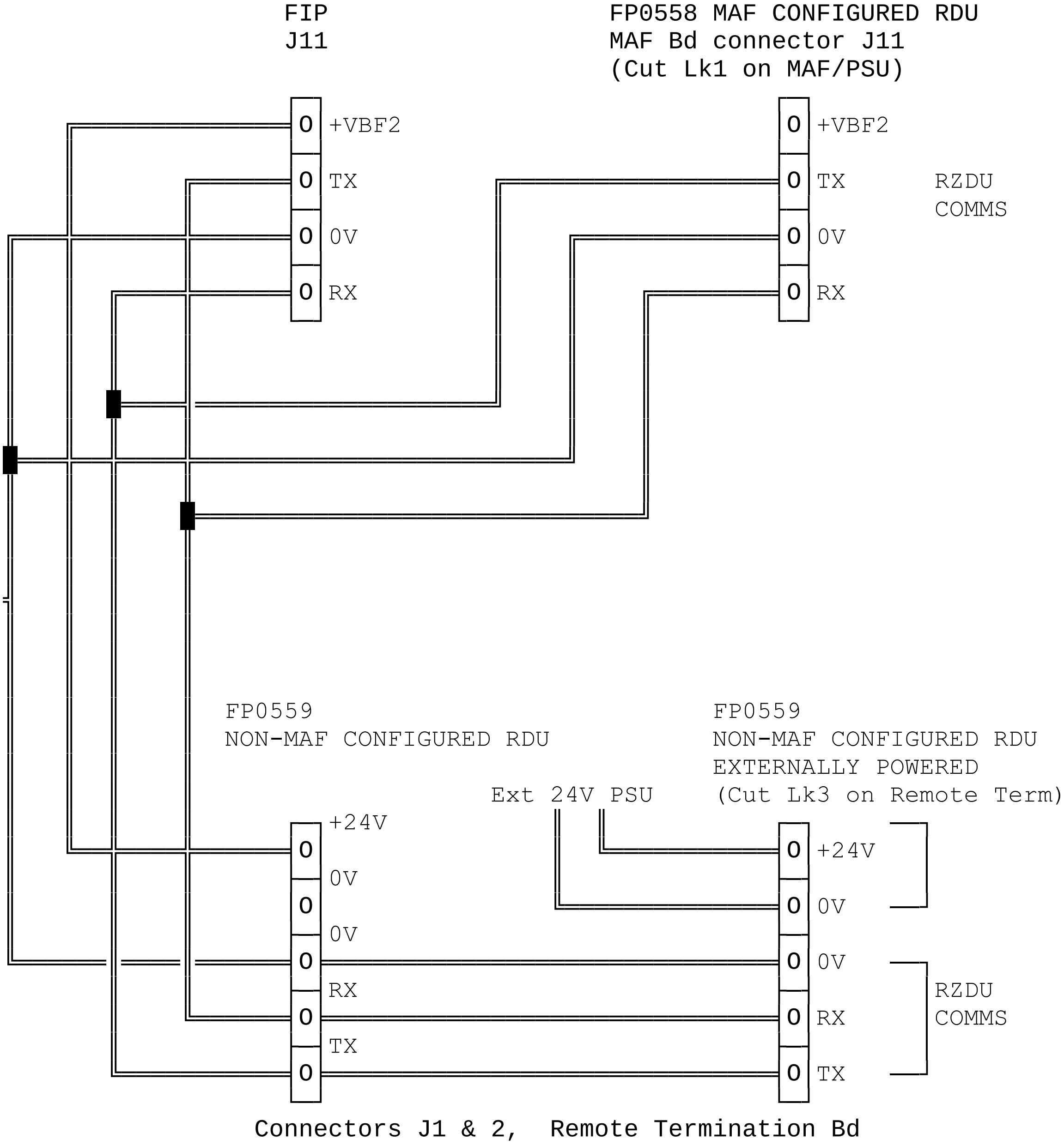


FIG 8.8.1

<u>EXAMPLE OF RDU COMS WIRING</u>

8.10 SLIMLINE NDU (FP0714) WIRING

MCP Connection

A slimline NDU has the facility for connection of an MCP, but the MCP has to be mounted on the wall, immediately adjacent to the NDU.

Connection is made to pins 3 & 4 of J5, the 4 way "Spare Input Connector" on the NDU Controller/Display Bd. The wiring to the MCP itself is detailed in the figure below. For an NDU in New Zealand mode refer to Chapter 12.

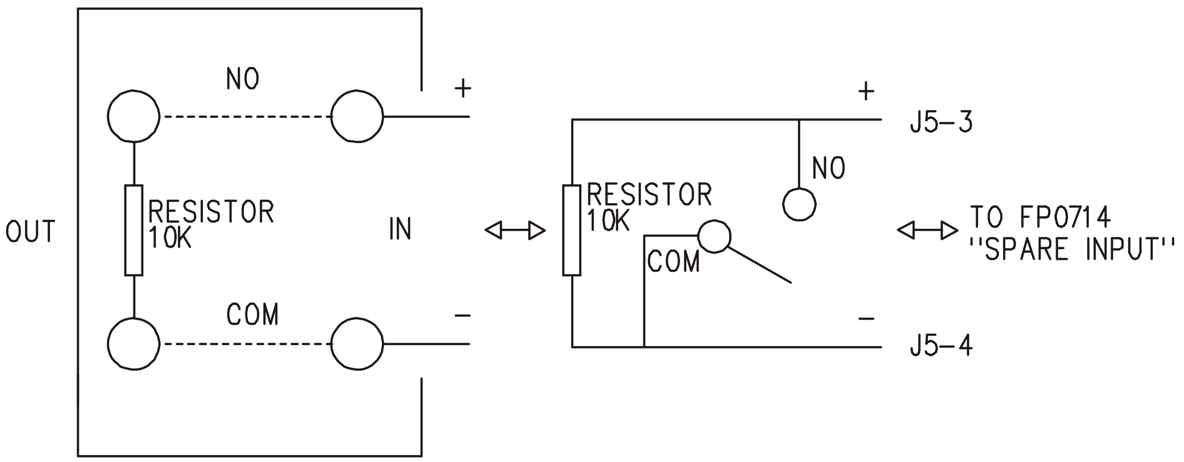


FIG 8.9.1
<u>FP0714 NDU MCP CONNECTION</u>

8.11 INSTALLATION OF 19" NDU (FP0733)

The NDU is available as a 19" rack mount kit (FP0733). This must be installed as follows to meet the EMC requirements.

Using the RS485 board as a template, drill 4 x ∅3.5mm holes and deburr. Scrape away any paint on the inside face and mount the metal standoffs using 4 M3 x 6 screws and shakeproof washers. Mount the RS485 board onto the standoffs using M3 x 6 screws and M3 crinkle washers.

Mount the 4U inner door onto the 19" rack and earth to the cabinet using the earth lead supplied.

Run the 10 way FRC from J7 (Network 1) on the Controller to J1 on the RS485 board, keeping it tight against the cabinet metalwork by using FRC clamps.

Run +24V to the J5 terminals on the Controller, and the network cables to J3 on the RS485 board. Connect any screen on the network cables to the 0V ISO terminal on the RS485 board.

CHAPTER 9
APPLICATIONS

9.1 AS1668 AIR CONDITIONING CONTROL

9.1.1 GENERAL

The following features of F3200 allow it to be easily adapted to Air Conditioning Plant Control (referred to as AS1668 which is the relevant Australian Standard):

- 19" Rack mounting cabinet with standard light grey blank panels available, including 9½U (plastic), 7U metal (hinged), 4U metal, 3U metal;
- Standard modules available which include a pcb module (3 options) with switch and LEDs, a connector block for field wiring, and labels (see Fig 9.1.1).
- Programable open collector output for driving LEDs (can enter logic equations for RUN, FAULT, STOPPED);
- Programmable relays for fan controls;
- Programmable time delays on duct sampling AZCs, with RAD and SAD options;
- Programmable AZCs for control inputs with two useable alarm states plus normal (plus faults) per AZC (i.e. logic equations can differentiate "manual" alarm (instant) from "detector" alarm (alarm);
- Programmable zones, allows non-latch, non-MAF (non-FFCIF), non-Bells/Ancillaries, status only (i.e. Fan Control Panel output relays can switch AZCs and the corresponding zones can be programmed as "non-fire" zones with optional levels of "transparency" within the Fire Alarm System e.g. Faults, Alarms can be included/not included in the "totals" display and the "recalls").

The standard AS1668 pcb modules are held to the front panel (rear) by a nut on the threaded shaft of the rotary switch which is attached to the pcb. The LEDs mount in black plastic bushes and are soldered to the pcb (chrome bezel LEDs are available and can also be accommodated by the pcb). The adhesive label is black on clear, and the standard panels are light grey.

The standard colours for RUN, FAULT and STOP (stopped) are red, yellow and green, respectively.

Detail is shown in Product Bulletin PBG0015.

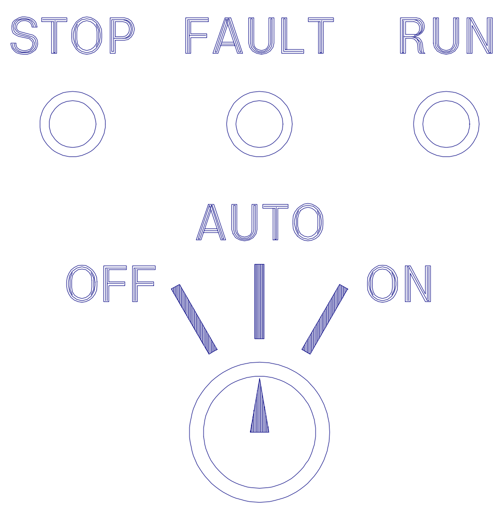


FIG 9.1.1
STANDARD AS1668 MODULE PANEL LAYOUT

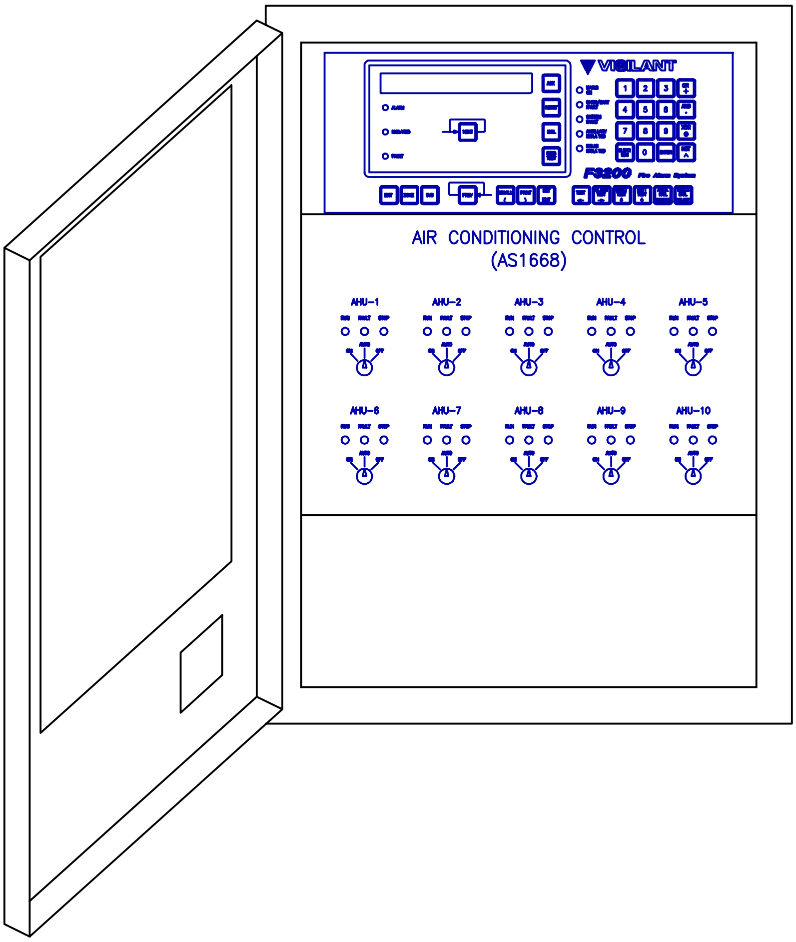


FIG 9.1.2
F3200 WITH TYPICAL AS1668 PANEL (10 UNITS)

9.1.2 CIRCUITS & ZONES

FIP End Inputs

The "off", "auto" and "on" inputs from the AS1668 Control Module can be connected to 0, 1 or 2 AZCs as desired.

One AZC per fan control is cheaper, but does not allow the LCD zone text to display "fan off" and "fan on", though the fan name can put in the zone text, and for options A and C following, the word "off" could be programmed as zone text so that "Manual" Alarm is "on" and "off" Alarm is "off".

For option B, the text LCD would display "fault" for "off". Zone text would normally only be viewed by a zone status recall as AS1668 control inputs will (generally) be programmed as "status" zones (i.e. non-FFCIF).

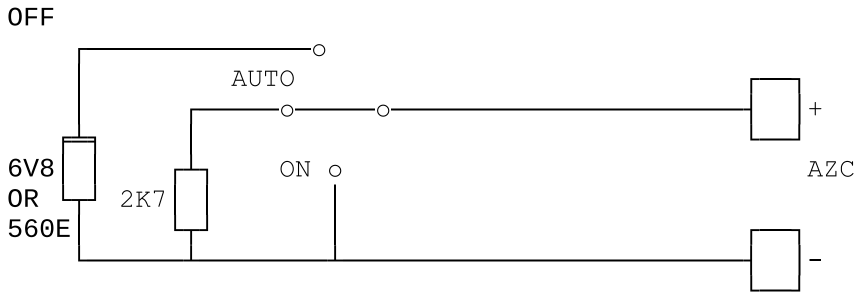
Figs 9.1.3 and 9.1.4 show both options. Option 1 requires a Zener diode or a resistor (e.g. 560E) to give B2 voltage.

Note that the option shown in Fig 9.1.3 B ("off" <-> "fault") corresponds to the standard AS1668 Module circuits 2, 3 & 4 (see drawings 1945-1-1/4 following) and so is the "preferred" option for configuring with standard hardware.

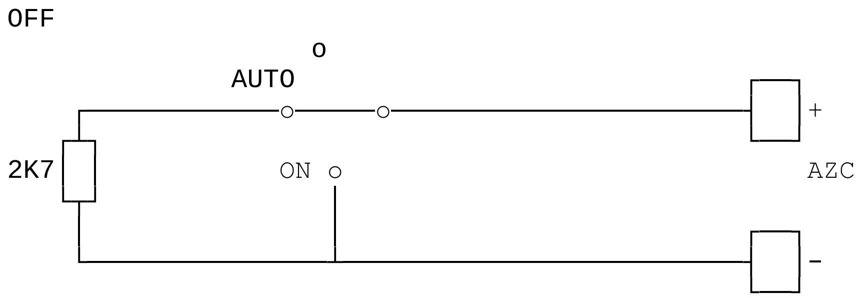
CIRCUITS & ZONES (CONTINUED)

The option in Fig 9.1.3 A could be implemented by "tacking" the 560E resistor (or 6V8 Zener) onto the pcb. The 2 AZC option (Fig 9.1.4) could also be implemented by soldering the extra resistor and wires onto the unused contact of the rotary switch on the pcb.

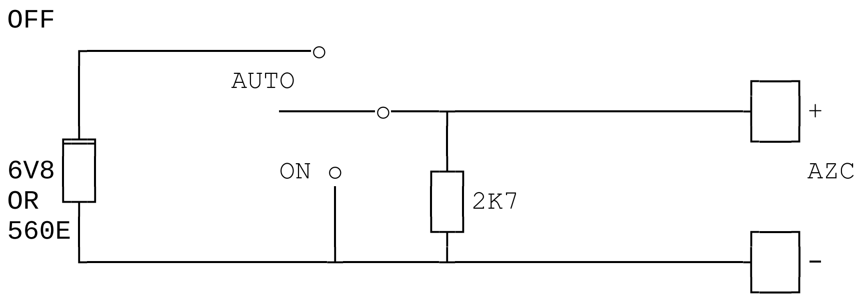
In all cases, "auto" is zone "normal".



A. WITH A ROTARY SWITCH, "ON" IS B1 (INSTANT), "OFF" IS B2 (ALARM).



B. WITH A ROTARY SWITCH, "ON" IS B1 (INSTANT), "OFF" IS FAULT.



C. WITH A CENTRE-OFF TOGGLE SWITCH, "ON" IS B1 (INSTANT), "OFF" IS B2 (ALARM).

FIG 9.1.3
<u>FAN CONTROL SWITCH WIRING WITH SINGLE AZC</u>

CIRCUITS & ZONES (CONTINUED)

For **options A and C** in Fig 9.1.3, configure circuit Alarm Text as "manual" and voltage band B1 as "Instant Alarm" (refer to table below).

Voltage Band	Default State	Program State	Fan Control
B5	Fault		Switch wiring open circuit
B4	Normal		"Auto"
B3		Normal	"Auto"
B2	Alarm		"Off"
B1		Inst Alarm	"On"

Configure the zone as non-latch, Status, non Anc1/Anc2/Bells.

In output logic, "off" is ZnD, "On" is ZnM, (for AZC number n).

For **Option B** in Fig 9.1.3, configuration is similar but in the output logic, "off" is ZnF and "on" is ZnA.

For two AZC inputs:

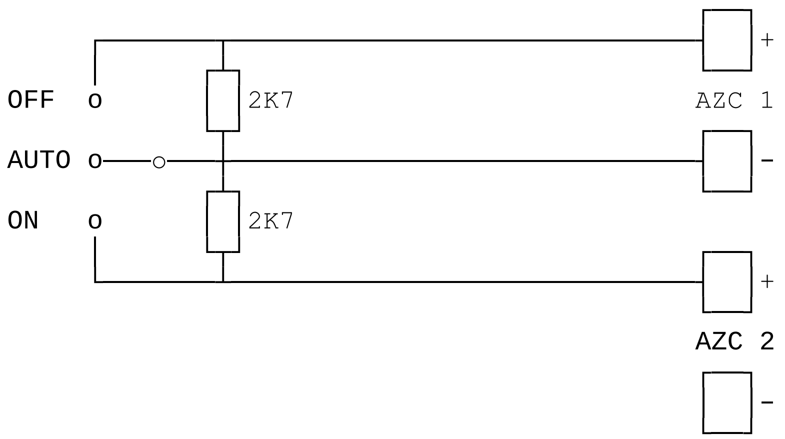


FIG 9.1.4
FAN CONTROL WITH TWO AZCs & ROTARY (OR CENTRE-OFF) SWITCH

Program B1 for both AZCs as "Instant Alarm", Alarm Text as "Manual".

Zone 1	Alarm	"Fan Control Off"
Zone 2	Alarm	"Fan Control On"
Both	Normal	"Fan Control Auto"

Configure both zones as non-latch, Status, non Anc1/Anc2/Bells.

Fan Inputs

The exact requirement depends on the particular fan motor controller, and the contacts available (e.g. "Run", "Fault"). Commonly "Run" is provided by an air flow switch (AFS), and is required to connect to an AZC so that it can become part of a logic equation (as per circuits 3 & 4 of standard module 1945-1-1/4 following).

CIRCUITS & ZONES (CONTINUED)

Where a "Fault" contact is available, along with "Run", both can be put onto a single AZC with the NO "Fault" contact shorting the AZC and voltage band B1 programmed as "Fault" (refer to Fig 9.1.5 A). Alternatively, the NC "Fault" contact can be put in series for open circuit Fault, and the NO "Run" contact can short the AZC, with B1 programmed as "Alarm" (ZnD). (Refer to Fig 9.1.5 B). Note that in A, Fault overrides Run, and in B, Run overrides Fault. The priority in B can be reversed, but not in A.

The zone should be configured as non-latching.

If a "run" contact is used to short a Zener across the AZC (i.e. run is B2 = Alarm) and the normal state of the fan is "run", then the zone mapping to MAF should be configured as "Status Only" so that the fan "Run" state is not shown in the "Totals" or "Alarm Recalls".

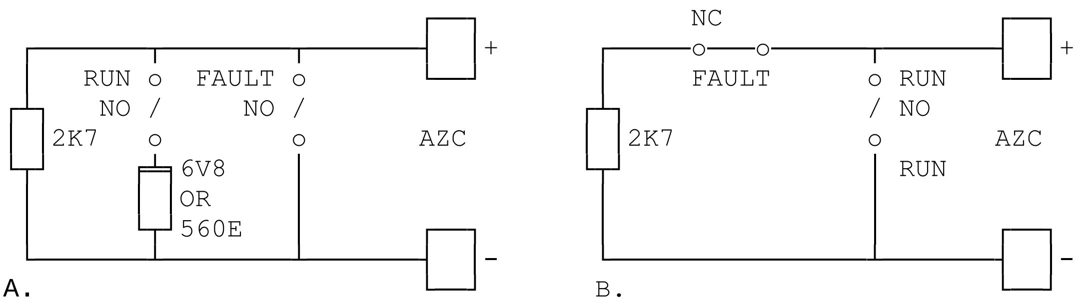


FIG 9.1.5
EXAMPLE OF FAN RUN & FAULT WIRING TO AZC

9.1.3 RELAYS

The exact number of relays per fan control and the logic required depends on the particular building and air conditioning plant.

Typically, one relay is required per fan to switch an interposing relay in the fan control equipment, with a possible logic equation as follows:

R5 = Z15D + Z15N.Z5A i.e. ("off") or ("auto" and duct alarm)
(ie. the relay turns on to turn the fan off).

Where: Relay 5 is the Fan Control relay for a normally running fan
Zone 5 is the associated Air Duct Smoke circuit

Zone 15 is the associated Fan Control switch circuit with ...
Z15D (band B2) = "Fan Off"
Z15M (band B1) = "Fan On"
Z15N (bands B3, B4) = "Auto"

Note that the zone range facility is useful in programming controls where selective, automatic switching is required. E.g. if zones 1-10 correspond to ducts in levels 1-10 of a building, and the logic requires Relay 5 to operate if Zone 5 is in alarm but zones 1-4 and 6-10 are not, the equation for R5 above would become:

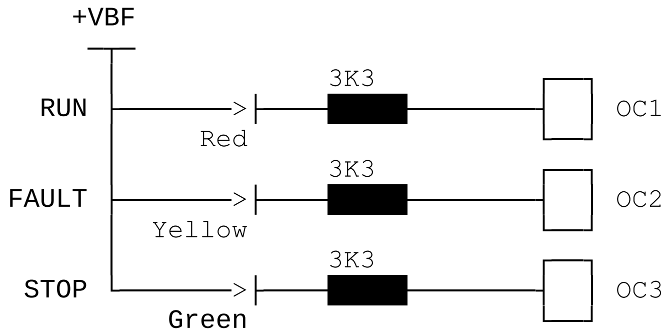
CIRCUITS & ZONES (CONTINUED)

R5 = Z15D + Z15N.Z5A.^ (Z1:4(1)A+Z6:10(1)A)

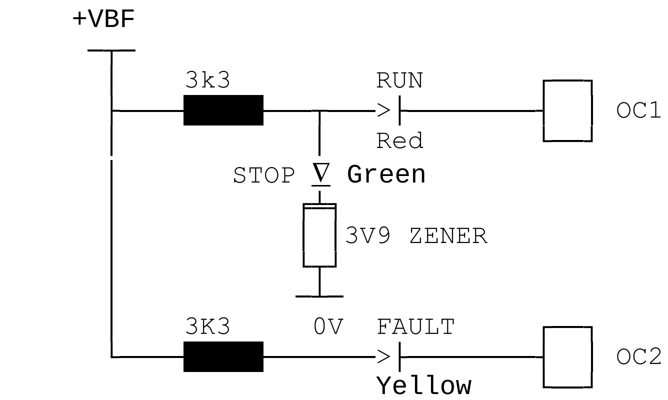
Note also, that if the interposing relay (fan control input) is 24V at less than 100mA then an open collector (O/C) may be used as per circuit 1 of 1945-1-1/4 following.

9.1.4 LEDS

The 3 LEDs may be: switched directly as per circuits 1 and 2 of 1945-1; driven off 3 open collector (O/C) outputs or driven off 2 O/Cs with a Zener diode as shown in Fig 9.1.6 and 1945-1-3. Note that where the FIP has a number of detector circuits, the open collector outputs associated with these AZCs may be used for driving the AS1668 LEDs and so it doesn't matter if the AS1668 panel requires more open collectors than circuits.



A. THREE OPEN COLLECTOR O/PS PER FAN (Ref 1945-1-4).



B. TWO OPEN COLLECTOR O/PS PER FAN (Ref 1945-1-3).

For other LEDs (eg. Chrome Bezel LEDs) a lower value (higher current) resistor may be required.

FIG 9.1.6
<u>WIRING OF FAN CONTROL LEDS</u>

CIRCUITS & ZONES (CONTINUED)

Note that the logic requested for the LEDs in Option B is as follows:

LEDs			OUTPUTS	
RUN	FAULT	STOPPED	OC1	OC2
off	off	on	off	off
on	x	off	on	x
x	on	x	x	on

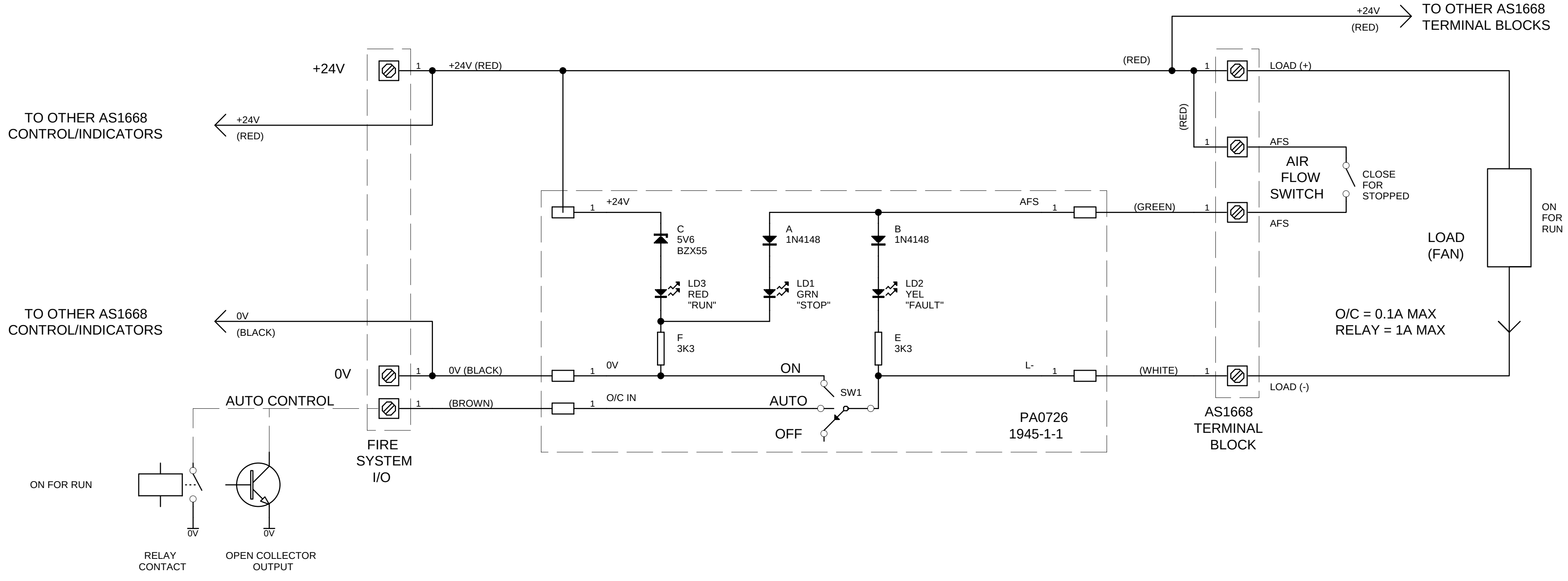
Where x = off or on (don't care).

9.1.5 AS1668 CONTROL MODULE & DRAWINGS

The following drawings are of 4 typical configurations using the AS1688 Control Module, 1945-1.

Circuit 1 uses Module Type 1 (KT0111)
Circuit 2 uses Module Type 2 (KT0112)
Circuits 3 and 4 both use Module Type 3 (KT0113), with selective "snipping" out of components as required.

1945-1-1, AS1668 CONTROL MODULE, CIRCUIT 1
1945-1-2, AS1668 CONTROL MODULE, CIRCUIT 2
1945-1-3, AS1668 CONTROL MODULE, CIRCUIT 3
1945-1-4, AS1668 CONTROL MODULE, CIRCUIT 4



UNLESS OTHERWISE STATED:

ALL RESISTANCE IN OHMS
ALL RESISTORS 1/4W, 5%
ALL CAPACITANCE IN FARADS

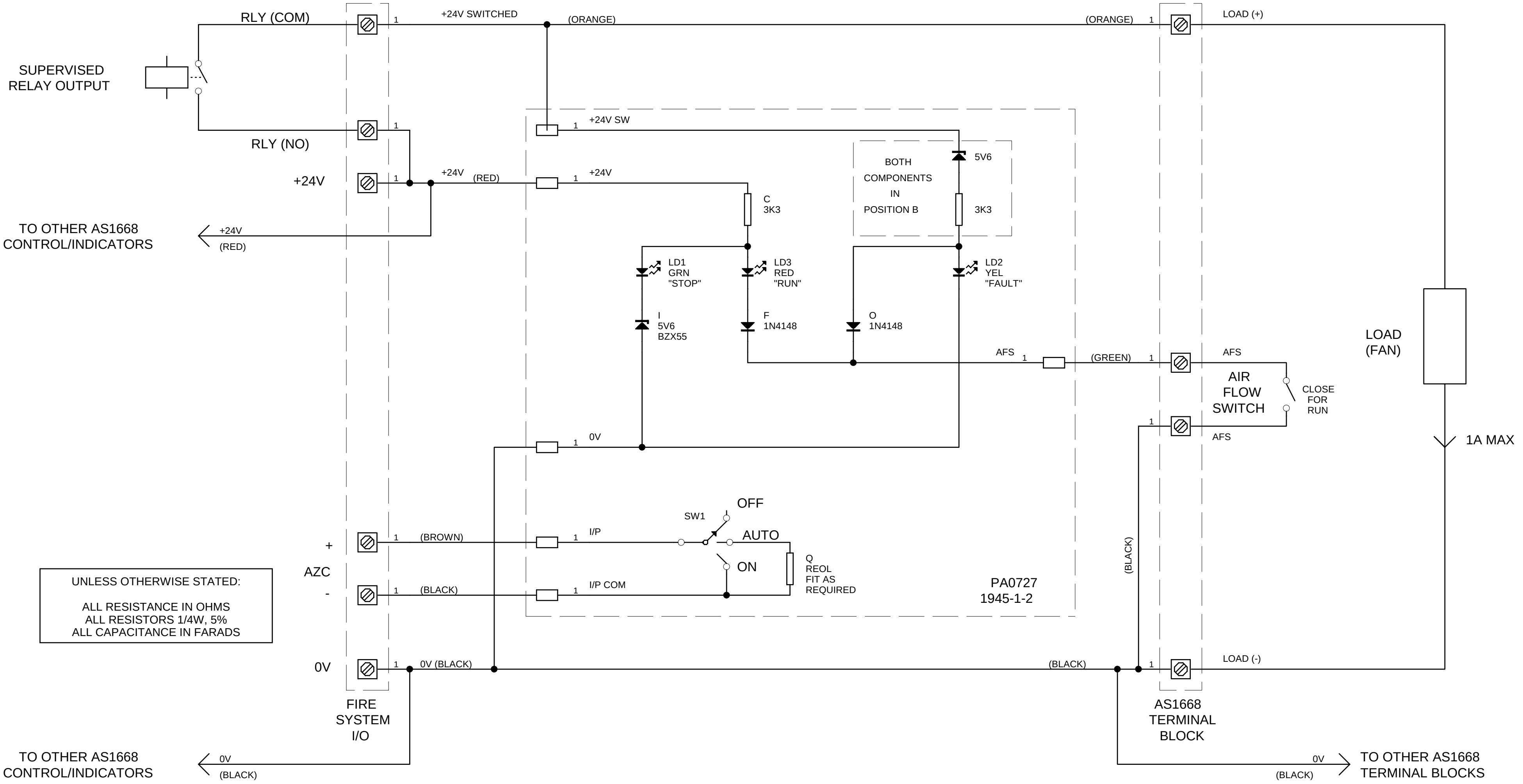
22-Aug-1997
18:17:43

ISS/REV	AMENDMENTS	ECO	DRN	CHKD	AUTH	APVD	DATE
1	ORIGINAL	-	CJL	LSC	RAC	DSCP	27.4.95
1.1	MINOR CORRECTIONS	-	CJL	CJL	RAC	DSCP	27.7.95

AS1668
CONTROL MODULE (CCT 1)
SYSTEM/CIRCUIT DIAGRAM

VIGILANT
FIRE & EVACUATION SYSTEMS
211 MACES ROAD, CHRISTCHURCH 8006, NZ
P.O. BOX 19-545, CHRISTCHURCH 8030, NZ

SIZE	DRAWING NUMBER	SHEET NUMBER	ISS/REV	PART NUMBER
A3	**1945-1-1**	**1** of **1**	**1.1**	**PA0726**



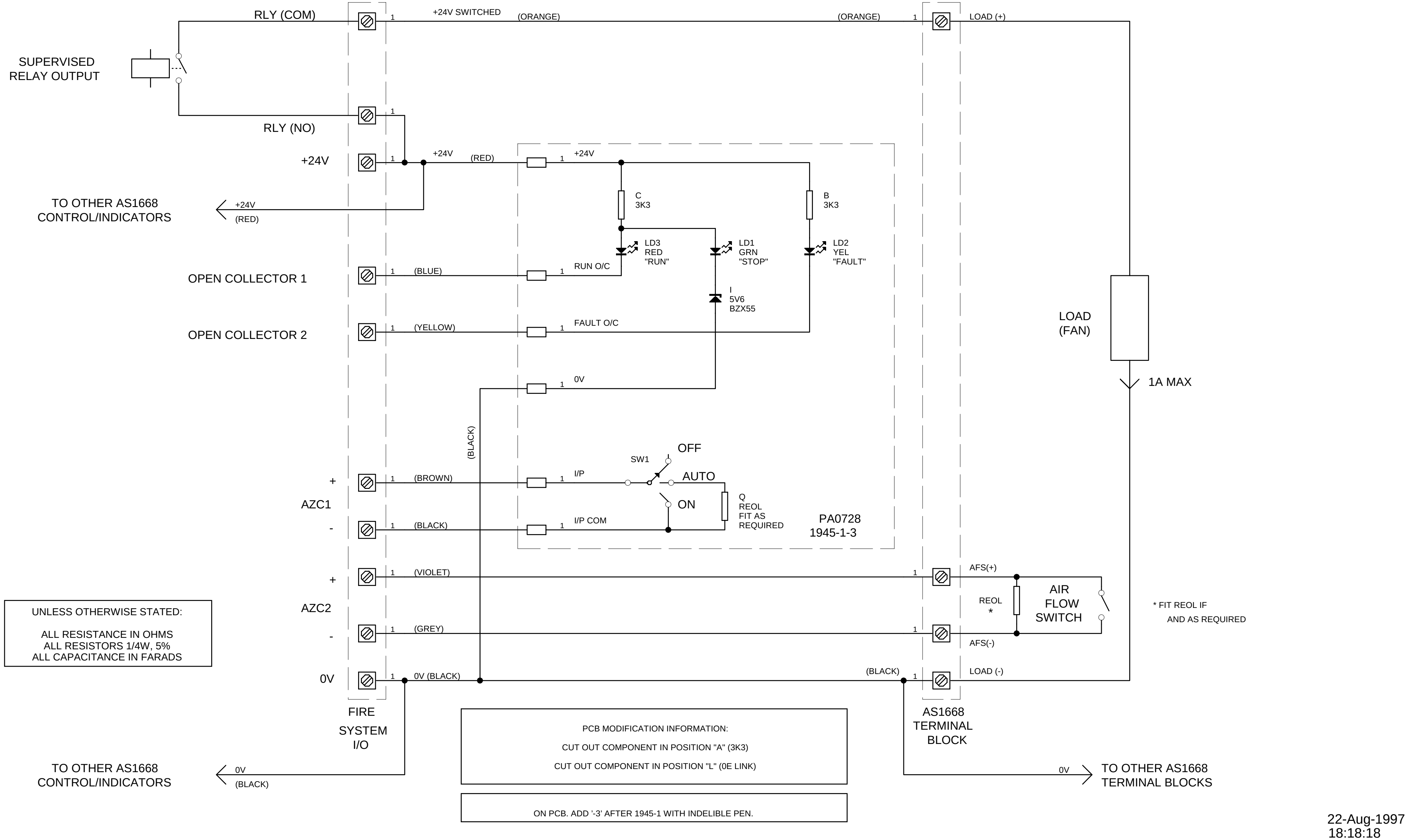
22-Aug-1997
18:17:08

ISS/REV	AMENDMENTS	ECO	DRN	CHKD	AUTH	APVD	DATE
1	ORIGINAL	-	CJL	LSC	RAC	DSCP	27.4.95
1.1	MINOR CORRECTIONS	-	CJL	CJL	RAC	DSCP	27.7.95

AS1668 CONTROL MODULE (CCT 2) SYSTEM/CIRCUIT DIAGRAM

VIGILANT
FIRE & EVACUATION SYSTEMS
211 MACES ROAD, CHRISTCHURCH 8006, NZ
P.O. BOX 19-545, CHRISTCHURCH 8030, NZ

SIZE	DRAWING NUMBER	SHEET NUMBER	ISS/REV	PART NUMBER
A3	1945-1-2	1 of 1	1.1	PA0727

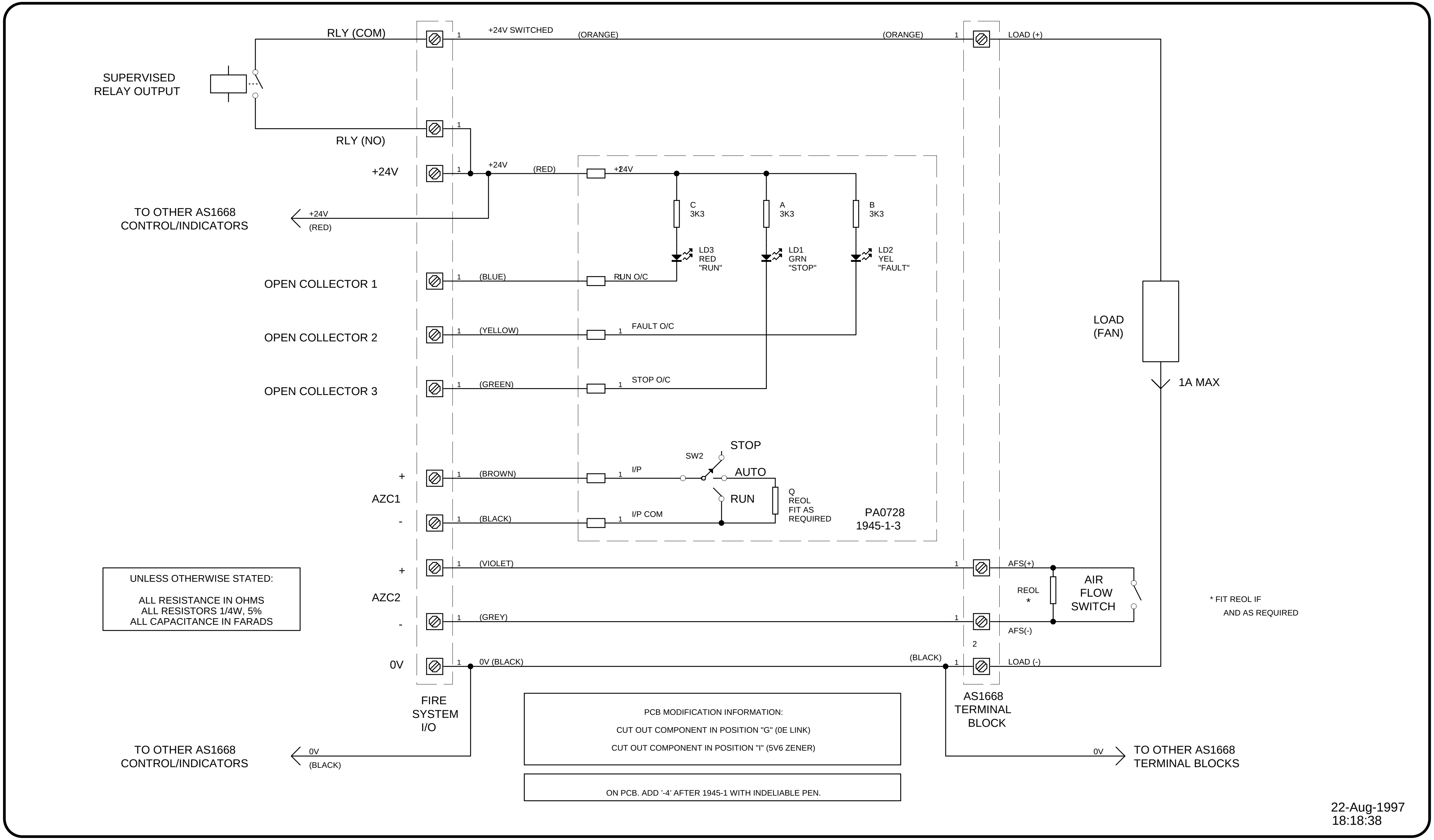


ISS/REV	AMENDMENTS	ECO	DRN	CHKD	AUTH	APVD	DATE
1	ORIGINAL	-	CJL	LSC	RAC	DSCP	27.4.95
1.1	MINOR CORRECTIONS	-	CJL	CJL	RAC	DSCP	27.7.95

AS1668 CONTROL MODULE (CCT 3) SYSTEM/CIRCUIT DIAGRAM

VIGILANT FIRE & EVACUATION SYSTEMS
211 MACES ROAD, CHRISTCHURCH 8006, NZ
P.O. BOX 19-545, CHRISTCHURCH 8030, NZ

SIZE	DRAWING NUMBER	SHEET NUMBER	ISS/REV	PART NUMBER
A3	1945-1-3	1 of 1	1.1	PA0728



ISS/REV	AMENDMENTS	ECO	DRN	CHKD	AUTH	APVD	DATE
1	ORIGINAL	-	CJL	LSC	RAC	DSCP	27.4.95
1.1	MINOR CORRECTIONS	-	CJL	CJL	RAC	DSCP	27.7.95

AS1668
CONTROL MODULE (CCT 4)
SYSTEM/CIRCUIT DIAGRAM

VIGILANT
FIRE & EVACUATION SYSTEMS
211 MACES ROAD, CHRISTCHURCH 8006, NZ
P.O. BOX 19-545, CHRISTCHURCH 8030, NZ

SIZE	DRAWING NUMBER	SHEET NUMBER	ISS/REV	PART NUMBER
A3	1945-1-4	1 of 1	1.1	PA0728

9.2 GAS FLOOD

9.2.1 GENERAL

The following features of the F3200 make it well suited to "Gas Flood" control:

- AZC Alarm Text for "pressure switch", "manual", can be used for the various inputs;
- Zones can be programmed as latch/non-latch, MAF/non-MAF as required, e.g. non-latch, non-MAF, for "Gas Inhibit" input;
- Zone range operand allows easy programming of "voting systems" on detector circuits e.g. 2 out of 3;
- Open collector O/Ps can be programmed to drive LEDs such as "Gas Initiated", "Gas Inhibited", etc;
- Programmable timers included as standard (0-250 sec);
- Programmable relays, with supervision option;
- Operation not fixed by hardware, as virtually any required logic equation for outputs (using AND, OR, NOT, XOR) can be entered;
- Fuse protected battery-backed supplies available via 2A fuse and 6A fuse;
- Standard hinged, screened 7U Gas Flood door available complete with LEDs, switches and looms for 1, 2, 3, 4 Gas Zones (Part Number ME0065 to ME0068 respectively);
- Standard non-hinged, screened 1U Panel as per above for 1 Gas Zone (Part Number ME0069);
- Standard Local Control Stations (LCSs) and AVI warning signs available. (LCS includes "Gas Start", "Gas Inhibit" switches, status LEDs). AVIs include AS2220 Alert and Evac tones and can be ordered with screens such as FIRE ALARM / DO NOT ENTER, etc.

Note that the following implementation has, as standard, supervision of only the Gas release relay output wiring, and not of the Stage 1 and Stage 2 warning signs. By allocating extra relays (or using the second pole) and fitting diodes at each sign, the warning sign circuits could be supervised (refer Figures 8.5.3, 8.6.2, 9.2.5 and 9.2.6).

9.2.2 LOGIC & CONFIGURATION

A commonly used logic diagram for a dual circuit Gas Flood Zone (i.e. protected area, sometimes called 'risk') is shown in Fig 9.2.1. This can be used with ME0065-69 and one or more Local Control Stations (FP0570) per protected area.

The logic equations for it may be as follows.

where:
OC1 = Gas Initiated LED (i.e. Timer Running)
OC2 = Manual Activation LED (i.e. LCS Gas Start)
OC3 = Gas Discharged LED
OC4 = System Inoperative (i.e. any isolate or fault in Gas Control System)
OC5 = Gas Inhibited LED

Zone 1 = Detector Cct 1
Zone 2 = Detector Cct 2
Zone 3 = Gas Start (LCS)
Zone 4 = Gas Released (Pressure Switch)
Zone 5 = Gas Inhibit (LCS)
Zone 6 = Gas Isolated (i.e. Gas Isolate switch operated, see note 3)
Zone 7 = Lock-off Valve (if required, see note 9)

LOGIC & CONFIGURATION (CONTINUED)

Relay 1 = Alert O/P (1st stage sign FIRE ALARM)
Relay 2 = Evac O/P (2nd stage sign EVACUATE and DO NOT ENTER)
Relay 3 = Gas Release Solenoid
Relay 4 = System Inoperative sign
Isolate = Guard Relay (see note 2)

Timer
T1 [S30:0] = V1 30 Second time delay from "Gas Initiated" (second stage).

Variables
V1 = Z1A.Z2A.^Z5A + Z3A

Open Collector LEDs
OC1 = V1
OC2 = Z3A
OC3 = Z4A
OC4 = Z5A + OC5 + Z7A + Z4:7(1)I + Z1:7(1)F + R3F +R1I+R2I +R4I (see notes 2,9)
OC5 = Z6A+Z1:3(1)I + R3I + Guard Iso (if isolatable, see note 2)

Relays

R1 = Z1A + Z2A + Z3A + Z4A	(Alert)
R2 = Z4A + V1	(Evac)
R3 = T1	(Gas Release)
R4 = OC4	(System Inoperative)
ISO (or Rn) = V1	(Guard) (see note 2)

Configure Circuits

AZC	Alarm Text	B1
Circuit 1	Smoke (1)	-
Circuit 2	Smoke (1)	-
Gas Start	MCP/Manual (4)	-
Gas Released	FSW (3) or PSW (6)	Alarm (2)
Gas Inhibit	MCP/Manual (4)	-
Gas Isolated	MCP/Manual (4)	If required (see note 3)
Lock-off Valve	VMD/Valve (5)	If required (see note 9)

(Circuits 1 and 2 use all default settings).

Configure Zones

Zone	Latch	MAF	Anc1	Anc2	Bells	
Circuit 1	-	-	-	-	-	
Circuit 2	-	-	-	-	-	
Gas Start	N ?	-	-	-	-	(see note 10)
Gas Released	-	-	-	-	-	
Gas Inhibit	N	N	N	N	N	
Gas Isolated	N	N	N	N	N	If required (see note 3)
Lock-off Valve	N	N	N	N	N	If required (see note 9)

(Zones 1-4 use all default settings. Zone 3 may be required to be non-latching. See note 10.)

LOGIC & CONFIGURATION (CONTINUED)

Configure Relay Supervision

Relay	Enable	Latch	MAF	LED	Isolate	Test	Sup.Act
Gas Release	Y	-	-	-	-	-	-

By default, relays are isolatable and testable but this can be changed if desired.

For all configuration, only items that have to be changed from default are shown.

9.2.3 NOTES

1. The variable V1 is used to initiate the timer rather than OC1 because outputs (including OC) can be tested from the keypad. It is not desirable to have a "test" function initiating the timer which releases gas.

2. The Guard relay is used to reduce the chances of accidental Gas Release (e.g. by someone performing a "Test " on the Gas Release Relay). (The test function may be inhibited, as may Isolate.) It uses a normally open set of contacts and is inserted between +VBF2 and the NO terminal of the Gas Release relay (R3). It is preferable to use an unused Brigade Relay (rated at 5A dc resistive) e.g. Isolate, if available (not Standby), else an ancillary relay, or a module relay (each rated at 2Adc resistive) on a separate 8RM to Gas Release. For multiple zones, a Module Relay "Guard" relay can be common for 2 Gas zones, or Brigade Relay "Guard" relay can be common to up to 5 Gas zones for 1A actuator loads. The common Guard relay should be programmed to operate off the OR of the variables. For example:
ISO = V1 + V2 + V3 for a 3 Risk FIP which used ISO as the Guard relay.
If a Module relay, Rn, is used as the Guard relay, then +RnI should be added to the equations for OC4 and OC5. (Similarly if an ancillary relay is used).

   Unused Brigade relays may also be used as an alternative to the module relays shown to switch the sounders where the load exceeds 2Adc.

3. The Gas Isolated switch turns on the Gas Isolated LEDs on the 1U/7U Panel and LCSs directly, and causes a Gas Release relay supervision fault. The third set of contacts on the Gas Isolate switch is connected to AZC 6 (Gas Isolated) as shown on Drawing 1931-47,57 for ME0065,69 so that "Gas Isolated" status can show on the LCD, be logged, and repeat from the FIP to an RZDU or remote FIP via a network. The suitable EOLR is to be soldered across the switch contacts (yellow and black remit wires) at time of building.

4. Snub (suppress) inductive loads (e.g. solenoids) with a suitably rated reverse diode.

5. The Gas Isolate switch isolates both +ve and -ve supplies to the solenoid. When not isolated, however, the -ve supply is connected to 0V and only the positive supply is switched by the relay. This allows the relay supervision to check for resistance from the relay "common" contact to 0V.

7. See Section 9.2.4 re use of actuators.

8. Solenoids are typically less than 400 Ohms and require a diode (of sufficient rating) to be wired in series at the solenoid to allow supervision. If two solenoids are connected in parallel on one circuit the supervision will not detect one being disconnected. Where multiple release circuits are diode connected (+ve & -ve legs) onto a common solenoid, the supervision will detect shorts, but not all opens.

NOTES (CONTINUED)

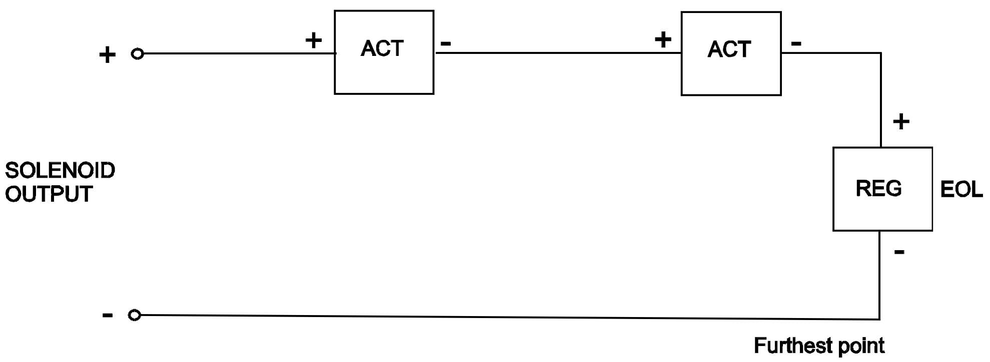
9. If a Lock-off valve is not required, then Z7 is not required and can be left out of the equations. Note that AS4124.1 requires the Lock-off Valve to isolate both poles of the Gas Release solenoid / actuator. This is not done within the ME wiring and would therefore need to be done externally with microswitches (or a relay).

10. The standard LCS Gas Start switch automatically turns on when the glass is broken. Some customers may require a different switch that can be turned off after the glass is broken, and hence cancel the timer and prevent gas release.

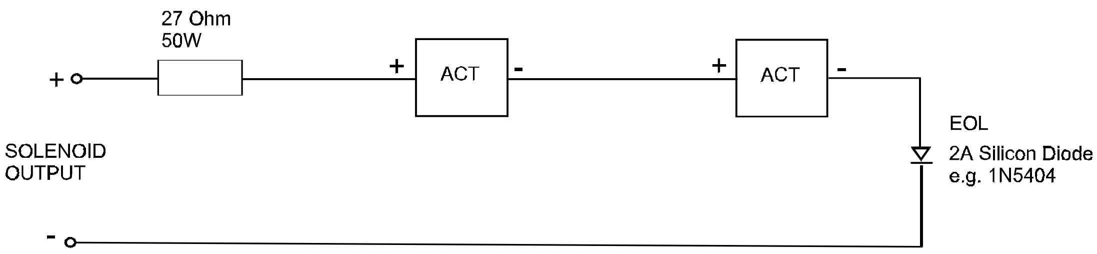
9.2.4 USE OF ACTUATORS

Where a CV-98 actuator is used it must be connected in series with the 427354 current regulator, fitted at the furthest point to act as the EOL. Where series resistors have been used (in existing circuits) to limit the current, a series diode must be fitted as the EOL. It must be a silicon diode (not Schottky) rated at 1Adc or greater, e.g. 1N5404. See Fig 9.2.4. A single actuator should be connected in reverse, i.e. with the black wire to the incoming +ve voltage, so that the supervision can detect that the element has been fired.

Multiple actuators may be connected in series on one circuit, but each **must** have the red wire to the incoming +ve voltage. Note the supervision cannot detect the difference between an unfired element (<2 Ohm) and a fired one (3 series forward diodes).



a) With current regulator at furthest point (EOL)



b) With limiting resistor (not recommended method).

FIGURE 9.2.4
<u>CONNECTING MULTIPLE ACTUATORS</u>

USE OF ACTUATORS (CONTINUED)

The maximum number of actuators connected in series in one circuit is dependent on the cable resistance. The following are estimates for the Metron Protractor and 427354 current limiter, and are not confirmed by the manufacturer (consult the manufacturer).

Allow: 21V as worst case battery voltage; 6.5V drop for regulator; 2.5V drop per actuator; 1V drop for diode EOL; 1V per Ohm of cable resistance.

Based on these estimates up to 4 actuators may be fitted to a circuit with up to 3.5 Ohms cable resistance and a diode EOL.

9.2.5 AVI SIGNS

The AVI is a single, illuminated, 24Vdc warning sign with an internal sounder that produces AS2220 Alert and Evacuate warning tones. It has two independent sets of lamps (i.e. top and bottom) and two signal inputs, and can be configured to provide the combinations of tone and illumination required for Gas Flood warning signs. It can be ordered with one of a number of standard faceplates with wording such as FIRE ALARM / EVACUATE AREA.

AVIs have three pairs of terminals that accept inputs from the FIP, namely '+24V', 'ALERT-', and 'EVAC-'. They can be connected and operated in two modes, namely 2-wire and 3-wire. The typical connection for 3-wire mode has the +VBF supply connected to +24V, with switched 0V signals to ALERT- and EVAC- respectively.

In 2-wire mode, the +24V terminals are not used. For an EVAC input, the +ve supply is connected to ALERT- (i.e EVAC+) and the -ve supply (0V) is switched to EVAC-, and vice versa for Alert. However currently the ME0065-69 arrangements do not support this wiring. Note the System Inoperative sign is configured and wired in 2 wire mode.

In its present form, multiple AVIs cannot be supervised if they have their tones synchronised. Multiple AVIs on one circuit require a series diodes to be fitted at each sign (i.e. one per tone) and two relays (per tone) to allow the circuit to be supervised. See Figures 9.2.5 and 9.2.6. The logic for each relay is shown alongside the relay (note the numbering is different to Figure 9.2.1).

All signs should be configured for flashing illumination as that attracts attention and saves power. Note the AVI has incandescent lamps that draw a large current.

The configuration of some commonly used signs is as follows.

Function			**Illuminate**	**Tone**	**Note**
1	Top:	FIRE ALARM	Top	Alert	
	Bottom:	EVACUATE AREA	Both	Evac	
2	Top:	FIRE ALARM	Top	Alert	
	Bottom:	DO NOT ENTER	Both	Evac	
3	Top:	DO NOT ENTER	Top	Evac	a.
	Bottom:	XXXX GAS DISCHARGE	Both	Evac	a.
4	Both:	XXXX SYSTEM INOPERATIVE	Both	None	

Options for XXXX include: CO2; INERGEN; FM-200; NAF S III.

AVI SIGNS (CONTINUED)

Function	Input	Lamps	Tone	Mode	DIL SW On	DIL Sw Off	Lk1,2	Lk3	Lk6	Notes
1	Alert- Both	Top Both	Alert Evac	3-wire std	1,3,5,6	2,4,7,8	1-2	1-2	On	
2	Alert- Both	Top Both	Alert Evac	3-wire std	1,3,5,6	2,4,7,8	1-2	1-2	On	
3	Evac-	Both	Evac	2-wire	2,3,5,6	1,4,7,8	2-3	1.2	Off	b.
4	Alert-	Both	None	3-wire spcl	1,3,5,6, 8	2,4,7	1-2	2-3	On	

Notes

a. The option of top lamps with Evac tone for one input, and both lamps with Evac tone for the other, is not directly supported. But it can be arranged by mounting the AVI upside down.

b. For this configuration the +ve supply is wired into Alert-, not +24V.

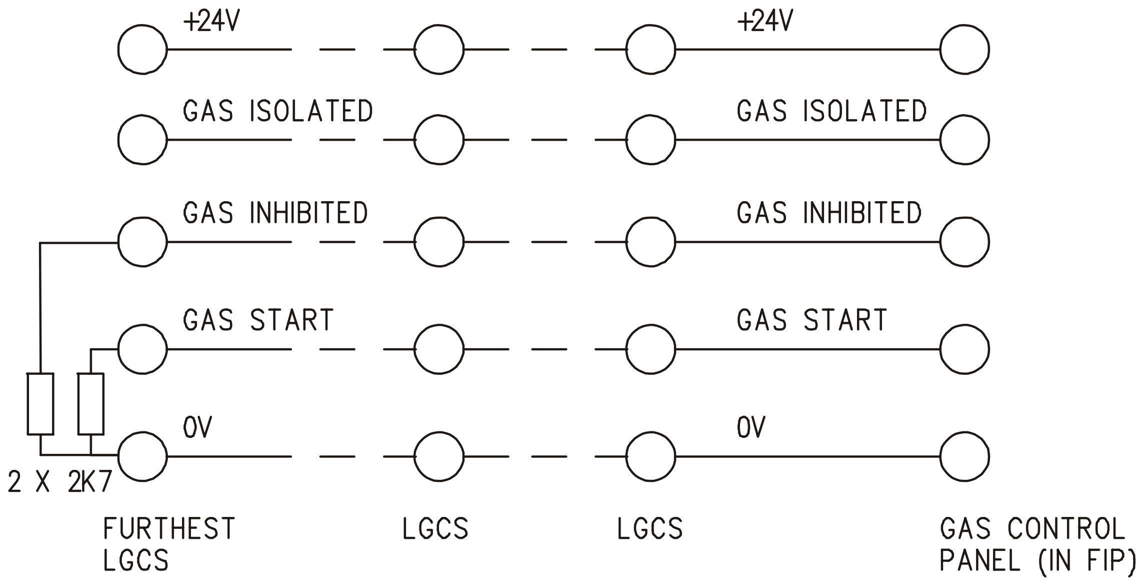


FIG 9.2.3
CONNECTION OF MULTIPLE LGCSs

9.2.6 DRAWINGS

The following drawings are included:

1931-47 1 Zone Gas Flood Door, Circuit Diagram
1937-2 Local Gas Control Station, Circuit Diagram

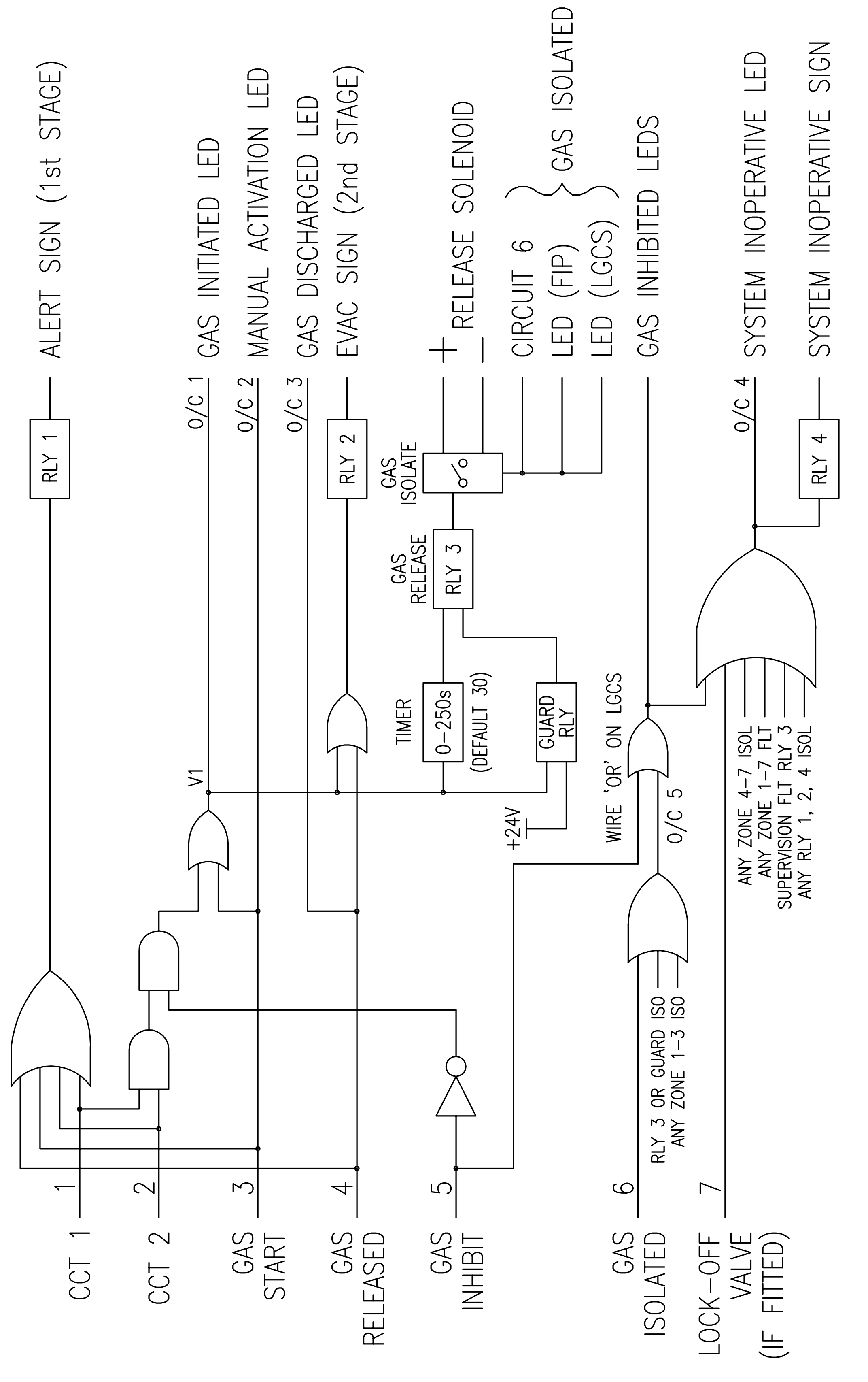


FIGURE 9.2.1
GAS FLOOD LOGIC DIAGRAM

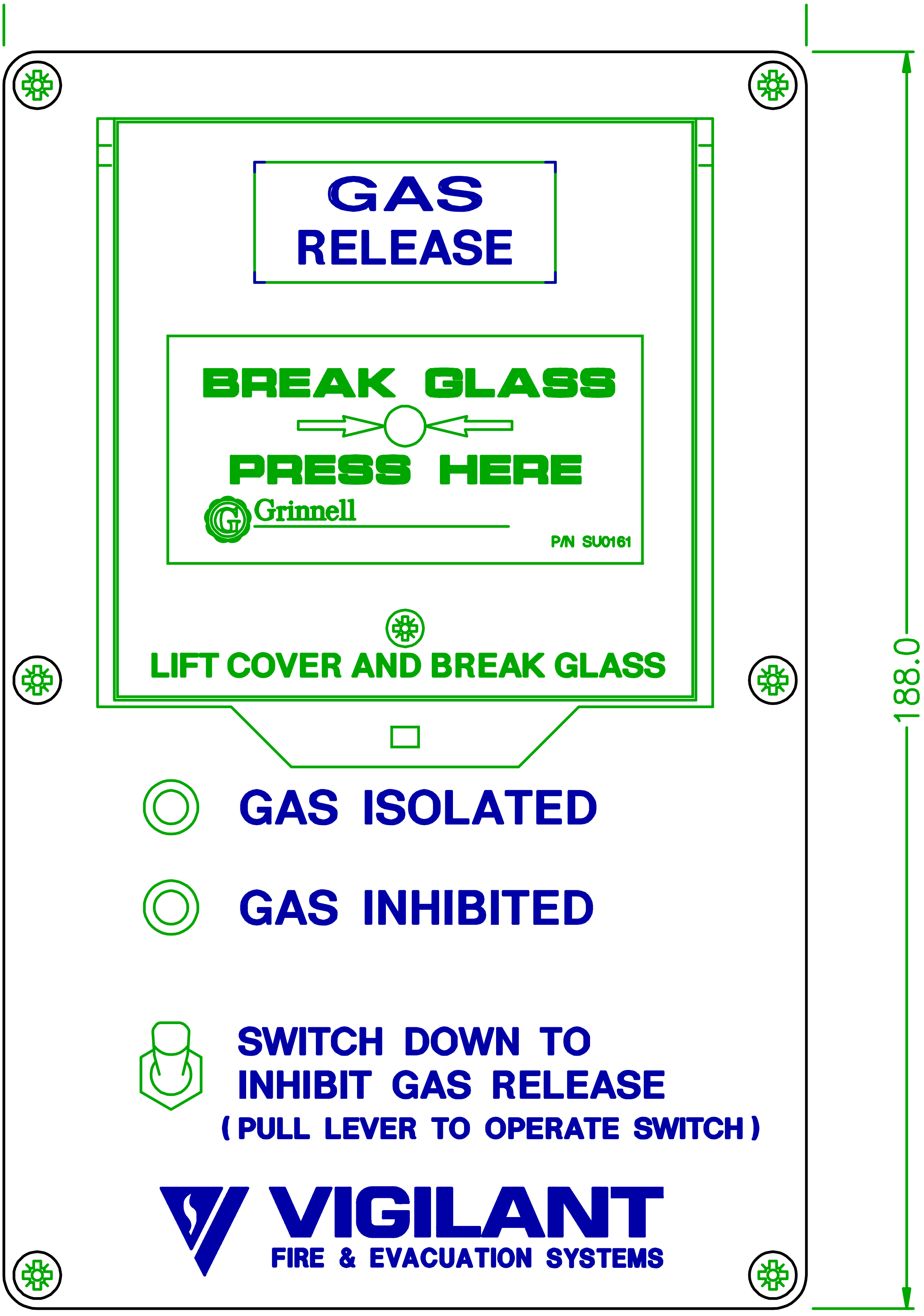
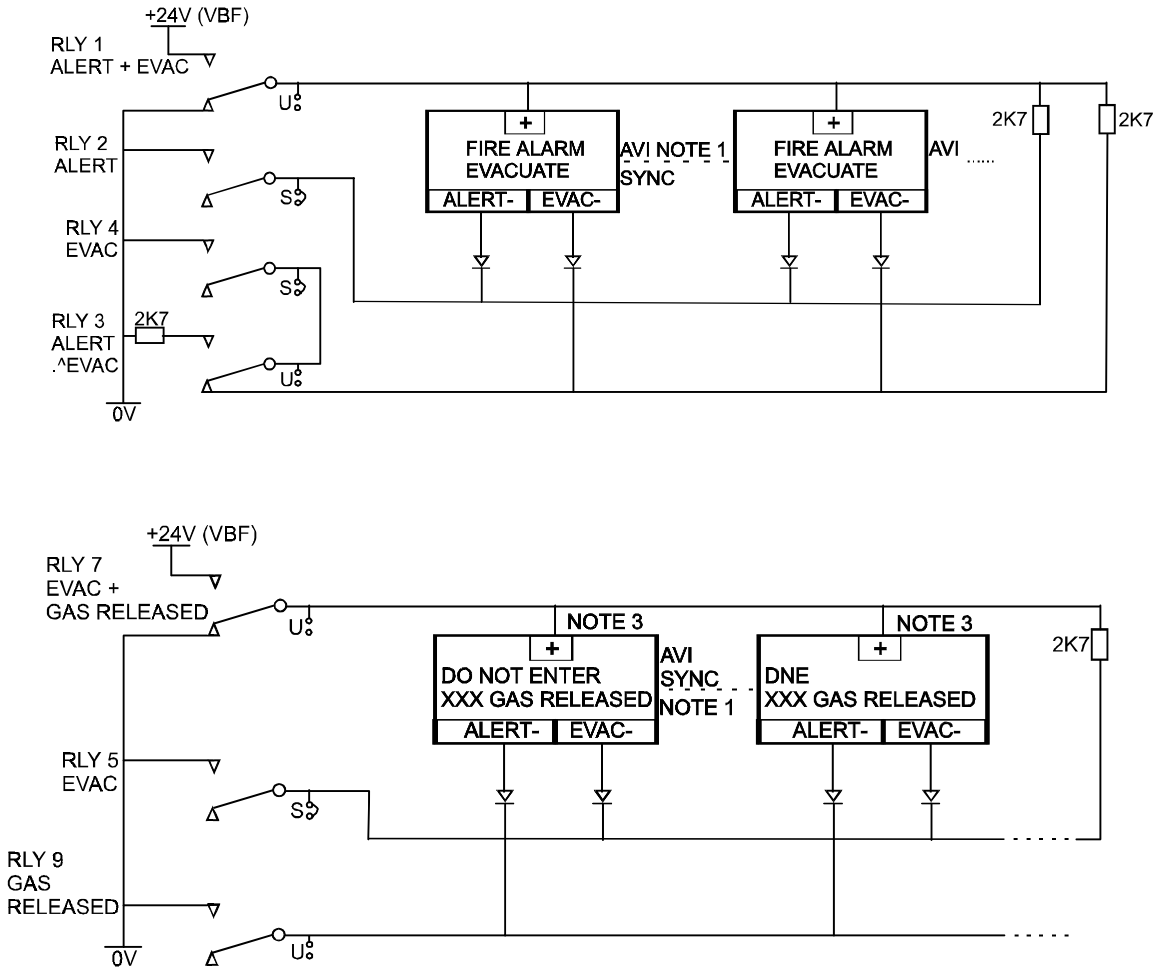


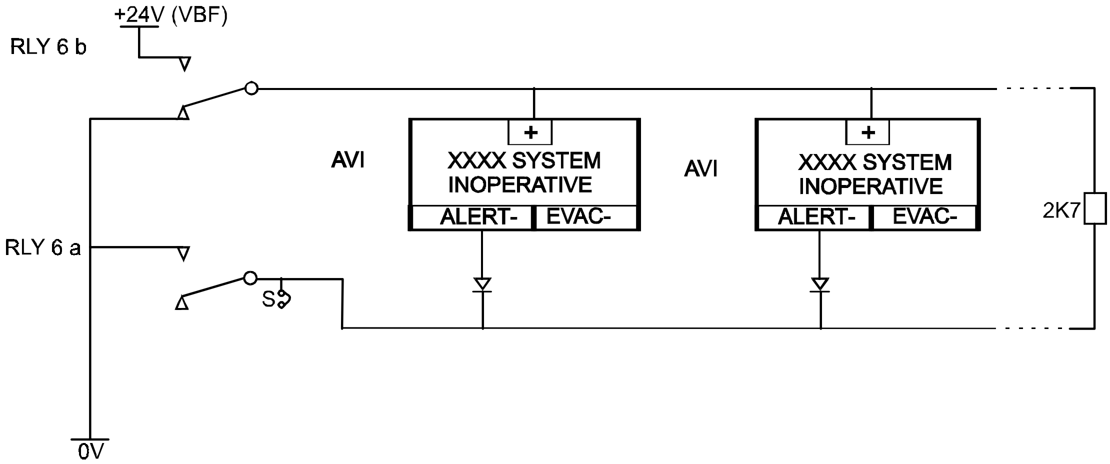
FIG 9.2.2
LOCAL GAS CONTROL STATION, FRONT VIEW



Notes

1. Only the wiring to AVIs making tones is supervised (the Sync wire is not supervised).
2. The supervising relays should be programmed to not supervise in the activated state.
3. This AVI should be mounted upside down, with the DNE face plate up the right way.

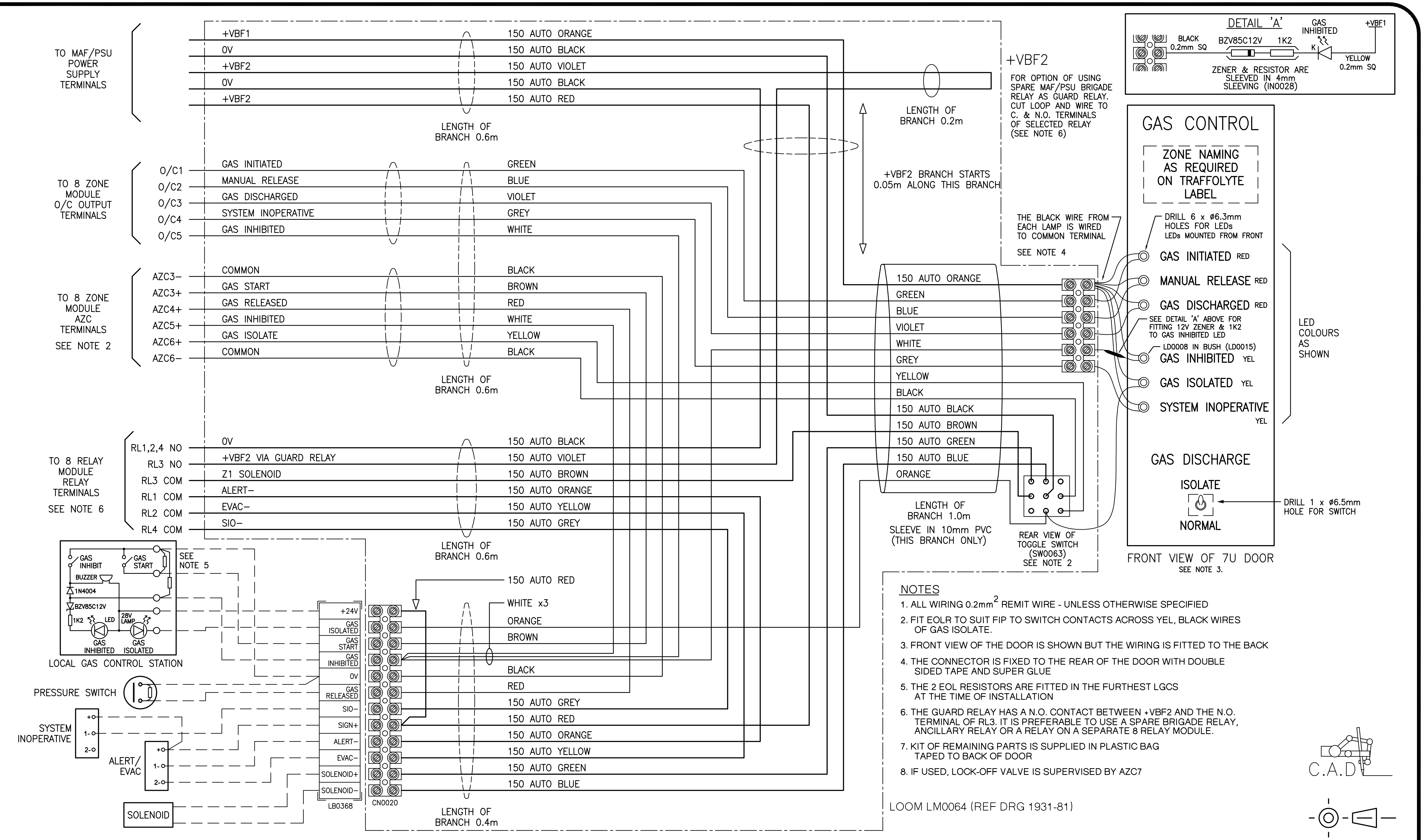
FIGURE 9.2.5
WIRING MULTIPLE SUPERVISED 2 STAGE SIGNS



Notes

1. The second pole of the relay is used by fitting connectors CN0260, CN0488 to the holes in the 8RM.
2. If only one sign is used, the diode need not be fitted.
3. Both tones should be disabled in the AVI.
4. If Supervision is not required, the second pole is not required and the AVI +24V terminal can be wired directly to the Gas Flood +24V terminal.

FIGURE 9.2.6
WIRING MULTIPLE SUPERVISED SYSTEM INOPERATIVE SIGNS



NOTES

1. ALL WIRING 0.2mm^2 REMIT WIRE - UNLESS OTHERWISE SPECIFIED
2. FIT EOLR TO SUIT FIP TO SWITCH CONTACTS ACROSS YEL, BLACK WIRES OF GAS ISOLATE.
3. FRONT VIEW OF THE DOOR IS SHOWN BUT THE WIRING IS FITTED TO THE BACK
4. THE CONNECTOR IS FIXED TO THE REAR OF THE DOOR WITH DOUBLE SIDED TAPE AND SUPER GLUE
5. THE 2 EOL RESISTORS ARE FITTED IN THE FURTHEST LGCS AT THE TIME OF INSTALLATION
6. THE GUARD RELAY HAS A N.O. CONTACT BETWEEN +VBF2 AND THE N.O. TERMINAL OF RL3. IT IS PREFERABLE TO USE A SPARE BRIGADE RELAY, ANCILLARY RELAY OR A RELAY ON A SEPARATE 8 RELAY MODULE.
7. KIT OF REMAINING PARTS IS SUPPLIED IN PLASTIC BAG TAPED TO BACK OF DOOR
8. IF USED, LOCK-OFF VALVE IS SUPERVISED BY AZC7

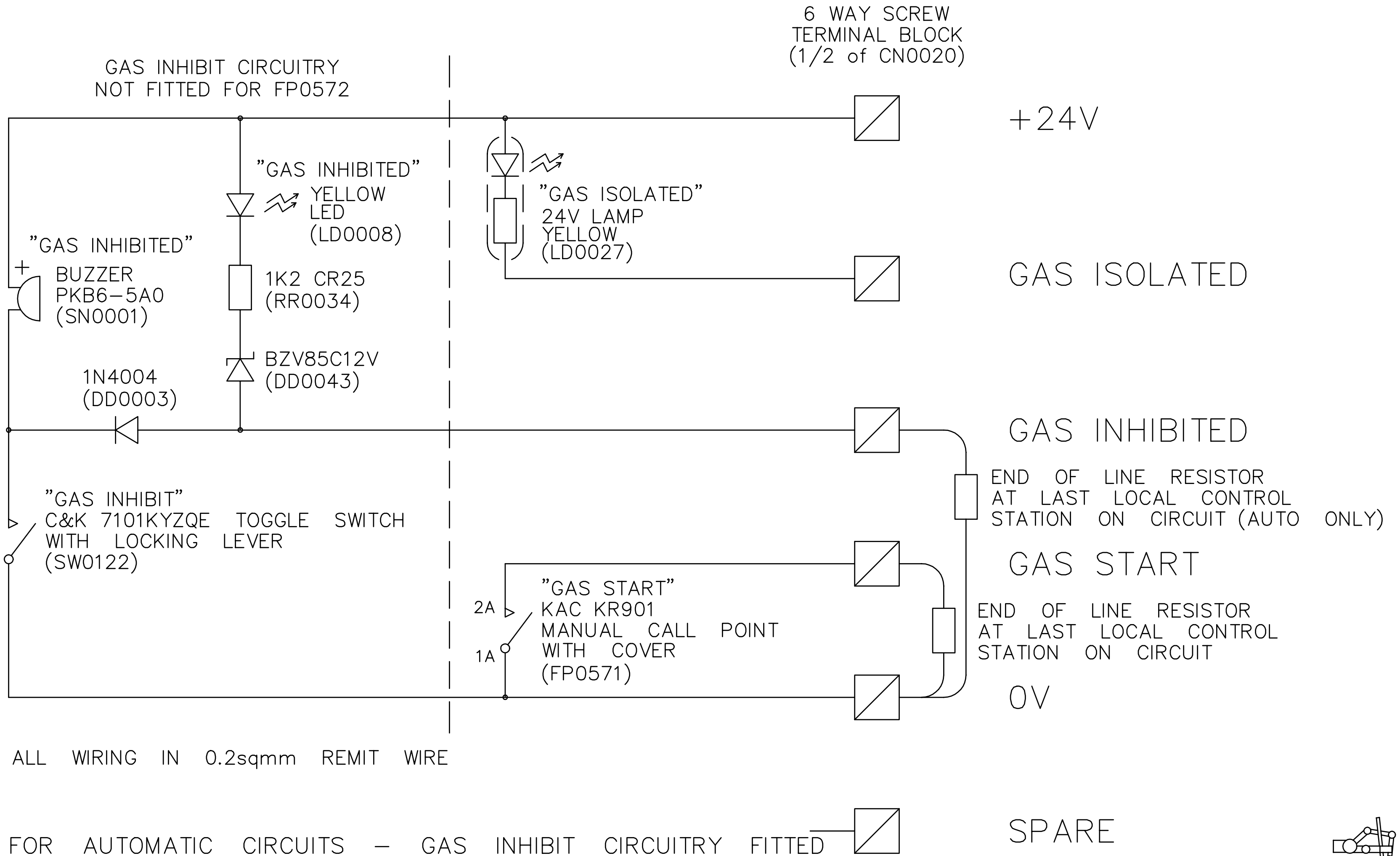
UNLESS OTHERWISE STATED: ALL DIMENSIONS IN MILLIMETRES. DO NOT SCALE. TOLERANCES ARE TO BE: 1 DECIMAL PLACE ±0.5, 2 DECIMAL PLACES ±0.3, 3 DECIMAL PLACES ±0.1

ISS/REV	AMENDMENTS	ECO	DRN	CHKD	AUTH	APVD	DATE
B	GUARD RELAY ADDED, GAS INHIBITED CCTRY MODIFIED, O/C5	2059	TWH	DJG	RAC	DSCP	13.5.94
	ADDED, DETAIL 'A' ADDED, +VBF2 ADDED, TERMINALS ON						
	LB0368/CN0020 REORDERED						
C	LOOMS NOW LM0064, ADDED SWITCH DESCRIPTION, ADDED WIRE COLOURS TO DETAIL A	2287	KJS	TH	SC	DP	7-11-95
D	CHANGE TO ADD SYSTEM INOPERATIVE OUTPUT	3154	KJS				14-6-01

F3200
1 ZONE GAS FLOOD DOOR & LM0064 LOOM/WIRING DIAGRAM

VIGILANT
FIRE & EVACUATION SYSTEMS
211 MACES ROAD, CHRISTCHURCH 8006, NZ
P.O. BOX 19-545, CHRISTCHURCH 8030, NZ

SIZE	DRAWING NUMBER	SHEET NUMBER	ISS/REV	PART NUMBER
A3	1931-47	1 of 1	D	ME0065



FP0570 FOR AUTOMATIC CIRCUITS – GAS INHIBIT CIRCUITRY FITTED

FP0572 FOR MANUAL CIRCUITS – GAS INHIBIT CIRCUITRY NOT FITTED

C.A.D.

FP0570
FP0572

3rd ANGLE

UNLESS OTHERWISE STATED: ALL DIMENSIONS IN MILLIMETRES. DO NOT SCALE. TOLERANCES ARE TO BE: 1 DECIMAL PLACE ±0.5, 2 DECIMAL PLACES ±0.3, 3 DECIMAL PLACES ±0.1

ISS/REV	AMENDMENTS	ECO	DRN	CHKD	AUTH	APVD	DATE

LOCAL GAS CONTROL STATION
AUTOMATIC & MANUAL VERSIONS
CIRCUIT DIAGRAM

VIGILANT
FIRE & EVACUATION SYSTEMS
211 MACES ROAD, CHRISTCHURCH 8006, NZ
P.O. BOX 19–545, CHRISTCHURCH 8030, NZ

SIZE	DRAWING NUMBER	SHEET NUMBER	ISS/REV	PART NUMBER
A3	1937–2	1 of 1	2	SEE ABOVE

9.3 SUB FIP MONITORING

9.3.1 GENERAL

A sub-FIP is a Fire Indicator Panel (e.g. a Gas Flood Panel) which may not be connected directly to the Brigade, but repeats its common conditions (e.g. Fire, Fault) to another FIP. AS1670.1 allows for the cabling from FIP to sub-FIP to be less than 0.75sqmm, and the resistance may be considerably greater than that used in standard detector circuits. The "Low Current Mode" for an F3200 AZC allows supervision of sub-FIPs on circuits with high resistance.

The limitations caused by the resistance in sub-FIP monitoring circuits are shown in the following 3 cases.

1. Loop Resistance Less than 150 Ohms

For a detector circuit programmed for standard mode the maximum loop resistance is 50 Ohms, but where there is no detector load (i.e. clean contacts are used) the resistance may be up to 150 Ohms.

Therefore it is recommended that for loop circuits of less than 150 Ohms, "standard mode" be used for sub-FIP monitoring.

All voltage bands are potentially usable, but it is recommended that B3 NOT be used for any condition as the circuit voltage drop of up to 2.5V needs to be allowed for. B2 can be used with a 5V6 or 6V8 zener diode to detect Alarm i.e. ZnA, and B1 can be used to detect Alarm (ZnD) or Instant Alarm (ZnM).

2. Loop Resistance of 150 Ohm to 800 Ohm

For this resistance range the AZC has to be programmed into "Low Current Mode", and voltage band B1 should be programmed as Fault or Alarm but must not be used to detect the Fault signal from the sub-FIP (i.e. by shorting the circuit with the Fault contacts). Shorting the circuit at the sub-FIP will cause B2 Alarm.

Because the voltage drop in the circuit wiring is between 3.8V and 12V, depending on loop resistance, it is recommended that B3 not be used to detect a signal (for safety sake it is advisable to program B3 as Alarm and B1 as Alarm or Fault. Note that only a short somewhere within the circuit wiring can cause B1).

3. Loop Resistance of 800 Ohm to 2000 Ohm

For this resistance range the AZC has to be programmed into "low current mode", and the voltage band B3 has to be programmed as Alarm. Shorting the circuit at the sub-FIP will cause either a B2 or B3 Alarm depending on the loop resistance (nominal B2/B3 threshold is 1100 Ohm).

B1 may be programmed as Fault or Alarm, but must not be used to detect the Fault signal from the sub-FIP.

9.3.2 CONNECTION

There are various connection possibilities depending on the particular local requirements for Standby and Isolate, and the loop resistance. One or two AZCs may be required.

Where Standby is required as a separate signal at the Main FIP it can be signalled as Alarm on a second AZC and the corresponding zone programmed as non-MAF, non-Anc1, etc. Isolate could be signalled as "Fault" on the same AZC (ref Fig 9.3.1 and Fig 9.3.2).

The Main FIP Brigade Standby and Isolate relays could be reprogrammed to include the "standby" zone "alarm" and "fault" conditions, or separate module relays could be programmed to operate on the zone "alarm" and "fault" conditions. These would then be connected to the Brigade transmitting device in series/parallel with the Standby and Isolate contacts of the MAF Brigade relays as appropriate.

Note that the EOL required depends on the mode programmed for the AZC.

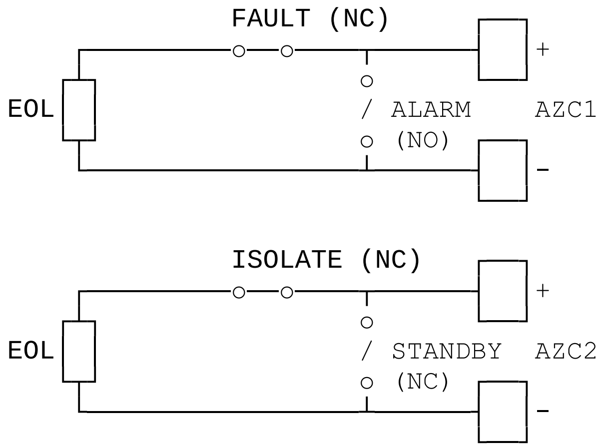
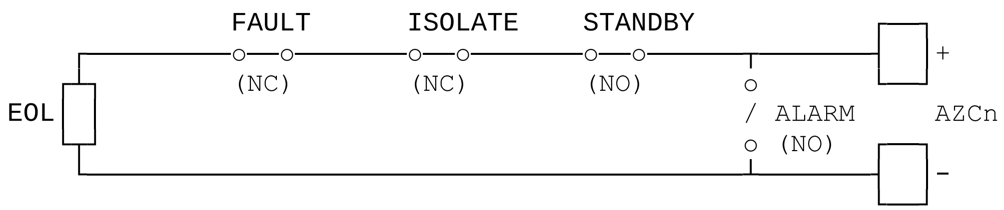
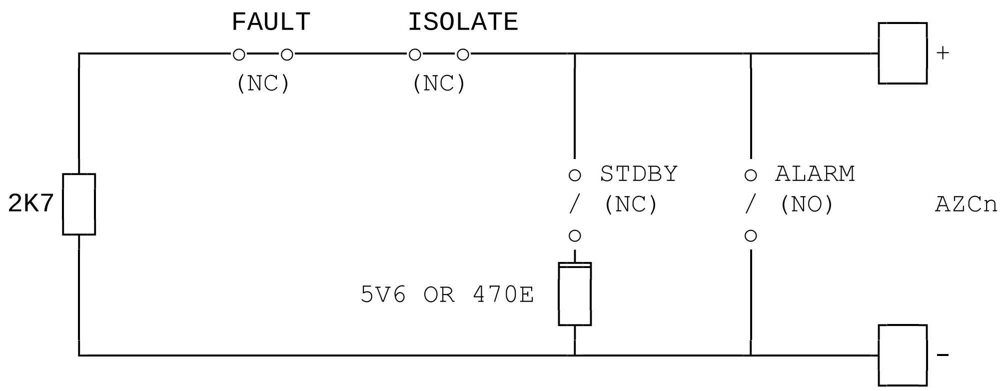


FIG 9.3.1
EXAMPLE OF SUB-FIP MONITORING USING 2 AZCS



Fault, Isolate and Standby are all represented by ZnF in the Main FIP.

FIG 9.3.2
EXAMPLE OF SUB-FIP MONITORING USING 1 AZC



Program B1 as Instant, ZnM represents "Alarm"
ZnD represents "Standby"
ZnF represents "Fault" or "Isolate"

FIG 9.3.3
EXAMPLE OF SUB-FIP MONITORING FOR RESISTANCE CASE 1 ONLY

Note the warnings for testing an AZC (i.e. Test Alarm, Test Fault) when the ZnM and ZnD tokens are used in logic equations. (See Section 7.4.3.1).

9.4 FIRE DETECTION IN HAZARDOUS AREAS (EXPLOSIVE ATMOSPHERES)

9.4.1 REFERENCES

AS 2380	Electrical Equipment for Explosive Atmospheres - Explosion-Protection Techniques.
AS 2381	Electrical Equipment for Explosive Atmospheres - Selection, Installation & Maintenance.
AS 2430	Classification of Hazardous Areas.
IEC79	Electrical Apparatus for Explosive Atmospheres.
SAA HB13	Electrical Equipment for Hazardous Areas (handbook).

9.4.2 GENERAL

A hazardous area is one which has a potentially explosive atmosphere due to combustible gases, liquids or dusts. In such an area there has to be a constraint to prevent an electrical fault from causing an explosion.

For fire detection in hazardous areas there are two main options:

1) Use approved IS (Intrinsically Safe) detectors and bases with IS isolators or Zener barriers and approved cabling.

2) Use approved detectors with explosion proof housings and compatible cabling. (E.g. Olsen V41B, (V42B), V44B, T54B). These are not discussed further in this section as the constraints are primarily mechanical.

Note that in addition to equipment selection and inter-connection, there are other requirements for wiring in hazardous areas that must be satisfied.

These include (but are not limited to):

- Matching “Ex” rating of equipment chosen with hazardous area classification.
- Ensuring cable capacitance and inductance is within the limits of the repeaters used (see Tables 9.4.3, 9.4.4, 9.4.5 for more details).
- Providing adequate physical protection for equipment according to local hazardous area wiring regulations.
- Using cable of the correct insulation and physical strength according to local hazardous area wiring regulations.
- Complying with manufacturer’s instructions for mounting of “Ex” rated devices.
- Inspection and certification of the finished installation.

9.4.3 INTRINSICALLY SAFE DETECTION

There are two types of device which may be inserted in a detector circuit between the FIP and the detectors to limit the electrical energy flow into the area and provide IS detection:

1) Galvanically (transformer) isolated repeaters (isolators).

2) Zener barriers (shunt barriers with fuses). These limit the circuit voltage relative to earth, and the circuit current.

   Although Zener barriers are cheaper than isolators they require a special Intrinsic Safety Earth, and precautions, and are therefore not recommended.

9.4.3.1 ISOLATED REPEATERS

There are several options for using isolated repeaters, each with differing limitations and expense.

The options are:

1. Use a 6 terminal isolating repeater where large numbers of smoke and/or flame detectors are required (see Section 9.4.3.2).

2. Use a lower-cost 4 terminal isolating repeater and a ZAU401 (Rev 2) where lower numbers of smoke and/or flame detectors are required (see Section 9.4.3.3).

3. Use a 4 terminal isolating repeater where all detectors generate a short circuit alarm condition (see Section 9.4.3.4).

For these the total capacitance and inductance of the detectors and cables on the IS circuit must be less than that specified in Table 9.4.1. The gases and vapours in each Gas group are listed in IEC 79-12.

GAS GROUP	MAX. CAPACITANCE	MAX. INDUCTANCE
Class IIA or Group D	1.04uF	31.9mH
Class IIB or Group C	0.39uF	12.6mH
Class IIC or Group A or B	0.13uF	3.6mH

TABLE 9.4.1
MAXIMUM CAPACITANCE & INDUCTANCE PER IS CIRCUIT

For isolated repeaters, the cable core to core capacitance can be used, rather than core to earth which, for bunched conductors on metal trays, may be higher. (Note that for Zener barriers, the core to earth capacitance is relevant). The values used in this section for a typical TPS pair, or multicore cable (unshielded) are:

TPS C = 100nF/km (i.e. 100 pF/m), L = 0.8mH/km

Cable manufacturers may quote differing values for specific cables.

It is the responsibility of the System Engineer to check that the cable
used has values less than or equal to the above values, and that the total capacitance and inductance for each circuit meet the requirements.

The values specified for the detectors are shown in Table 9.4.2.

ISOLATED REPEATERS (CONTINUED)

DETECTOR	CAPACITANCE	INDUCTANCE	RESISTANCE (FW ONLY)
C29BEx/Z94C	1Nf	1uH (0.001mH)	
R24Bex	3.3nF	1.5mH	
FW68	84nF/km	0.62mH/km	100Ω/km
FW105	66nF/km	0.83mH/km	100Ω/km
FW180	57nF/km	0.89mH/km	100Ω/km
S231i+	1.5nF	0	
S121	4nF	0	
MS302Ex	1.5nF	0	
MF301Ex	1.5nF	0	
MR301Ex (Photo)	1.5nF	0	
MR301TEX (HPO)	1.5nF	0	
T56B (Heat)	0	0	
(Z500N base)	0	0	
T54B (Heat)	0	0	

TABLE 9.4.2
CAPACITANCE & INDUCTANCE PER I.S. DETECTOR

Notes

1. The KHD0-ICS/Ex 251 or KFD0-CS-Ex 2.51P is effectively two KHD0-ICS/Ex 151 or KFD0-CS-Ex 1.51P isolators (respectively) in one package.

2. The resistance quoted in Table 9.4.2 for fire wire is per wire, thus the circuit resistance of the pair is twice that amount.

3. The FW68 and FW105 fire wires are not currently listed as IS.

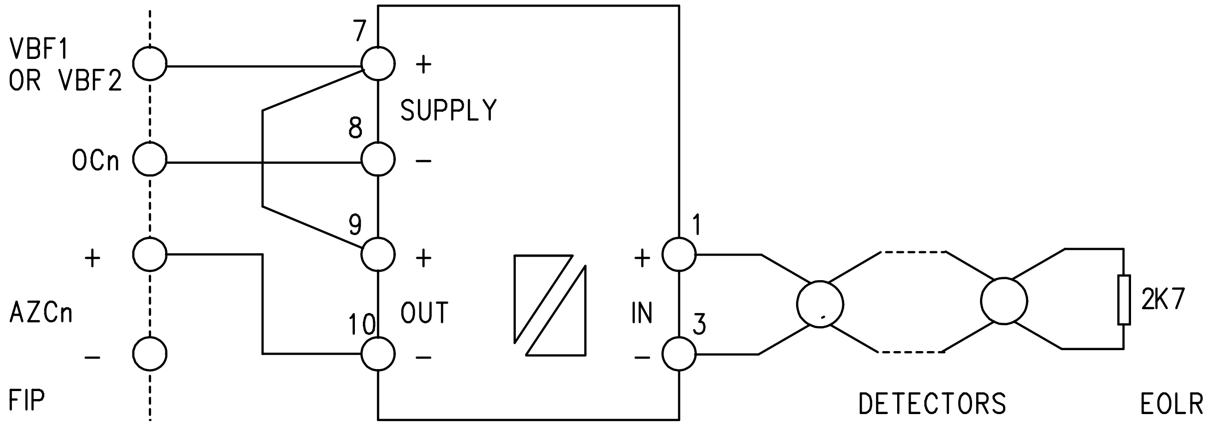
4. The MS302Ex, MF301Ex, MR301Ex, MR301TEx, S121 and S231i+ detectors are currently not SSL approved.

For each of the following configuration options a table is included showing the limits of detector quantity and cable length.

9.4.3.2 6 TERMINAL ISOLATED REPEATER

The following 6 terminal isolating repeaters can connect an F3200 zone to an IS detection circuit using the circuit of Figure 9.4.3.2.

Pepperl & Fuchs KHD3-ICR/Ex130 200
Pepperl & Fuchs KFD2-CR-Ex1.30 200



OR

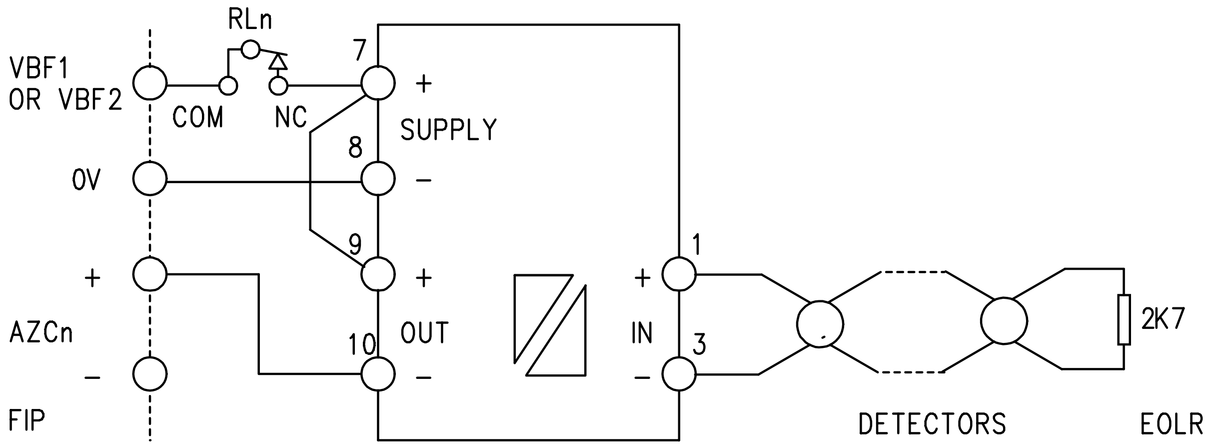


FIG 9.4.3.2
F3200 IS CIRCUIT USING 6-TERMINAL REPEATERS

Relay or Open Collector

For each AZC there must be either: a corresponding relay (e.g. Module Relay RLn) with normally closed contacts breaking the supply to the Isolator as shown; or an open collector output switching the supply 0V as shown. As the open collector is standard with an 8ZM it is the cheapest alternative.

6 TERMINAL ISOLATED REPEATER (CONTINUED)

Programming & Limitations

All detector types require the circuit to be programmed for Mode 1 (Std) with voltage band B1 programmed as Alarm.

The open collector must be programmed as OCn = ^ZnR, or the Relay must be programmed as Rn = ZnR (i.e. Zone n not in Reset or Zone n in Reset respectively).

There can be no differentiation of voltage bands (B1, B2, B3) i.e. the FIP cannot differentiate between MCP and detector operation on the same circuit.

Any alarm on the detector circuit (either a short circuit or detector operation) will cause a B1 or a B2 voltage level on the FIP AZC, depending on the battery voltage.

Detector quantity and circuit length limits are shown in Table 9.4.3.

DETECTOR			GAS GROUP 11A OR 11B			GAS GROUP 11C		
			QTY	CCT LENGTH		QTY	CCT LENGTH	
TYPE	PART	BASE		$1.0mm^2$	$0.75mm^2$		$1.00mm^2$	$0.75mm^2$
SMOKE	C29BEx	Z94C	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	0.9km(C) (90nF)	0.9km(C) (90nF)
						33	0.97km(C) (97nF)	0.97km(C) (97nF)
						20	1.1km(C) (110nF)	1.1km(C) (110nF)
						1	1.3km(C) (130nF)	1.3km(C) (130nF)
FLAME	R24BEx	-	7(M)	1.5km(R) (50Ω)	1.1km(R) (50Ω)	2(M)	1.2km(C) (120nF)	1.1km(R) (50Ω)
HEAT	FW105	-	-	- (100Ω TOT)	- (100Ω TOT)	-	1.3km TOT (130nF)	1.3km TOT (130nF)
HEAT	T54B	-	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	1.3km(C) (130nF)	1.3km(C) (130nF)
HEAT	T56B	Z500N	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	1.13KM(C) (130nF)	1.3km(C) (130nF)
HEAT	S231i+	-	11(M)	3KM (R) (100Ω)	2.2KM (R) (100Ω)	11(M)	1.13km(C) (113nF)	1.13KM(C) (113nF)
						5	1.22km(C) (122nF)	1.22km(C) (122nF)
						1	1.28km(C) (128nF)	1.28km(C) (128nF)
FLAME	S121	-	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	32(M)	0.02km(C) (2nF)	0.02km(C) (2nF)
						20	0.5km(C) (50nF)	0.5km(C) (50nF)
						10	0.9km(C) (90nF)	0.9km(C) (90nF)
						1	1.26km(C) (126nF)	1.26km(C) (126nF)
FLAME	MS302Ex	M300	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	0.7km(C) (70nF)	0.7km(C) (70nF)
						20	1km(C) (100nF)	1km(C) (100nF)
						1	1.28km(C) (128nF)	1.28km(C) (128nF)
ION	MF301Ex	M300	40(M)	(SAME AS MS302Ex)				
PHOTO	MR301Ex	M300	40(M)	(SAME AS MS302Ex)				
HPO	MR301TEx	M300	40(M)	(SAME AS MS302Ex)				

TABLE 9.4.3
MAXIMUM DETECTOR QUANTITY & CABLE LENGTH FOR 6-TERMINAL REPEATER

6 TERMINAL ISOLATED REPEATER (CONTINUED)

Notes

1. Circuit lengths quoted are from the isolator to the EOL. An extra 50 Ohms of cable from the FIP to the isolator is also allowed (1.5km of $1.0mm^2$, 1.1km of $0.75mm^2$). The length quoted is the maximum for the corresponding quantity of detectors.

2. Cable resistance shown is for the circuit, ie. both cables in the pair. The value of 34Ω per km (return) is used for 1 mm^2.

3. The maximum resistances shown for the fire wire circuits must include both cable and fire wire (see Table 9.4.2 and associated note 2).

4. The letter in ( ) after the cable length, and the value in ( ) under the cable length specify which parameter out of capacitance (C), inductance (L) and resistance (R) provides the limitation, and what the maximum value is.

5. The (M) after a detector quantity indicates the maximum quantity allowed per circuit.

6. The maximum allowable detector quiescent (or 2 second switch on) current is 3.5mA (only relevant to R24BEx).

7. The C23BEx detector (old type) would be compatible but has not been tested in this configuration.

9.4.3.3 4 TERMINAL ISOLATED REPEATER WITH ZONE ADAPTOR UNIT ZAU401

With the addition of the ZAU401 Zone Adaptor Unit (PA0838), lower-cost 4-terminal isolating repeaters can be used with the F3200 panel.

The ZAU401 can be thought of as a single zone circuit module that can be added to a panel to make it compatible with a wider range of detectors – in particular when using IS repeaters.

The ZAU401 can support up to 2mA of quiescent detector current and uses a 3k9 5% EOL resistor.

Wiring of the ZAU401 and the isolating repeater to the panel is shown in Figure 9.4.3.3. Note that only one ZAU401 can be connected to each of the panel's zone circuits.

The following 4-terminal isolating repeaters can be used to connect the ZAU401 to an IS detection circuit. (Note that dual channel repeaters have two separate repeaters, and can connect two circuits with two ZAU401s).

Pepperl & Fuchs	KHD0-ICS/Ex 1.51 (single channel)
Pepperl & Fuchs	KHD0-ICS/Ex 2.51 (dual channel)
Pepperl & Fuchs	KFD0-CS-Ex 1.51P (single channel)
Pepperl & Fuchs	KFD0-CS-Ex 2.51P (dual channel)
Measurement Technology Ltd	MTL5061 (dual channel)

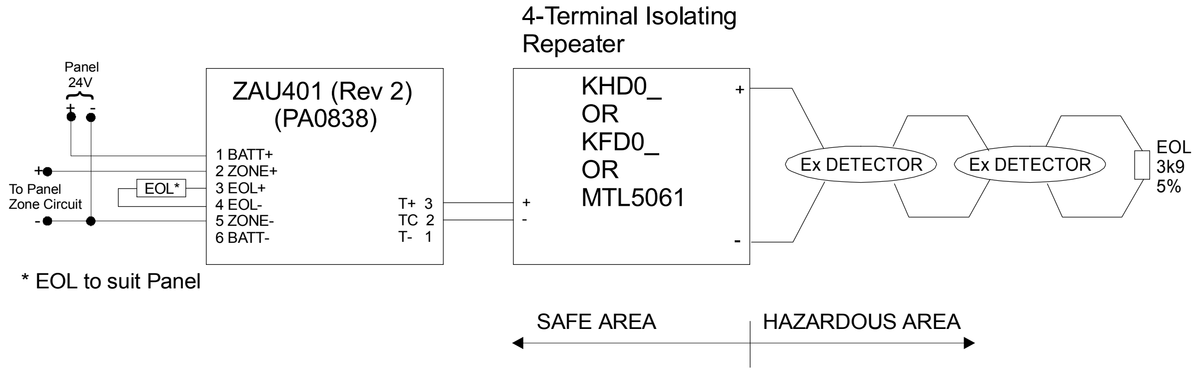


FIG 9.4.3.3
F3200 WITH ZAU401 & 4 TERMINAL IS REPEATER

Programming & Limitations

The circuit should be programmed as Mode 1 (standard). Voltage bands B1 and B3 can be left at default, though it is better to program B1 as fault. Voltage band B3 is not generated by a ZAU401 so can be left at the default setting (which is "normal" for V1.XX software and "instant alarm" for V2.XX software).

Note that all alarms from the ZAU401 will give voltage band B2 i.e. the FIP cannot differentiate between MCP and detector operation, and voltage B1 represents a short on the circuit between the FIP and the ZAU401 (i.e. internal wiring fault).

Detector quantity and circuit length limits are shown in Table 9.4.4.

4 TERMINAL ISOLATED REPEATER WITH ZONE ADAPTOR UNIT ZAU401 (REV 2) (CONTINUED)

DETECTOR			GAS GROUP 11A OR 11B			GAS GROUP 11C		
			QTY	CCT LENGTH		QTY	CCT LENGTH	
TYPE	PART	BASE		1.0mm²	0.75mm²		1.00mm²	0.75mm²
SMOKE	C29BEx	Z94C	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	0.9km(C) (90nF)	0.9km(C) (90nF)
						33	0.97km(C) (97nF)	0.97km(C) (97nF)
						20	1.1km(C) (110nF)	1.1km(C) (110nF)
						1	1.3km(C) (130nF)	1.3km(C) (130nF)
FLAME	R24BEx	-	2(M)	0.5km(R) (17Ω)	.37km(R) (17Ω)	2(M)	0.5km(C) (17Ω)	0.37km(R) (17Ω)
HEAT	FW105	-	-	- (100Ω TOT)	- (100Ω TOT)	-	1.3km TOT (130nF)	1.3km TOT (130nF)
HEAT	T54B	-	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	1.3km(C) (130nF)	1.3km(C) (130nF)
HEAT	T56B	Z500N	40(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	40(M)	1.13km(C) (130nF)	1.3km(C) (130nF)
HEAT	S231i+	-	4(M)	3KM (R) (100Ω)	2.2KM (R) (100Ω)	4(M)	1.24KM(C) (124nF)	1.24KM(C) (124nF)
						1	1.28km(C) (128nF)	1.28km(C) (128nF)
FLAME	S121	-	16(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	16(M)	0.66km(C) (66nF)	0.66km(C) (66nF)
						10	0.9km(C) (90nF)	0.9km(C) (90nF)
						1	126km(C) (126nF)	1.26km(C) (126nF)
FLAME	MS302Ex	M300	16(M)	3km(R) (100Ω)	2.2km(R) (100Ω)	16(M)	1.06km(C) (106nF)	1.06km(C) (106nF)
						10	1.15km(C) (115nF)	1.15km(C) (115nF)
						1	1.28km(C) (128nF)	1.28km(C) (128nF)
ION	MF301Ex	M300	16(M)	(SAME AS MS302Ex)				
PHOTO	MR301Ex	M300	16(M)	(SAME AS MS302Ex)				
HPO	MR301TEx	M300	16(M)	(SAME AS MS302Ex)				

TABLE 9.4.4
MAXIMUM DETECTOR QUANTITY & CABLE LENGTH FOR
ZAU401 (REV 2) & 4-TERMINAL REPEATER

Notes

1. Circuit lengths quoted are total from the FIP to the EOL. The length quoted is the maximum for the corresponding quantity of detectors.

2. Cable resistance shown is for the circuit, ie. both cables in the pair. The value of 34Ω per km (return) is used for 1 mm².

3. The maximum resistances shown for the fire wire circuits must include both cable and fire wire (see Table 9.4.2 and associated note 2).

4. The letter in ( ) after the cable length, and the value in ( ) under the cable length specify which parameter out of capacitance (C), inductance (L) and resistance (R) provides the limitation, and what the maximum value is.

5. The (M) after a detector quantity indicates the maximum quantity allowed per circuit.

6. The maximum allowable detector quantity corresponds to a quiescent current of 1.8mA for C29BEx, 0.3mA for R24BEx.

9.4.3.4 4 TERMINAL ISOLATED REPEATER ALONE

When all the detectors on the IS circuit will generate a short circuit alarm condition it is possible to use the lower-cost, 4-terminal isolating repeater without a ZAU401. This is shown in Figure 9.4.3.4.

The following 4-terminal isolating repeaters can be used. (Note that dual channel repeaters have two separate repeaters, and can connect two circuits to the panel).

Pepperl & Fuchs	KHD0-ICS/Ex 1.51 (single channel)
Pepperl & Fuchs	KHD0-ICS/Ex 2.51 (dual channel)
Pepperl & Fuchs	KFD0-CS-Ex 1.51P (single channel)
Pepperl & Fuchs	KFD0-CS-Ex 2.51P (dual channel)
Measurement Technology Ltd	MTL5061 (dual channel)

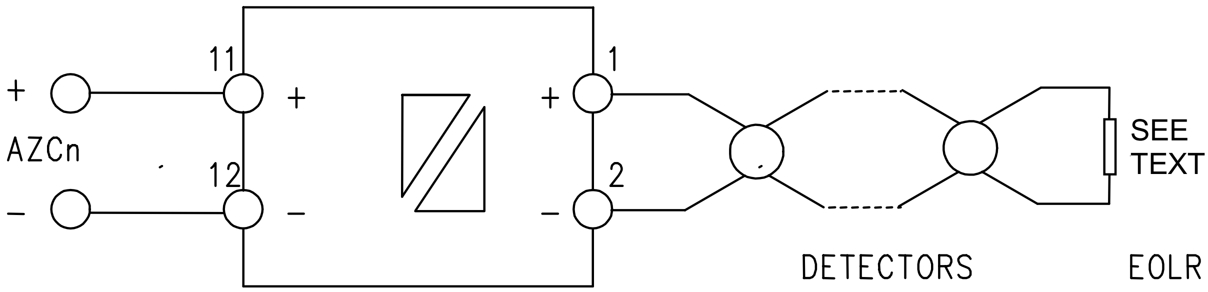


FIG 9.4.3.4
SHORT-CIRCUITING DETECTORS WITH 4 TERMINAL REPEATER

Programming & Limitations

The required EOL resistance is lower than the standard 2k7. Two methods for obtaining the correct EOL value are:

1. Place a 22K 5% resistor in parallel with the supplied 2k7 EOL. This achieves the required value.

2. Or just use a 2k2 5% resistor as the EOL.

The circuit should be programmed as Mode 1, B3 as Normal, and B1 should be programmed as Fault.

There can be no differentiation between MCP and detector operation on the same circuit.

Detector quantity and circuit length limits are shown in Table 9.4.5.

4 TERMINAL ISOLATED REPEATER ALONE (CONTINUED)

DETECTOR			GAS GROUP 11A OR 11B			GAS GROUP 11C		
			QTY	CCT LENGTH		QTY	CCT LENGTH	
TYPE	PART	BASE		1.0mm²	0.75mm²		1.00mm²	0.75mm²
HEAT	FW105	-	-	NOTE 2 & 3 (68Ω TOT)	NOTE 2 & 3 (68Ω TOT)	-	1.3km TOT (130nF)	1.3km TOT (130nF)
HEAT	T54B	-	40(M)	2km(R) (68Ω TOT)	1.5km(R) (68Ω)	40(M)	1.3km(C) (130nF)	1.3km(C) (130nF)
HEAT	T56B	Z500N	40(M)	2km(R) (100Ω)	1.5km(R) (68Ω)	40(M)	1.3km(C) (130nF)	1.3km(C) (130nF)

TABLE 9.4.5
MAXIMUM DETECTOR QUANTITY & CABLE LENGTH FOR 4 TERMINAL REPEATER ALONE

Notes

1. Circuit lengths quoted are from the isolator to the EOL. The length quoted is the maximum for the corresponding quantity of detectors.

2. Cable resistance shown is for the circuit, ie. both cables in the pair. The value of 34Ω per km (return) is used for 1 mm².

3. The maximum resistances shown for the fire wire circuits must include both cable and fire wire (see table 9.4.2 and associated note 2).

4. The letter in ( ) after the cable length, and the value in ( ) under the cable length specify which parameter out of capacitance (C), inductance (L) and resistance (R) provides the limitation, and what the limiting value is.

5. The (M) after a detector quantity indicates the maximum quantity allowed per circuit.

9.5 USE OF NORMALLY CLOSED CONTACTS

There may be some situations where it is necessary to monitor a set of normally-closed contacts which open on "alarm".

As standard these cannot be wired directly to the F3200 AZC terminals.

The Vigilant Contact Conversion Module (part number PA0443) may be used as a conversion interface between the contacts and an F3200 AZC.

This small, encapsulated module has three wires protruding from it.

These must be connected between the normally closed contact and the AZC as shown in Figure 9.5.1, using suitable screw terminal blocks.

The module applies a low impedance to the AZC when the alarm contacts open, and so the circuit must be programmed as B1 = Alarm.

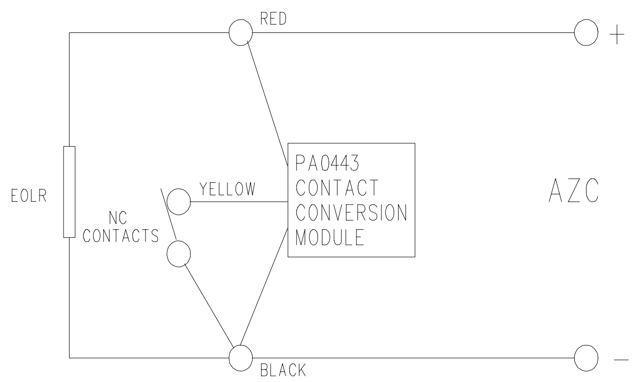


FIG 9.5.1
<u>NORMALLY CLOSED CONTACT WIRING TO F3200 AZC</u>

9.6 SPECIAL CONNECTIONS TO DETECTORS

9.6.1 CONNECTING THE S231I+ OR S231F+ (USING ZAU401 REV 2)

****W A R N I N G****
Even though the S231i+ is listed as hazardous area rated, this compatibility is for a direct connection – not through an intrinsically-safe isolator, and thus cannot be used in hazardous area applications. For IS applications refer to Section 9.4.

The S231i+ and S231f+ detectors are not directly compatible with the F3200. However, compatibility can be achieved by using the PA0838 ZAU401 (Rev 2) Zone Adaptor unit between the panel and the detectors.

The ZAU401 can be thought of as a single zone circuit module that can be added to a panel to make it compatible with a wider range of detectors. The ZAU401 supports up to 2mA of quiescent detector current, thus only 5 S231i+ or S231f+ detectors can be used on each ZAU401. It operates off the panel's 24V supply and consumes 20mA in the normal state.

Only one ZAU401 can be connected to each circuit on the panel. Also, do not use a Rev 1 or non-Vigilant manufactured ZAU401 as these have different characteristics.

A 220E 5W resistor (Vigilant part number RR0415) must be placed in series with the detector circuit at the ZAU401 to limit the maximum current to any detectors in alarm.

Wiring of the ZAU401 to the panel and S231i+ / S231f+ detectors is shown in Figure 9.6.1.1.
* EOL to suit Panel used.

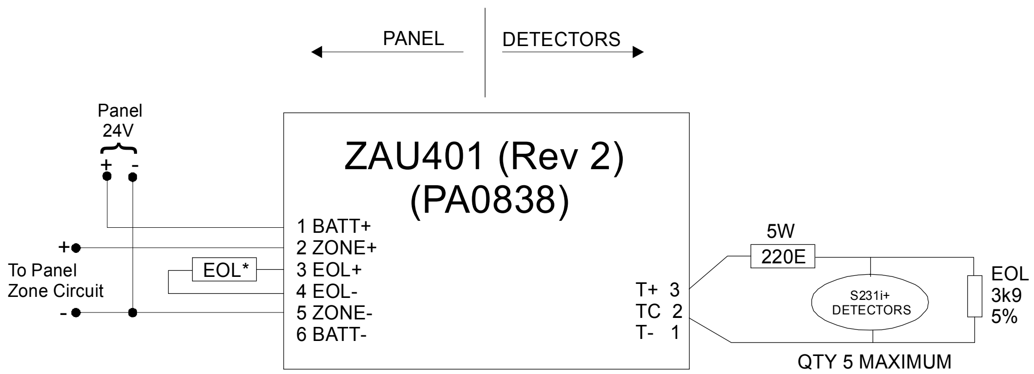


FIGURE 9.6.1.1
ZAU401 (REV 2) AND S231i+ or S231f+

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CHAPTER 10
ALIGNMENT, ADJUSTMENT & PLACING INTO OPERATION

10.1 ALIGNMENT & ADJUSTMENT

All the F3200 modules (pcbs) are tested and aligned in the factory before being supplied to the customer or fitted to a FIP. The only field adjustments that may be necessary are to set the LCD contrast and the battery charger voltage.

Controller/Display

VR2	LCD Contrast	Adjust for best readability of the LCD when viewed from the front of an installed FIP.

Factory adjustments include:

VR1	Set 1.2V Ref	Adjust for Charger High voltage of 28.1V to 28.15V.
VR3	Adjust 15.9V	Adjust until the 15.9V reference on TP15 is 15.90Vdc.
R94, R105	Fault Threshold	Snip as required to set Fault Threshold to nominal 19.03V.

MAF/PSU

PT1 Battery Charger Voltage

Should the battery charger voltage need adjusting, the method is as follows:

1. Run the system with the door closed for at least 30 minutes to allow components to "warm up" (the longer the better).
2. Calculate the required no-load battery charging voltage by taking 27.3V for 20°C and subtracting approximately 0.1V for every 3°C above 20°C, or adding approximately 0.1V for every 3°C below 20°C.
3. With the system not in Alarm, disconnect the batteries.
4. Measure the voltage at the battery terminals and adjust to the voltage calculated in Step 2 by turning PT1.
5. Re-connect the batteries.

PT2 +22V Supply is factory set and should not need field adjustment.

10.2 PLACING INTO OPERATION

10.2.1 GENERAL

This chapter describes the procedure to place an F3200 FIP into operation. It assumes that the mains and other field wiring has been connected, but that the battery has not. Note that all electronic modules were tested and adjusted in the factory and should need no further adjustment.

Before switching on power, inspect the cabinet and internals. Check as follows:

1. Check that all equipment is securely mounted, and that all cables are connected at the appropriate points. The factory checklist is included.

2. Check that the 8 way modules and (if required) the 16 Zone LED Displays are fitted and connected correctly. (See Sections 2.3.2, 5.2 and 8.1).

3. Check that (if required) the additional battery test resistors, 6A power supply and overcurrent protection device are fitted as per Chapter 5 (with PTCs shorted). Note that batteries are not yet connected.

4. Check that links Lk2-4 on the MAF are fitted (unless Anc3, clean contacts is being used), and module relay supervision links are fitted in the S position for relays which require supervision.

5. Check that the field wiring of AZC and relays is as per the "As Built" wiring diagrams and corresponds to the configuration of modules and links.

The "MAINS ISOLATE SWITCH" is located at the top right hand side of the cabinet rear, to the left of the mains transformer, behind the inner display door. This controls the mains power to the FIP, charger and power supply, and should be left on once the FIP is operational.

NOTE: The Battery is not disconnected by the "MAINS ISOLATE SWITCH".

10.2.2 POWER UP

To place the F3200 FIP into operation, perform the following steps:

STEP 1 Ensure that the Mains Isolate Switch is OFF.

STEP 2 Ensure that 240 VAC is connected to the panel from the mains distribution switchboard.

STEP 3 Ensure that Lk7 on the controller is set to the DATABASE WRITE PROTECT position before powering on the panel. If an E2INIT is required before programming, fit minijump SW1. (Refer to Section 6.3.1).

Turn the Mains Isolate Switch ON.

STEP 4 Check that the buzzer sounds and all LEDs on the Operator Display panel flash for 2 seconds (except Mains On).

STEP 5 Check that the green "MAINS ON" LED indicator is on.
The Controller performs tests on its memory, electronics, and the LCD.

STEP 6 Check that the LCD has good visibility. The LCD displays the FIP PCB configuration before showing the Base Display.

STEP 7 If doing an E2INIT, set Lk7 to the DATABASE WRITE position, then remove minijump SW1 and press "ACK" to complete the sequence.

STEP 8 Install and connect the batteries.
Take care not to short the battery leads or connect in reverse polarity when connecting.

STEP 9 If required, complete programming as per Chapters 6 and 7 and then fit Lk7 on the Controller to the DATABASE PROTECT position.

STEP 10 Perform a Battery Test.
- If this fails check the battery connections, leave for 24 hours and then retest.

STEP 11 Perform a Bells and System Test (de-isolate all zones first).

A full commissioning test should be carried out as per AS1670.1.

10.2.3 COMMISSIONING CHECKLIST

The following checklist should have been completed and supplied by the manufacturer. It should be placed with other System Configuration Information. Commissioning staff should check the installed FIP against it. (Note that all pcbs are electronically tested and adjusted before being fitted to the FIP).

1. CABINET & GENERAL

A) Cabinet colour - Standard Cream Wrinkle (BFF 998 CW) ☐
- Other: ______________________________________

B) Cabinet undamaged (Paint OK) ☐

C) Door aligned correctly ☐

D) Window undamaged and fitted correctly ☐

E) MCP fitted and undamaged ☐

F) Cabinet Door locks firmly, operates microswitch ☐

G) Lock - 003 Type & two keys supplied ☐

H) Door seals fitted to top and sides ☐

I) Display Keypad and 4U door fitted & aligned correctly ☐

J) Cardframe fitted, card fits frame correctly ..(FP0551 only) ☐

K) Standoffs fitted to cabinet rear (none missing) ☐

L) Operator Manual and battery leads included ☐

M) VIGILANT label completed, fitted ☐

2. PCBS & WIRING

A) MAF/PSU Fitted securely on standoffs ☐

B) Controller/Display fitted securely ☐

C) 8ZM fitted securely, earth screw fitted ☐

D) FRC Looms fitted correctly ☐

E) MCP & door switch wires fitted to J6 of MAF/PSU, secured ☐

F) Earth wire fitted to display door ☐

G) All 3 modules earth to cabinet metal ☐

COMMISSIONING CHECKLIST (CONTINUED)

3. POWER SUPPLY

A)	Mains Wired correctly, MOV, cap fitted	☐
B)	"Mains Isolate Switch" and "NAE" label fitted	☐
C)	Mains Earth wired to stud, good contact	☐
D)	Mains Switch neon off/on for switch off/on	☐
E)	MAF/PSU Mains On LED on, Fuse Blown LED off	☐
F)	VRECT at DC IN tab 40-42Vdc	☐
G)	Charger Voltage 27.25-27.4V warm, 27.5-27.75V cold	☐

4. OPERATION

A)	LEDs flash, aligned with windows, "MAINS ON" LED on	☐
B)	Buzzer pulses with microswitch operated, Lk7 in Write	☐
C)	Controller LK7 in "Protect" position	☐
D)	LCD contrast correct for front view	☐
E)	De-isolate zones, system test pass on all (8) circuits	☐
F)	FIP MCP Programmed to Zone 1; Other: ___________ OK	☐
G)	"ALM" LED flashes & buzzer pulses for MCP operation	☐
H)	Acknowledge silences buzzer, Zone Resets	☐
I)	Controller Lk2 fitted (not in Service mode)	☐

SERIAL NUMBER [   ] TEST PASSED ☐

DATE : …….............. SIGNATURE : ……………….....................

CHAPTER 11
NETWORK PROGRAMMING

11.1 INTRODUCTION

11.1.1 PANEL-LINK NETWORK

Networking enables up to 64 F3200 FIPs to be interconnected via single or duplicated 2 wire connections, and information to be exchanged between FIPs.

Alarms occurring on any FIP on the network may be displayed and acknowledged on the LCD FFCIF of any other FIP. Similarly output logic variables are available on the network, enabling data from any FIP to be used as input parameters in logic equations on any other FIP in the system.

Commands can be entered at one networked F3200 to reset, isolate, de-isolate, test and recall/search for status for zones on other networked FIPs.

Networked F3200s can also send and receive system commands from the network such as isolation/de-isolation of bells, system test and bells test.

Intended usages for the Panel-Link are:

(i) Connection of two or more fire panels together to share data and expand fire panel capability, either by co-locating two systems, or having them geographically separate.

(ii) Connection of printers, BMS systems and PCs using Vigilant PTM or PMB to receive data from panels on the network.

(iii) Connection of a Fire Panel to an Evacuation System for network connection initiation of evacuation sequences.

To enable FIPs to be identified on the network, each FIP is configured with a System Identification Number (or SID) in the range 1 to 254. This number must be unique for each device on the network.

11.1.2 NETWORK APPLICATION OVERVIEW

The main benefits of networking F3200s are the sharing of zone, event and alarm information, the ability to remotely control other F3200s, and overall, to expand the size of an F3200 system beyond 64 zones.

F3200s are programmable in a number of ways to customise the type of information to be shared, how it is to be shared, and the extent to which remote control is permitted.

The Network Configuration menu is Option 7 in the Program Data menu (as is shown in Figure 6.1.2C). It allows programming of the parameters which determine the way the F3200 networking operates.

Network Application Overview (Continued)

The menu includes the following options:

1. Config, 2. SIDs, 3. MAF, 4. Cmds, 5. FFCIF, 6. Events, 7. Net-variables, 8. Status;

1. Config defines the network type, the critical timing parameters, whether this panel sends link integrity messages, and the group membership for this panel.

2. The Network SID settings define which other panels on the network the F3200 is to send or receive information or commands.

3. The Network MAF settings control the usage of common panel status for brigade interfaces and status totals for display to system operators.

4. The Network Command settings are associated with the sending and receiving of commands to/from other panels.

5. The FFCIF application settings control the sending of FFCIF alarm events to other panels on the network. Receiving FFCIF alarm events is programmed in the Network SID menu.

6. The Network Event settings are associated with the transmitting of event information onto the network.

7. The Network Variable settings control the transmitting of network variable data onto the network.

8. Network Status configuration controls the refreshing of zone status onto the network.

Figure 11.1.1 shows the Network Configuration menu and its hierarchial structure.

When a user needs to change one particular parameter in an existing FIP, Figure 11.1.1 acts as a "road map" that shows the path required to access that parameter.

Detail on each menu is shown in the following sections.

11.2 PROGRAMMING METHODS

11.2.1 DATA FILTERS - THE SID LIST & GROUPS LIST

The Panel-Link network utilises a number of concepts to allow a network designer to determine not only what information gets onto the network, but where that information can be used.

The first concept is the SID list: an F3200 can only use Network Logic, MAF data and MAF totals from units whose SID is in the list and can only send and receive commands, recall zones and monitor the scan status (link integrity) for SIDs in the SID list.

The second concept is the Group Membership list. This concept affects Event Annunciation (FFCIF alarms) and Event Logging, where the events are broadcast onto the network. Each unit on the network is programmed for membership in any number of the 8 groups possible. Events contain the group membership list of the unit that generated the event.

11.2.2 NETWORK MAF STATUS

An F3200 panel transmits (if programmed to) its MAF status and totals (alarm, fault, isolate and "other" as shown on the base display) onto the network for use by other panels. Other panels will use that MAF status to drive their own MAF outputs (alarm, fault, isolate, standby and bells outputs) only if they are programmed to use the MAF status that comes from this panel (refer to SID list programming section 11.4.3 "use MAF relay option"). This allows the brigade connection/signalling to be done at only one panel on the network if desired (although it may be done by more than one panel if necessary).

The totals received from other panels on the network may be added to the local totals of this panel and shown on the base display. If any of the totals (alarm, fault, isolate) shown on the base display of this panel are non zero then the corresponding front panel LED will be on.

The MAF status transmitted onto the network includes the following information. All of the states are normally false and become true for an off normal condition.

1. MAF alarm state.
   True if any non isolated MAF mapped zone is in alarm.
   When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF alarm relay. When true, it will also cause the receiving panel to energise the bells relay (if the bells at the receiving panel are not isolated or silenced). See NOTE 1 below.

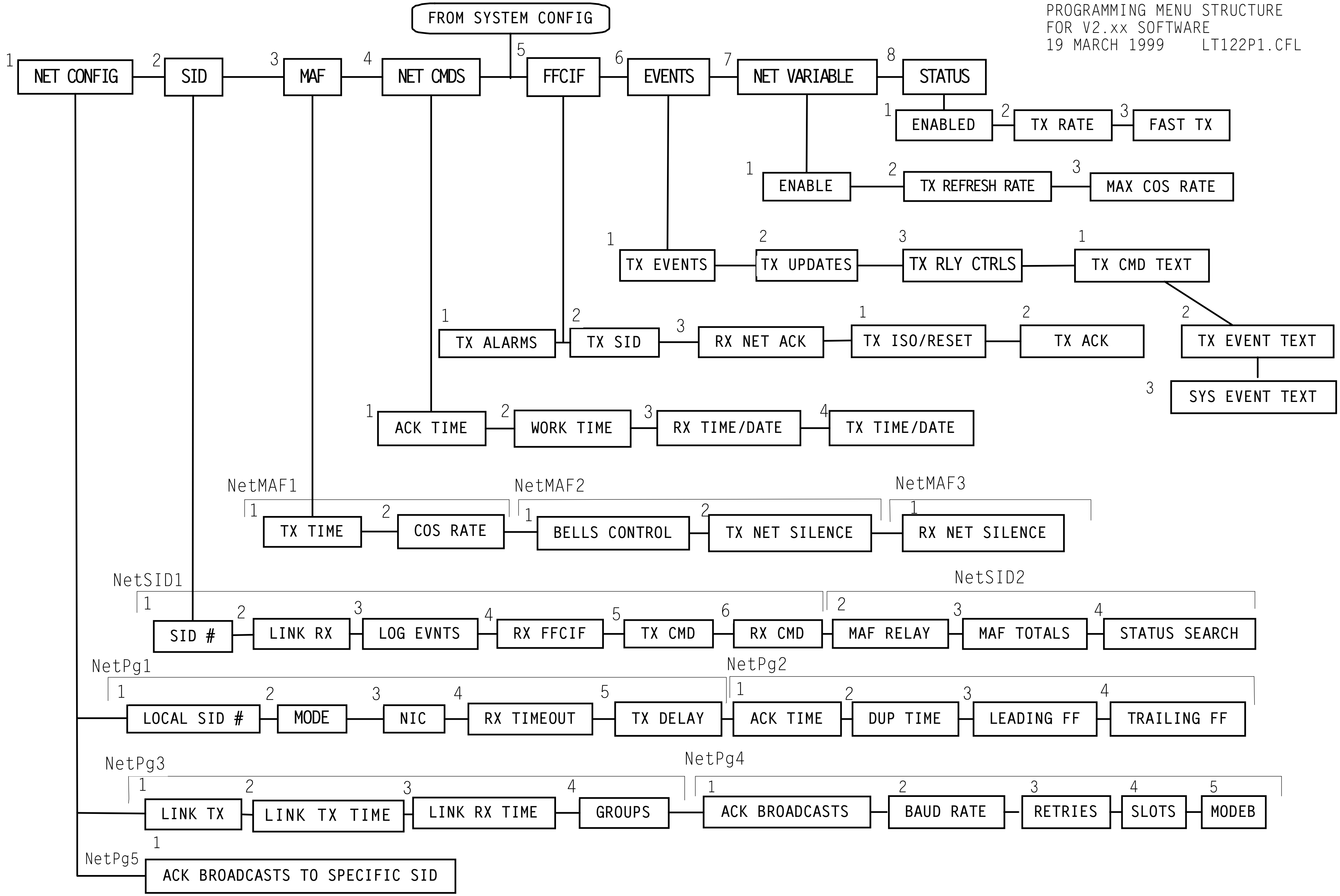
2. MAF fault state.
   True if any non isolated MAF mapped zone or relay is in fault.
   When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF fault relay and, (if the receiving panel is an F3200 panel), to turn its buzzer on when a new fault occurs.

3. MAF isolate state.
   True if any MAF mapped zone or relay is isolated. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF isolate relay.

4. MAF standby state.
   True if there is any "standby fault" present (e.g. all zones isolated). When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to generate a system fault.

F3200 NETWORK PROGRAMMING MENU STRUCTURE

FIGURE 11.1.1 F3200 NETWORK PROGRAMMING MENU STRUCTURE FOR V2.xx SOFTWARE
19 MARCH 1999 LT122P1.CFL



NETWORK MAF STATUS (CONTINUED)

5. System fault state.
   True if any system fault is present. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF fault relay and, (if the receiving panel is an F3200 panel), to turn its buzzer on when a new fault occurs.

6. Brigade test state.
   True if a brigade test has been initiated (by holding down the brigade test key for 2 seconds) AND the local MAF alarm relay, (if any), is programmed to operate for a local brigade test. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF alarm relay.

7. Silence alarms state.
   True if the bells are isolated and the panel is programmed to send bells isolate as network silence. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel AND is programmed to allow the receiving of network bells silence, to keep the bells off. For New Zealand operation this also includes the state of the silence alarms keyswitch.

NOTE 1.
In F3200 each zone may be individually mapped to MAF, BELLS, ANC1, and ANC2. However, the mapping of a zone to BELLS, ANC1 and ANC2 has NO effect on the MAF data transmitted on the network - it effects only the local relays on that panel. Mapping a zone to bells will cause the bells to turn on at the local panel of that zone but not at a remote panel. Mapping a zone to the MAF may cause the bells to turn on at a remote panel when the zone goes into alarm. Mapping a zone to ANC1/ANC2 will cause the respective ancillary relay to turn on at the local panel of that zone but not at a remote panel.

At any F3200 panel, the MAF status and totals it is currently receiving from any other panel may be viewed by recalling net panel status (from the base display press [RECALL] [RECALL] [3] - refer also to the F3200 operator's manual).

F3200 output logic tokens affected by network MAF status

The output logic tokens in an F3200 panel that are affected by the MAF status received from other panels are listed below. These tokens are not affected by MAF status from another panel unless that panel is programmed into the SID list of this panel and has "use MAF relay data" option enabled (refer section 11.4.3).

NML This token is described in Section 7.4.3.2 and is affected by any network states which cause the Brigade Alarm or Brigade Fault relays to operate at this panel. This includes MAF alarm, MAF fault or system fault received from a SID that this panel is programmed to use the MAF status of.

BEL False if the bells are locally isolated or if
[common network bells silence is true AND this panel has "receive network bells SILENCE" enabled], otherwise true if

1. Local 5 second bells test occurring.
2. 2 second ring for alarm on local zone in auto reset mode.
3. Alarm on any local non isolated zone mapped to bells
4. Common network maf alarm AND "receive network bells CONTROL" enabled.
5. Any entry in the FFCIF alarm queue and bells on for FFCIF alarm has been enabled with programming.

Note: For New Zealand operation, BEL will become true if the trial evac keyswitch is operated regardless of bells isolation or silence alarms.

NETWORK MAF STATUS (CONTINUED)

BLI - true if the bells are isolated at this panel or if the bells are silenced from the network. A bells silence state received from a network panel will be applied at this panel if 1. "use maf status" is enabled at this panel for the remote panel and 2. this panel has "allow receive net bells silence" enabled. (Refer Section 11.5.3).

No other output logic tokens are affected by MAF status from other panels.

11.2.3 PROGRAMMING METHODOLOGY

1) SID designation

A unique SID number (1-254) must be given to every fire panel and network accessory (PTM,NLDU,PMB etc). Numbering can be achieved in different ways, for example a multi-building senario.

Each main FIP in each building could have a SID number starting with 10, 20, 30 etc. Every FIP in the same building could then be consecutively numbered after the main FIP, or perhaps a number which may signify the level in the building of which the FIP is located. (ie SID number 22 could mean the second slave FIP in building 2. The master FIP would be 20)

2) Group Membership

Groups could be allocated on the basis of buildings, for example all units in one building are members of the same group. A printer in a building allocated as Group One will only print Group One events.

Units can, if necessary, belong to more than one group, eg. there may be three independent groups for three buildings on site, but a unit in a site monitoring office can be a member of all three groups.

To continue the example, the Group One printer prints only Group One events, but the site monitoring printer prints all events from Groups One, Two and Three.

Units that receive the events are permitted to process them only if there is at least one group that the sender and receiver have in common.

The groups concept also applies to Alarm annunciation on the F3200 LCD. An F3200 can be programmed whether to receive alarms from other FIPs on the network. If this is so, the F3200 will only display alarms from sending FIPs that have a Group common to the receiving F3200.

For example, a building has 3 FIPs which are members of Group 7. Two are sub-FIPs, which only display alarms from any of the 3 FIPs in Group 7. The main FIP can display its own alarms, plus those of the other two. However, the main FIP could be programmed to also be a member of Group 4, thus alarms from a panel in Group 4, eg. another building, could be displayed on the main FIP's LCD.

3) SID LIST programming

Section 11.4 describes the programming of the SID list. Each SID on the network that this panel needs to know about must be programmed into the SID list of this panel. Determine what functions are to be performed by each SID and what information is to be shared by which SIDs. The SID list provides a number of options which can be enabled or disabled per SID. A master SID will probably have nearly all of these options set to YES, while a slave SID will probably have less options enabled.

PROGRAMMING METHODOLOGY (CONTINUED)

4) Determine whether acknowledge of broadcasts is to be enabled.

Some of the messages transmitted on the network are "broadcast" i.e. not directed to one particular SID but to all SIDs. A single device on the network may be programmed to acknowledge these broadcast messages to provide some confirmation that the broadcast message was received by other devices. All non-broadcast messages are acknowledged by the SID that the message is directed to. Enabling acknowledge of broadcasts does increase the loading on the network.

It is recommended that if an F3200 panel is to acknowledge broadcasts then it should be the most lightly loaded FIP on the network, taking into consideration the number of circuits, amount of output logic and the number of display boards. If a PTM protocol translation module), NLDU (network LED display unit), NDU (network display unit), or PMB (Panel-Link MODBUS bridge) is present then it is preferable to use one of them to do the acknowledging of broadcasts, rather than an F3200 panel.

5) Determine NET MAF Configuration

This allows a panel to send out its MAF status/totals to other panels, which may combine it with their own, and the status of other panels, to control a single brigade interface. MAF status is not controlled by network groups.

6) Network Variable Setup

Determine what information needs to be sent to other panels using network variables. If individual brigade signals are required per panel on the network then network variables can be used to transfer status.

11.3 NETWORK CONFIGURATION MENU

These configuration settings determine how the F3200 communicates with other panels on the network. In general, most settings should be left at default values. However, there may be some settings that need to be customised for some installations.

The < and > keys allow movement between five menus NetPg1 through NetPg5.

11.3.1 NETPG1 OPTIONS

1. SID: (1-254)
This is the network address (SID number) of this F3200, allowing for the unique identification of zones, events, and for remote controls to be sent to this F3200. The SID for any device on the network must be a unique number between 1 and 254. It is recommended that all Fire Alarm Panels are numbered sequentially from 1 upwards, so as to make numbering consistent. This is because the SID is combined with the local zone number to form a network zone number.

2. Mode : (Multidrop/Point to point)
In general, this must be left as multidrop. In some special cases, point to point mode be may be selected, eg. a single F3200 connected to one other device. Point to Point mode requires a full duplex data path between this panel and one other device.

3. NIC : (Yes/No)
Is set to "Yes" only if another device on the network is configured to acknowledge broadcasts. Acknowledgment of broadcasts provides extra confirmation that a message sent has been received. Panel throughput is reduced as the F3200 must wait for an acknowledgement before it can transmit further messages. It is recommended that acknowledgement of broadcasts is enabled on the network. This means that every panel has the NIC option set to yes except for the panel doing the acknowledging (See NetPg4 option 1, section 11.3.4).

4. RX Timeout : (1-250)
Number of 5 millisecond time periods of delay before a channel is assumed to be free.

5. TX Delay : (1-250)
Scaling factor for randomised delay before transmission. Measured in 5 millisecond time periods.

11.3.2 NETPG2 OPTIONS

1. Ack time : (1-9999)
Time to wait for Acknowledge before retransmission. Measured in 1 millisecond time periods.

2. DUP time : (1-9000)
Time during which duplicate messages are ignored. Measured in 1 millisecond periods.

3. Leading FF : (0-250)
Number of $FF preamble characters transmitted after asserting RTS, before sending a message.

4. Trailing FF : (0-250)
Number of $FF characters inserted after a message to ensure that the message is transmitted by the UART before RTS is deassserted.

11.3.3 NETPG3 OPTIONS

1. Link TX : (Yes/No)
This controls whether the F3200 sends Link Integrity messages. This should be enabled for every panel.

2. Link TX time : (1-250)
Time period (in seconds) between successive Link Integrity Transmissions from this SID.

3. Link RX time : (1-250)
Maximum time period (in seconds) permitted between the reception of successive Link Integrity messages from any SID, before generating Net Scan Fail events.

4. Groups : ([12345678])
This setting controls the usage of the following information types:

- FFCIF Alarm Information
- Network Event Information

Groups can be used to limit where the information is printed out or displayed, for example an F3200 can belong to any combination of 8 groups, or none. The group data is sent out with alarm and event information, and panels receiving this information are able to process the data only if the sender is a member of at least one group that the receiving F3200 is a member of.

If the group number is shown then this F3200 is a member of that group. Membership can be changed by pressing keys 1-8.

11.3.4 NETPG4 OPTIONS

1. ACK broadcasts : (Yes/No)
This selects whether this panel does the acknowledging of broadcasts or not. Only one device on the entire network should be programmed to do acknowledging of broadcasts. Refer also to section 11.3.1 item 3 (NIC). If acknowledge of broadcasts is enabled then all devices on the network should be programmed to expect acknowledge of broadcasts, which, in the case of F3200/NDU is the NIC option described in section 11.3.1.

It is recommended that if an F3200 panel is to acknowledge broadcasts then it should be the most lightly loaded FIP on the network, taking into consideration the number of circuits, amount of output logic and the number of display boards.

2. Baud rate.
This sets the baud rate for the network. The choices are 300, 600, 1200, 2400, 4800, 9600 and 19200 baud.

3. Retries (0-250)
This parameter sets the number of times a message will be retransmitted if an acknowledge is not received for it. After all attempts to transmit the message have been made, the message is discarded and a "Netmsg Discard" event is generated. If the device the message is being sent to has scan failed, then only one transmission of the message is done. For V2.08 or earlier software the maximum number of retries allowed was 15.

4. Slots (8, 16, 32)
There are only three allowable values for this parameter - 8, 16 or 32. When a panel wants to transmit onto the network it selects a random slot position from slot 1 up to slot 8/16/32 depending on the maximum slot number set by this parameter. The greater the number of devices connected to the network, the greater the number of slots needed.

NETPG4 OPTIONS (CONTINUED)

For 1-12 devices, select 8 slots
For 13-24 devices, select 16 slots
For 25 or more devices, select 32 slots

5. Mode B

This is a numeric value 0-7 which is used to control some of the network operations as follows. This value should be changed only under instruction from a systems engineer. For normal operation a value of 3 should be used.

Early Collision Detection
Values 0-3 enable early collision detection
Values 4-7 disable early collision detection

Message Combination

Values 0, 4	Combine no messages
Values 1, 5	Combine "ack" messages into a single network access with up to maximum of 10 ack messages combined.
Values 2, 6	Combine application messages when possible. This includes combining MAF status, MAF totals, Netvars and Link Integrity A and B.
Values 3, 7	Combine both ACK messages and application messages.

11.3.5 NETPG5 OPTIONS

1. Ack broadcasts to specific SID

If this parameter is set to a non-zero SID number XYZ then this panel will send an acknowledge to a broadcast sent by SID XYZ. If this parameter is set to zero then this feature is disabled.

Only one device on a network (say SID XYZ), should be programmed to acknowledge all broadcasts but it can have its own broadcasts acknowledged if another panel on the network has "ACK broadcasts to specific SID" set to XYZ.

11.4 SID CONFIGURATION

Up to 64 panels may be configured on the Panel-Link network, and each panel must have a unique SID (System Identification) number.

In general, the SID number of every device on the network should be entered into the SID list of this panel and should have "Link RX" enabled (section 11.4.2). This allows this F3200 to monitor all other devices on the network. Any device on the network which is not in the SID list of this panel will be completely ignored i.e. all messages received from it will be discarded and no messages will be sent to it.
Hence, if a panel is not in the SID list, it's information cannot be used. It may be that some panels do not have every SID programmed into their SID list. For example, a system may have multiple slave devices which all appear in the SID list of a master panel but do not appear in the SID list of each others panels.

On entry to the programming of the SID list the total number of SIDs currently in the SID list will be displayed.

There are two ways of moving through the SID list. By pressing the 'NEXT' or 'PREV' keys you can step through the list of programmed SIDs, or by using the Up/Down arrow keys to move sequentially through the SID numbers 1-254. The number of a specific SID to be programmed may also be entered by selecting option 1 from either menu 1 or menu 2.

Each SID has two configuration menus which can be scrolled through using the < or > keys.

The DELETE key can be used to delete a SID from the list. The EDIT key can be used to display a menu which has options for setting or clearing all the settings for the current SID and for turning on or off the display of a full description of each item as it is being changed. Turning the full description display off allows faster programming.

11.4.1 SID MENU ONE

1. SID : (1-254)
Change the network SID number that is being viewed/modified.

2. Link RX : (Yes/No)
When enabled, the link integrity transmissions from the selected SID are monitored by this panel, and if no transmissions are received for a programmed length of time (section 11.3.3 Link RX time) a system fault is generated. Link RX should be enabled in this panel for all SIDs that this panel needs to receive information from or wishes to monitor the presence of.

3. Log events : (Yes/No)
If yes, events received from the selected SID are logged to the local history queue and also to the local printer but will only be printed on the printer if event printing is enabled. Only certain types of events will be logged to the history and printer according to the programming of event type selections described in section 6.4.4.

4. RX FFCIF : (Yes/No)
If enabled, FFCIF Alarms received from the selected SID will be placed into the local FFCIF alarm list providing that the two panels have at least one common group. The remote SID must also be programmed to send FFCIF alarms. FFCIF alarms received from remote network panels do not get sent to local RZDUs - local RZDUs receive only alarms for zones local to this panel.

SID MENU ONE (CONTINUED)

If the F3200 is programmed to receive FFCIF events from a particular SID, then it is also able to send Ack, Reset and Isolate commands for the event back to the originating SID (providing that reset and isolate of remote alarms is also enabled - refer section 11.7 FFCIF config).

5. TX CMD : (Yes/No)
If enabled this allows this panel to send commands to the selected SID. This includes zone reset/isolate/test commands as well as system commands such as system test/battery test/bell test. If disabled, this panel is still allowed to recall the status of zones from the selected SID but not control them.

6. RX CMD : (Yes/No)
If enabled this allows this panel to receive and execute commands from the selected SID. If disabled, commands received from the selected SID will be ignored but a recall of zone status will still be permitted. NOTE :- this option does not affect FFCIF commands received from another panel which will still be accepted, (if FFCIF TX alarms is enabled), even if the RX CMD option here is disabled. (refer also section 11.7 FFCIF configuration).

11.4.2 SID MENU TWO

1. SID : (1-254)
Change the SID number that is being viewed/modified.

2. Use MAF relay data : (Yes/No)
If enabled, MAF data received from the selected SID will be used by this panel i.e. combined with local MAF status and possibly MAF status of other SIDs and used to drive the brigade signalling etc. Refer to section 11.2.2 for a description of network MAF status.

3. Use MAF totals : (Yes/No)
If enabled, the totals received from the selected SID are included in the totals shown on this panel. If enabled, it also means that a non zero total received from the selected SID, (alarm, fault or isolate), will cause the corresponding LED on the front panel to turn on. Also, if enabled, the buzzer will turn on when a new MAF or system fault (as received in the MAF status) is received from the selected SID. The buzzer will turn on if "use MAF totals" is enabled even if "use MAF relay data" is disabled for the selected SID.

4. Status search : (Yes/No)
If enabled, a recall of off normal zones will include the selected SID in the search. If disabled, an off normal recall will not search the SID but specific zones from that SID may still be recalled using their network zone number.

11.5 NETWORK MAF CONFIGURATION

As described in section 11.2.2, a panel will transmits its MAF status and totals onto the network for use by other panels, if programmed to. If both the “Refresh Tx Time” and the “Max COS rate” listed below are zero then this panel will not transmit MAF status.

The MAF status and totals are transmitted at regular intervals, defined by the 'Refresh TX time'. If a change of MAF Status occurs the new MAF status will be transmitted immediately as long as the minimum time specified by 'Max Cos TX Rate' has elapsed since the last transmission of MAF status.

If individual brigade signals are required per panel on the network, Network Variables can be used to transfer the status and to control the relays.

The < and > keys allow movement between two menus named NetMAF1 and NetMAF2.

11.5.1 OPTIONS UNDER NETMAF1

F3200 V2.07 or later software allows the following options to be set to zero. If both are zero, the panel will never send MAF status onto the network.

1. Refresh TX time : (0-250)
A value in seconds which specifies the rate at which a refresh of the network MAF status/totals of this SID should be transmitted onto the network.

2. Max COS rate : (0-250)
This is a value in seconds which specifies the maximum rate at which MAF status can be transmitted into the network. If set to zero then MAF status is sent according to the Refresh Tx time and is not sent for every change of state.

11.5.2 OPTIONS UNDER NETMAF2

1. Receive net bells control : (Yes/No)
If enabled, allows the local bell relay to operate when a MAF alarm occurs on another panel. The SID number of the remote panel must also be entered into the SID list of this panel and have "Use MAF relay data" enabled if a MAF alarm at the remote panel is to operate the bells at this panel.

2. Send bell isolate as net silence : (Yes/No)
If enabled will cause this panel to send a network silence state onto the network when the local bells are isolated. This can then silence the bells at any other network panel that has "Allow receive net bells silence" enabled (see Section 11.5.3) AND is programmed to use the MAF status of this panel.

11.5.3 OPTIONS UNDER NETMAF3

1. Allow receive net bells silence. (Yes/No)
If enabled, allows this panel to use a network silence state received from a remote panel to keep the local bells off (providing the remote panel also appears in the SID list of this panel and has "use MAF relay data" enabled). Hence, isolating the bells at a remote panel can cause it to transmit a network silence state which is received by the local panel and will cause the bells to remain off at the local panel.

If disabled, any network silence state received from other panels is ignored.

11.6 NET COMMANDS

The Network Command configuration provides some parameters involved in the sending and receiving of commands to/from other devices on the network.

When F3200 issues a command, it may take some time for the message to be sent on the network, processed by the receiver, and the response sent back. The length of time the F3200 will wait for the response is defined as the 'ACK time' (Net Command Acknowledge Delay Time). A device that is processing a command that cannot be replied to immediately will send a "response pending" message at a rate defined by the 'Work time'. This message indicates to the sender of the command that the command is still being processed, and the required response cannot yet be given. An F3200 receiving the response pending message will extend the time that it waits for the required response.

1. ACK time : (1-250 seconds)
Net Command ACK Delay Time. Length of time the F3200 will wait for a response before displaying an error message.

2. Work time : (1-250 seconds)
Command Work TX Time. If a message cannot be sent immediately a "response pending" message is sent at a rate determined by this. Work time should be less then ACK time.

3. RX Time/Date : (Yes/No)
If enabled, this allows this panel to process a "new time/date" command received from the network and to set its clock time/date from the time/date in the received message. If disabled, this panel will ignore new time/date command messages received. See also "TX time/date" below.

For V2.07 or earlier software, the time and date received from another SID will be processed only if the SID appears in the SID list of this panel and has the “Rx commands” option enabled . V2.08 or later software do not require this.

4. TX Time/Date : (Yes/No)
If enabled, this panel will transmit (broadcast) a "new time/date" command onto the network at the following times.

1. When the local time/date is set manually from the keypad.
2. At 12 pm and 12 am every day.
3. Whenever the local time is changed due to daylight saving.
4. Whenever this panel receives a message indicating that another panel has just powered up.

In all cases the time/date is broadcast onto the network and will therefore be received by all devices on the network, but whether each device uses the command to set its local time/date depends on the device type (i.e. F3200, F4000, PTM etc) and its programming.

It is preferable, but not essential, that only one panel on the network (or network segment) is configured to transmit time/date. F3200 panels and NDUs with a MAF board maintain their local time very accurately (using 50 hz mains frequency), but an NDU without a MAF board has a less accurate local time clock and, if possible, should not be configured to transmit time/date onto the network.

11.7 NET FFCIF CONFIGURATION

This determines whether FFCIF alarm events are sent onto the network, and can provide an extra level of confirmation that alarm events have been received by one or more devices on the network. FFCIF alarms sent onto the network will be entered into the FFCIF alarm list of another panel only if the panel sending the alarm has at least one group in common with the panel receiving the alarm (refer section 11.3.3 groups). For F3200 and NDUs the SID list programming also determines whether FFCIF alarms received from other panels are entered into the FFCIF alarm list of this panel.

Alarms which are entered into the local FFCIF alarms list may be either local alarms or alarms which have come from other panels. In both cases, these alarms can be acknowledged from either the local panel or from a remote panel but it is possible to disable the acceptance of acknowledgments which come from remote network devices and to force all FFCIF alarms to be acknowledged locally - see item 3 "Remote ACK" below.

If FFCIF auto ack is enabled, (refer section 6.4.4), any alarms which are entered into the local FFCIF alarm list (i.e. both local alarms and remote alarms) are automatically flagged as "acknowledged", but this does not result in any acknowledge indication or command being sent onto the network.

<u>Options under FFCIF1</u>

1. TX alarms : (Yes/No)
If enabled, any FFCIF alarm that is entered into the FFCIF list of this panel will also be sent onto the network. Setting this to enabled also determines whether this panel accepts FFCIF commands from other panels to acknowledge, reset or isolate FFCIF alarms. **NOTE :-** an FFCIF command is not the same as a zone command. If FFCIF alarms are not being transmitted onto the network then FFCIF commands will not be accepted from other panels but zone/system commands etc. may still be accepted depending on the RX CMD option programmed in the SID list of this panel. Refer also section 11.4.2 SID list RX CMD option.

Note, an FFCIF command is either an acknowledge, reset, or isolate command which is initiated when the associated ACK, RESET or ISOLATE key is pressed from within FFCIF mode i.e. when the FFCIF alarm list is being displayed. Zone commands or system commands are initiated using the ZONE or SYSTEM keys.

2. Dedicated TX SID : (0-254)
If this parameter is zero, then any FFCIF alarms that are transmitted onto the network, (i.e. TX alarms enabled), will be broadcast, (i.e. received by all devices on the network), and each device can individually decide, (according to group programming and SID list programming), whether to enter that FFCIF alarm into its own FFCIF alarm list.

If this parameter is non zero then FFCIF alarms will not be broadcast onto the network but will be sent specifically to the SID specified by this number. No devices on the network other than the specified SID will receive FFCIF alarms sent by this panel.

If FFCIF alarms are broadcast onto the network, then confirmation of delivery can be provided by setting "acknowledge of broadcasts" enabled (refer section 11.3.1 NIC option). If FFCIF alarms are directed to one specific SID then that SID will acknowledge receipt of the alarm and acknowledge of broadcasts is not involved. If acknowledge of broadcasts is not enabled, (or this device is doing the acknowledge of broadcasts), and only one other device is required to receive FFCIF alarms from this SID, then it is preferable to set the "TX dedicated SID" parameter here to a specific SID number.

FFCIF CONFIGURATION (CONTINUED)

3. Remote ACK : Yes/No
If enabled, this allows alarms in the local FFCIF alarm list to be acknowledged by commands from remote network devices. If disabled, then any alarm which is entered into the local FFCIF alarm list must be acknowledged locally - this applies to both alarms generated by local zones and alarms which come from remote devices. If acceptance of remote acknowledgements is disabled (i.e. all alarms must be acknowledged locally), FFCIF commands, (or zone commands), to reset or isolate will still be accepted and a reset or isolate performed but the alarm will not be taken out of the local FFCIF alarm list until it has been acknowledged locally. The remote ack acceptance parameter here affects only commands coming from network devices and does not affect commands coming from local RZDU devices. Acceptance of acknowledgement from local RZDU devices can be enabled or disabled with a separate parameter described in section 6.4.4 (FFCIF mode).

Options under FFCIF2

1.TX iso/reset cmds
If enabled this allows this panel to send FFCIF reset or FFCIF isolate commands to remote panels. The local FFCIF alarm list may contain alarms which were generated by alarms on local zones or alarms which originated from remote network devices. When an FFCIF reset or isolate command is initiated, (by pressing RESET or ISOLATE keys when in FFCIF mode), all acknowledged local alarms will always be reset or isolated but for acknowledged alarms which originated from remote network devices, a reset or isolate command will be sent to the remote network device only if this parameter is enabled.

2.TX ack cmds
If enabled this allows this panel to send FFCIF acknowledge commands to remote network panels to acknowledge alarms which originated from remote panels.
When an FFCIF alarm is being displayed it can be acknowledged by pressing the ACK key. If the alarm originated locally, then the word "ACKD" will appear on the display and an "acknowledge indication" will be sent on the network and also sent to local RZDU devices. If the alarm originated from a remote network device then the word "ACKD" will appear on the display, (i.e. it will be flagged as acknowledged), and if the "TX ack cmds" parameter here is enabled then an acknowledge command will be transmitted onto the network to the device which originated the alarm.

11.8 NETWORK EVENT CONFIGURATION

The network event parameters determine the transmission of event log information onto the network.
When an event occurs, (e.g. zone isolate, zone alarm, system test fail etc.), the event is logged into the local history queue and printed on the local event printer (if event printing is enabled - refer section 6.4.4), and the event may also be transmitted onto the network if transmission of events is enabled. If an event is transmitted onto the network, some of the parameters here determine whether additional text data is included with the event.

The event and it's text may be used by a network printer (e.g. PTM or NDU), network history logger, (e.g. an NDU or another F3200 panel), graphics display, or NLDU (network led display unit).
If an NLDU is being used on the network to display zones from this panel, then transmission of events and events and event updates should be enabled, but an NLDU (LED display unit), does not need any of the text information. If events from this panel are to be logged into the history of a remote panel then transmission of events and all event text should be enabled but transmission of "event updates" is not required for remote history logging. Colour graphics displays require everything to be sent i.e. events, event updates and all text. Check with the user manuals of each particular device type on the network to find what information they require.

To reduce the loading of the network, transmission of events, event updates or text should be disabled unless it is needed.

Options under Events1

1.Transmit events : (Yes/No)
If enabled, on the occurrence of a new event, the event will be transmitted onto the network (as well as logged into local history).

2.Transmit event updates : (Yes/No)
Event updates are used to update the status of an object (e.g. zone), when the status has changed but has not produced a printable event. e.g. an alarm on an isolated zone does not produce a printable event but the status of the zone has changed. Colour graphics displays and NLDUs need updated zone status and hence transmission of event updates should be enabled if they are displaying status from this panel. Remote event printers or remote event history logging do not require event update transmission enabled.

3. TX relay controls : (Yes/No)
If disabled, activate and deactivate events for local module and ancillary relays will not be sent onto the network and hence will not be logged to the printer and history of any remote device. Other relay events such as isolate and fault will still be sent on the network.
NOTE - relay events are always sent onto the network as zone events.

NETWORK EVENT CONFIGURATION (CONTINUED)

Options under Events2

1. Zone/relay cmd text tx : (Yes/No)
If enabled, the text name of the zone or relay will be transmitted onto the network along with the event for zone/relay command event types. "Command" type events include isolate, deisolate, reset, alarm test, fault test, operate test, auto reset test.

2. Zone/relay event text tx : (Yes/No)
If enabled, the text name of the zone or relay will be transmitted onto the network along with the event for zone/relay non-command event types. These include zone alarm, zone fault and zone normal.

3. Sys event text tx : (Yes/No)
If enabled, the text associated with a system event will be included when the event is transmitted onto the network. An NLDU (LED display unit), does not require system event text, but remote event printers or remote event history loggers do require system event text.

11.9 NETWORK LOGIC VARIABLES

Network Variables can be used to transfer output logic status between panels for applications such as:

(i) Fan controls.

(ii) Remote zone mimics.

(iii) Transfer of zone alarm status between panels.

(iv) Transfer of alarm status to a common Evacuation Panel interface.

(v) Transfer of brigade relay status for multiple brigade interfaces at one panel.

An F3200 is always able to modify and use it's own network variables - this gives an extra 128 Variables for use, but they should be used sparingly as processing of network variables takes longer than ordinary output logic variables.

The local F3200 will only send it's own Network variables onto the network if 'TX enabled' is set to Yes. The transmit rate is programmed by "TX refresh rate". If a change of state occurs, the network variables will be transmitted immediately providing the minimum time specified by Max COS TX rate has elapsed since the last transmission.

The "Max COS TX rate" should be less than the "TX refresh rate". Both times should be set so that an F3200 does not clog up the network with messages. The "Max COS rate" should be set to the longest time possible, taking into consideration the configuration of the panel. In general, the default settings should be adequate.

1. TX enabled : (Yes/No)
Enable sending of network logic variables onto the network.

2. TX refresh rate : (0-255 seconds)
Transmit refresh rate for network logic variables. A value of 255 for the TX refresh rate will result in the Netvar data being refreshed at the same rate as MAF status refresh (Section 11.5.1), and the Netvar message will be transmitted in a single burst at the same time as MAF status and MAF totals messages. This also requires the "Mode B" parameter to be set to 3 (refer network configuration programming Section 11.3.4).

3. Max COS TX rate : (0-250 seconds)
Max rate on COS to transmit network logic variables.

11.10 NET STATUS REFRESH

The Network Status application provides a continual refresh of zone status onto the network.

This information may be used for example, by colour graphics systems to display zone status.

Enabling of the Network Status application is only necessary when there is a device on the network, eg. some colour graphics systems, that require this information. Otherwise, it should be left disabled, to reduce network traffic. Note that F3200s generate network status, but do NOT use it. Check with the user manuals of the other devices on the network to see if they require status refresh data to be sent from this panel.

1. Status refresh enabled : (Yes/No)
Determines whether this F3200 sends zone status data onto the network. If disabled, no refreshes or changes of status will be sent onto the network. However, the F3200 will still respond to requests for status from other devices on the network.

2. TX rate : (0-250)
A value in seconds which is the normal background refresh rate of status.

3. Fast TX rate : (0-255)
A value in seconds which is the faster background refresh rate. This is used when the F3200 first starts running, and whenever another device on the network requests a faster refresh, ie. the other device may be initialising.

11.11 NDU OPERATION

An NDU can be thought of as an F3200 FIP without any alarm zone modules or relay modules. An NDU also has an option of MAF board present/not present.

An NDU can be programmed to operate in “New Zealand” mode rather than the default Australian mode. New Zealand mode operation is described in Chapter 12.

An NDU without a MAF board is physically quite small, convenient to use, and is powered from an external source. An NDU with a MAF board may perform brigade signalling functions and also has ancillary and bell relays.

Even though an NDU does not have any 8 zone or 8 relay modules, it does have 16 alarm zones. The local MCP (or connected RDU MCP), if any, may be mapped to any one of these 16 zones. Each of the 16 zones may be isolated, de-isolated, or reset, but cannot be tested. Each zone can be programmed as latching/non-latching, MAF/non-MAF, etc. Even though an NDU zone which does not have an MCP mapped cannot go into alarm, it may be useful as an object which can be isolated or de-isolated.

Otherwise an NDU will perform all the functions of an F3200 panels, including sending/receiving network zone commands, network event printing, and FFCIF alarm display.

An NDU may be programmed with output logic, the same as F3200, and may send and receive network logic variables on the network.

An NDU without a MAF board may still perform functions of Bells or Ancillary Relay Isolate/De-Isolate/Test, and the output logic tokens associated with these may be used so that these conditions can be accessed from other panels.

An NDU without a MAF board may be used to do Bells Isolate operation, and, with appropriate programming, may be used to silence the bells throughout the network, or it can be used just to display the Bells Isolate/Network Silence state of the network.

The keypad on an NDU without a MAF board is physically accessible all the time, but when the cabinet is locked the NDU software disables the keypad even though the keypad is physically accessible.

The operation of the Bells Isol and Ancil Isol keys may be disabled as described in Section 6.4.4.

Section 4.1.1 of the F3200 Operator’s Manual describes the interpretation of the front panel LEDs on an NDU.

If an NDU is programmed to use the totals sent by another device on the network, then the NDU will turn its buzzer on if a new MAF fault, Standby condition or new System fault occurs on the remote device.

Programming an NDU

All of the programmable network parameters listed in Table 6.4.1 Chapter 6 and section 11.13 are relevant to an NDU with the following points to note.

MAF board present/not present
The MAF board must be programmed as present or not present. This is done by selecting System Config from the main programming menu and then option 3:Modules.

NDU OPERATION (CONTINUED)

Network setup
The parameters for Link TX time, Link RX time, groups etc should be programmed as for a standard F3200.

Network SID configuration.
All 8 items that can be enabled per SID are relevant to an NDU and should be enabled or disabled as necessary.

Network MAF config
The MAF status transmitted onto the network by an NDU may include alarm, isolate, fault, brigade test, system fault, standby, and silence alarms.

Network command config
An NDU may send and receive commands on the network such as system tests, zone tests, zone isolate/deisolate etc. All of the commands described in the F3200 Operator's Manual apply to an NDU except that an NDU has no open collector outputs or module relays.

FFCIF config
This operates the same as F3200.

Network Event Config
An NDU may transmit events, event updates and text.

Network Variable Config
An NDU may send and receive output logic network variables.

Network Status Config
An NDU may have transmission of network status refresh data enabled, if desired, and this will cause it to transmit the status of its local zones which include alarm zones 1-16, bells, ancillary relays, and plant isolate zones.

11.12 DEFAULT VALUES FOR PANEL-LINK VARIABLES

Item	Parameters	Default
Network Setup		
Local SID Number	1-254	0
Mode	Multidrop/Pnt to Pnt	Multidrop
NIC	Yes/No	No
RX Timeout	1-250 5 millisecs	2
TX Delay	1-250 5 millisecs	1
ACK Time	1-9999 millisecs	800
DUP Time	1-9000 millisecs	2000
Leading FF	0-250 characters	1
Trailing FF	0-250 seconds	1
Link TX	Yes/No	Yes
Link Tx Time	1-250 seconds	5
Link RX Time	1-250 seconds	50
Groups	Any combination of 1 to 8	[12345678]
ACK Broadcasts	Yes/No	No
Baud rate	300 up to 19200	9600
Retries	0-15	5
Slots	8, 16, 32	8
Mode B	0-7	3
ACK Bcasts Specific SID	0-254	0
Network SID Configuration (per SID)		
Link RX	Yes/No	No
Log Events	Yes/No	No
RX FFCIF	Yes/No	No
TX CMD	Yes/No	No
RX CMD	Yes/No	No
Use MAF data	Yes/No	No
Use MAF totals	Yes/No	No
Status search	Yes/No	No
Network MAF Config		
Refresh TX Time	1-250 seconds	20
Max COS rate	0-250 seconds	2
Receive net bells control	Yes/No	No
Send net silence	Yes/No	No
Receive net silence	Yes/No	No
Network Command Config		
ACK Time	1-250 seconds	10
Work Time	1-250 seconds	3
RX net time/date	Yes/No	Yes
TX net time/date	Yes/No	No
FFCIF Config		
TX Alarms	Yes/No	No
Dedicated TX SID	0-254 (0=all)	0
RX Net ACK	Yes/No	No
TX iso/reset cmds	Yes/No	No
TX ack cmds	Yes/No	No

Item	Parameters	Default
Network Event Config		
Transmit events	Yes/No	No
Transmit event updates	Yes/No	No
Transmit relay operates	Yes/No	No
Zone/Relay cmd text tx	Yes/No	No
Zone/Rly event text tx	Yes/No	No
System event text tx	Yes/No	Yes
Network Variable Config		
TX enabled	Yes/No	No
TX Refresh Rate	0-255 seconds	20
Max COS TX rate	0-250 seconds	5
Network Status Config		
Refresh enabled	Yes/No	No
TX Refresh Rate	0-250 seconds	23
Fast TX rate	0-250 seconds	7

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CHAPTER 12
NEW ZEALAND OPERATION

12.1 GENERAL

New Zealand mode operation may be enabled on an NDU but not on an F3200 fire panel.

An NDU with New Zealand mode enabled may be connected to a Panel-link network of panels which also have "New Zealand" mode enabled. The NDU may be used with or without a MAF board, and optionally with a NZ Display Extender board. The NDU may not have any RZDU or RDU connected to it.

If a MAF board is used, the NDU may be used as the main brigade connection point of the network. The MAF board has relays for signalling alarm (normally energised), fault (normally de-energised) and standby (normally energised and normally wire-ORed with fault). The MAF board also provides a supervised BELL relay, two supervised ancillary relays, and an "isolate" relay; all of which can be controlled by output logic if desired.

12.2 NZ DISPLAY EXTENDER BOARD

The New Zealand extender board, if fitted, is added to the end of the 16 zone LED display board chain (if any), and provides the common Normal, Defect, and Fire LEDs, as well as other New Zealand specific inputs and outputs.

The last 16 zone LED display board must have link Lk1 not fitted. If there are no 16 zone LED display boards then the New Zealand display extender board is connected directly to J13 on the Controller.

The New Zealand Display Extender board has the following inputs and outputs.

Inputs (all active low)

- Trial Evac/Sprinkler operated (shared)
- Silence alarms
- External defect
- Lamp test
- Services restore
- Brigade test/brigade isolate (shared)
- Evac defect

Outputs

- Fire LED
- Defect LED
- Normal LED
- Ancil defect
- Ancil fire
- Lamp

Evac Defect/External Defect

The Defect and External Defect inputs may be programmed as to whether a defect is signalled for them or not. If defect is not signalled then they can be used as general purpose inputs accessible in output logic.

DISPLAY EXTENDER BOARD (CONTINUED)

Services Restore

When the Services Restore input is activated, the BSR logic token is set true and this can be used in output logic to turn outputs off or on if necessary.

Trial Evac

When the Trial Evac input is activated, the Bell relay is energised and the BEL logic token is set true regardless of any silence alarms or bells isolate condition. By default, Ancillary 3 relay is the bell relay. The Ancillary 3 relay (or any relay), can be controlled with output logic. The TEV logic token can be used to get an output to operate when Trial Evac is asserted, however, when outputs are controlled this way, isolation of the output overrides Trial Evac which contravenes NZS4512. It may be necessary to program such relay outputs as non-isolatable – refer to section 7.5 Relay outputs.

Silence Alarms

When the silence alarms input is activated, the Bell relay is de-energised and the BEL logic token is set false unless trial evac is asserted.

Brigade Test/Brigade Isolate

These conditions share the same input and when true, result in an “abnormal” system state (but defect is not signalled) that can be recalled with a system fault recall.

Lamp Test

This input can be used to test all the LEDs including the front panel LEDs, the LEDs on the New Zealand Display Extender board, the index lamp and any 16 zone LED display boards.

The New Zealand Display Extender board is connected to a PA0483 termination board. The termination board wiring connections are shown in Fig 12.2.1 below.

I/O 01	SPARE-	0V	SPKLR OP-	I/O 16
I/O 02	ANC DEF-		TRIAL EVAC-	I/O 15
I/O 03	ANC FIRE-		SIL ALMS-	I/O 14
I/O 04	FIRE-	PA0483	EXT DEF-	I/O 13
I/O 05	DEFECT-		LAMP TEST-	I/O 12
I/O 06	NORMAL-		BRIG ISOL/TEST-	I/O 11
I/O 07	LAMP-	+V	BSR-	I/O 10
I/O 08	LAMP+		EVAC DEF-	I/O 09

FIG 12.2.1
NEW ZEALAND EXTENDER TERMINATION BOARD

12.3 MANUAL CALLPOINT (MCP)

An NDU with a MAF board may have an MCP connected to the MAF board (refer Fig 12.3.1 for wiring).

An NDU without a MAF board may have an MCP connected to screw terminals 3 and 4 of standalone connector J5 on the Controller board as shown in Fig 12.3.2.

The MCP is disabled by default. To enable it, it should be mapped to one of the 16 alarm zones (1-16) on the NDU. To map the MCP to a zone, select option 3:Global data from the main programming menu, then option 2:FIP MCP.

The zone the MCP is mapped to can be programmed with a name, whether it is latching/non-latching, maf/non-maf, etc (refer to Fig 7.1.1B for zone options). If the zone is a status-only zone, then the MCP input can be used as a general purpose input, and its status can be accessed in output logic by using the zone status tokens (ZnA, ZnF, ZnW, and ZnI) of the zone it maps to.

There is a one second delay applied to any change of state on the MCP input. If the zone the MCP maps to is a MAF zone then a brigade alarm will result after this time delay.

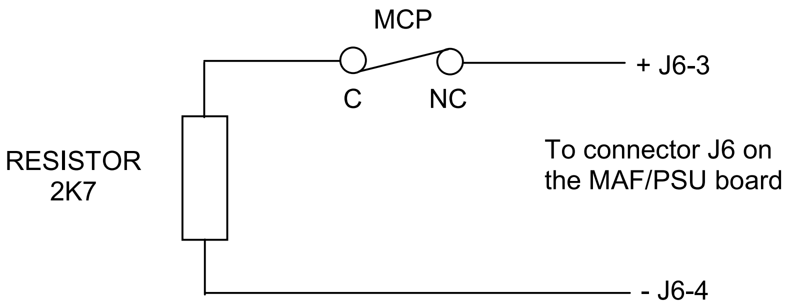


FIG 12.3.1
<u>NZ MODE MCP WIRING FOR NDU MAF BOARD</u>

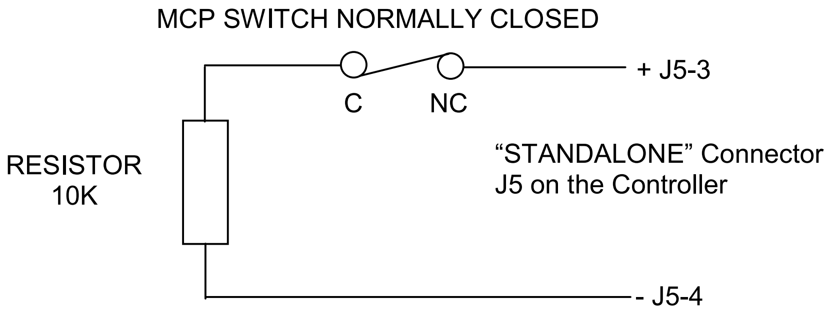


FIG 12.3.2
<u>NZ MODE MCP WIRING FOR "SLIMLINE" NDU</u>

12.4 PROGRAMMABLE OPTIONS

There are a number of parameters that need to be set for New Zealand operation according to the installation requirements. These are detailed below.

Fig 6.1.2D2 shows that they are accessed by selecting option 3:Global data, then 5:more, 4:more, 4:more, then 4: New Zealand options.

A database re-initialise will select New Zealand mode by default if a New Zealand Display Extender board is fitted. If a New Zealand Display Extender board is not fitted, New Zealand mode must be programmed manually.

<u>New Zealand Mode Programmable Parameters</u>

1. New Zealand mode – enable/disable
   When this parameter is enabled, the user is asked whether a number of other parameters (detailed below) should automatically set to their New Zealand mode settings. When this parameter is changed from enabled to disabled, the values of a number of parameters are set back to non-New Zealand mode settings.

2. New Zealand Display Extender board fitted – Y/N
   If a New Zealand Display Extender board is fitted, this should be set to Y.

3. Battery Very Low = Alarm – Y/N
   If this is enabled, a brigade alarm will be signalled on power-up or whenever the supply voltage reaches the battery very low threshold. The bells are not activated for this alarm.

4. Evac Defect is fault – Y/N
   External defect is fault – Y/N
   These two parameters select whether the corresponding input on the New Zealand Display Extender will result in a defect (fault) being signalled when the input is asserted. If sent to N then the input is available as a general purpose input, the state of which can be accessed using the logic tokens NEV and NED respectively.

5. Battery testing & monitoring
   There are four parameters, that for an NDU with no MAF board only the battery low monitor parameter needs to be set – the others are "don't care".

   (a) Battery low monitor – enable/disable
   For an NDU with a MAF board, this should be enabled. If enabled, then when the supply voltage falls below the battery low threshold a defect will be signalled.

   For an NDU with no MAF board, if this option is enabled then a defect is signalled when the supply voltage falls to the battery very low threshold.

   (b) Battery connection check – enable/disable
   This is enabled by default. When enabled, the battery connection is checked every 28 seconds by reducing the charger voltage for 500 milliseconds and monitoring the battery voltage.

   (c) Hourly battery test
   This is disabled by default and is not required for New Zealand operation. When enabled, every hour the charger voltage is reduced for 60 seconds to check the battery voltage.

PROGRAMMABLE OPTIONS (CONTINUED)

(d) Daily battery test
This is enabled by default. When enabled, every 24 hours (beginning at the auto test start time) the charger voltage is reduced for 40 minutes and the battery voltage is monitored.

Parameter Defaults for New Zealand Mode

The following is a list of the values set when New Zealand mode is enabled by a database re-initialise or when New Zealand mode is manually enabled.

New Zealand Display Extender fitted	- as appropriate
Battery very low alarm	- disabled
Evac defect is fault	- enabled
External defect is fault	- enabled
Battery low monitor	- enabled
Battery connection test	- enabled
Hourly battery test	- disabled
Daily battery test	- enabled
Charger fault monitoring	- disabled
Mains fail = fault after 8 hours	- disabled
MCP	- disabled
Alarm buzzer	- enabled
Zone and system fault buzzer	- disabled
Daylight saving start and end time	- enabled

The daylight saving start time for New Zealand is set to 2am on the first Sunday in October and the end time is set to 2am on the third Sunday in March.

12.5 LOGIC TOKENS

The full list of logic tokens is given in Section 7.4.3.2. Logic tokens that are valid only in New Zealand mode are:

NSA local silence alarms (this does not include any received network bells silence State – refer BLI).

TEV Local trial evac operated.

BSR Local services restore operated.

NEV Evac defect input asserted.

NED External defect input asserted.

12.6 SYSTEM STATES & INDICATIONS

Faults, alarms and system faults can be recalled using the Recall key.

A recall of system faults will display in addition to system faults, any system states (such as trial evac) that are present.

The bells isolate LED flashes at 2Hz when the local silence alarms switch is activated, flashes at 1Hz when the bells are silenced by a bells isolate or silence alarms at some other panel, and is on steady when the bells are isolated locally.

Door Interlock Buzzer

If the door is closed when any of the brigade isolate/test, services restore, trial evac, silence alarms inputs are asserted, or the bells are isolated locally, or the database is write enabled, then the buzzer sounds a unique cadence to warn the user.

Abnormal Conditions

The NDU sends a state of "abnormal" on the network when it has any local off normal condition.

The common normal LED on the NZ Display Extender Board is off and the NML logic token is false whenever any of the following are true.

1. There is any local abnormal condition (refer below).

2. There is a "local" abnormal condition at any panel on the network that the NDU is programmed to "indicate for" i.e any panel in the SID list of the NDU with the "use MAF relay data" option enabled.

3. There is any off normal total in the list of totals shown on the base display of the NDU. This includes any off normal totals that come from other panels on the network that the NDU is programmed to show totals for. i.e any panel in the NDU SID list that has the "use MAF totals" option enabled.

Local Abnormal Conditions

The conditions that generate local abnormal are:

1. Any alarm, fault or isolate state on any of the NDUs 16 zones that are not "Status Only".
2. Any fault or isolate state on any of ancillary 1, ancillary 2 or bells relays on the MAF/PSU board.
3. When the "plant" is isolated i.e. when the logic token PLI is true.
4. When the bells are locally isolated.
5. When there is a latched battery very low alarm state.
6. When the panel is in program mode or the database is write enabled.
7. When any of silence alarms, trial evac, services restore, brigade isolate or brigade test are locally operated.
8. When there is any battery, mains or charger fault. Battery faults include battery low, battery connection and battery capacity faults. This does not include failure of a manual battery test.
9. When there is a battery very low state and battery very low alarm is disabled.
10. Evac defect or external defect true if enabled to be fault.

SYSTEM STATES & INDICATIONS (CONTINUED)

11. An off normal state is indicated (also defect) for approximately 10 seconds after any restart of the panel.
12. When there is a "link integrity" fail for any network SID that this panel is monitoring or when the NDU does not receive an acknowledge to a message it transmits on the network to a SID that is supposed to be responding.
13. When there is a shift register bus fault.
14. When there is a fault with the "LCD".
15. When there is a fault with the non volatile RAM on the clock chip.
16. When there is a database (EEPROM) checksum error.
17. When the MAF/PSU module is not connected if it is required or connected when not required.
18. When there is a fault with the keypad connection.
19. When there is a fault with the LED display board connection. e.g. NZ display extender board or 16 zone LED display board not present when required or connected when not required.
20. When there is an EPROM checksum error.
21. When the main system RAM fails.
22. When all 16 zones on the NDU are isolated and "all zones isolated" is programmed as being a fault.
23. When an error occurs in the execution of output logic e.g. invalid logic token or accessing a network variable for a network panel whose SID number does not appear in the SID list of the NDU (this fault will occur immediately upon exit from program mode).
24. When a fuse on the MAF/PSU board is blown.
25. When the IC that drives the network serial port does not store its programmed settings correctly. This could occur if the IC was not installed.
26. When an RZDU is connected that is not required.
27. When the panel is not powered up or is continually restarting or not executing its ROM program correctly.

12.7 NETWORK PARAMETER PROGRAMMING

Chapter 11 of this manual (LT0122) describes the network parameters that can be programmed in an NDU.

The network parameters of particular importance for an NDU in NZ mode are:

1. The SID list (Section 11.4 – SID configuration).
2. Network MAF configuration (Section 11.5).
3. Network FFCIF configuration (Section 11.7).

12.7.1 THE SID LIST

Normally, all other panels on the network are entered into the SID list of the NDU, with 8 options able to be set for each panel.

If the NDU is the brigade connection point of the system, then probably all 8 options will be enabled for every SID in the list. When the option "use MAF relay data" is enabled for a SID, the NDU will signal the brigade for faults and alarms received from that SID.

Even if the NDU is not the main brigade connection point of the system, it may still need to have the "use MAF relay data" option enabled for SIDs in its SID list for the following reasons.

1. To signal alarm and defect on the New Zealand Display Extender board LEDs and outputs when an alarm or defect occurs on another panel.

2. To control the NDU bell relay, if any, for an alarm or trial evac condition on another panel.

3. To display the network bells silence state by flashing the bells isolate LED.

The most situations, the NDU should have the "use MAF totals" option enabled for each panel in the SID list that it has "use MAF relay data" enabled.

The "RX FFCIF" option should be enabled in the SID list for any panel that the NDU is to display FFCIF alarms for.

12.7.2 NETWORK MAF CONFIGURATION

Section 11.5 of this manual describes these options:

1. "Receive net bells control"
   This option should be enabled if the NDU bell relay is to operate when a MAF alarm or Trial Evac on another panel is to operate the bell relay at this panel.

2. "Send bell isolate as net silence"
   This option, if enabled, means that a local bells isolate state is sent onto the network as network bells silence and also that a defect is signalled for bells isolate. If this option is disabled, a defect is not signalled for bells isolate. When the local silence alarms keyswitch (if any) is operated, a network bells silence state is always sent on the network regardless of the "send bell isolate as net silence" parameter.

3. "Allow receive net bells silence"
   This option must be enabled if the NDU is to keep its alarm bells (if any) off in response to a network silence state sent from another panel.

12.7.3 NETWORK FFCIF CONFIGURATION

Section 11.7 of this manual describes the options for this. The Tx alarms option should be enabled if the NDU should send an FFCIF alarm on the network when its local MCP zone goes into alarm.

12.8 INSTALLATION : NZ DISPLAY EXTENDER BOARD & BRIGADE DISPLAYS

12.8.1 GENERAL

An NDU is not normally used as a brigade connection point. If an NDU is used as a brigade connection point then, in general, a separate display panel must be provided if there needs to be zone alarm indication to the attending Fire Brigade staff. The common MAF status display is provided by mounting an NZ Display Extender Board (PA0499 or PA0762), in the NDU cabinet and wiring to display in a separate cabinet in one of three different ways as shown in Fig 12.8.1, 12.8.2, and 12.8.3.

Sixteen-zone display boards are not normally connected to an NDU, but the three diagrams show how they can be connected if necessary. An NDU allows a maximum of four 16-zone display boards and each individual LED (48 LEDs per board) must be controlled using output logic which is generally too cumbersome for normal use.

The second cabinet is necessary because the LEDs mounted inside the NDU cabinet do not meet the requirements of NZ4512 with regard to visibility and viewing access. An NLDU (Network LED Display Unit), can often be used to more conveniently drive 16-zone display boards and show individual zone information as part of the brigade mimic display.

Any Ancillary Control Zone indicators on this external display must be coloured differently or be segregated from the zone alarm and common indicators, and be clearly labelled.

There are several methods for providing a separate display panel. Two approaches are detailed below.

NOTE 1: The information provided here is very similar to the information in the RDU installation manual LT0148 which may be useful to refer to.

NOTE 2: As stated above, 16 zone display boards are not normally connected to an NDU, nevertheless, the following sections describe how to do it if necessary. If an NLDU is used to drive 16 zone display boards, then the NLDU user manual LT0188 must also be referred to.

12.8.2 MIMIC DISPLAY

A mimic display uses the mimic outputs from the NDU's internal 16 Zone LED Indicator Boards to drive alarm LEDs in an external display. Each group of 16 zone alarms and the common indicators are extended in a separate 26 way FRC to the external display.

The number of FRCs between the NDU and the external display limit the practical separation distance. Since the cabling is not supervised in any way, the Fire Service or approving authority may place restrictions on this distance. The cable must be well protected mechanically by conduit, trunking or equivalent.

These parts are available for constructing displays of this type:

FP0475	FP,16 ZONE LED DISPLAY EXTENDER KIT (C/W LOOM)
FZ3031	16 ZONE LED DISPLAY EXTENDER KIT, RHS POSITION
LM0044	LOOM, DISPLAY EXTENDER FRC,2M,26 WAY
LM0045	LOOM, DISPLAY EXTENDER FRC,5M,26 WAY (Longer and 3-way looms can be made to special order)

MIMIC DISPLAY (CONTINUED)

LM0092	LOOM, CONTROLLER TO FIRST DISPLAY, 1.2m
PA0483	PCB ASSY, IOR UNPROTECTED TERMINATION BOARD
PA0499	PCB ASSY, NZ DISPLAY EXTENDER BOARD
PA0769	PCB ASSY,16 O/P MIMIC TERMINATION BOARD,C/W RESISTORS (As for PA0483 but 3k3 resister per output)
PA0753	PCB ASSY,PICTURE FRAME DISPLAY,16 LED MIMIC,24V
PA0760	PCB ASSY,NZ DISPLAY EXTENDER,PFD MIMIC

Suitable cabinets for Mimic Displays include:

ME0073	PICTURE FRAME DISPLAY,F/S, EMPTY,003 LOCK,C/W INDEX
ME0074	PICTURE FRAME DISPLAY,F/S,EMPTY,60124 LOCK,C/W INDEX
ME0076	PICTURE FRAME DISPLAY,R/S,EMPTY,60124 LOCK,C/W INDEX

or various FP1600/OMEGA 64 empty cabinets and the PA0787 FP1600 Mimic Display Board provide an alternative format.

At the display panel there are two possibilities:

(i) Geographic Plan Mimic - the FRCs from the NDU are connected to Termination boards (PA0483). Individual LEDs with series resistors are mounted on the display panel and wired to these Termination boards. Figure 12.8.1 shows this arrangement. Alternatively, the PA0769 Termination Board has 3k3 resistors already fitted (gives 7mA LED current which is adequate for interior use).

(ii) Column Format - where arrangement of zone alarms into columns is acceptable, LED Mimic Display boards can be used. This simplifies the wiring considerably.

The Picture Frame Display (ME0074 or ME0073 Front Service, or ME0076 Rear Service) is a suitable cabinet, and also has mounting hardware for four 16 zone Display mimic boards (PA0753), plus one Common Indicator and Index Lamp Mimic board (PA0760). Figure 12.8.2 shows this arrangement.

Note that a special 3-way FRC is required for the Display Extender board, so that the miscellaneous inputs are accessible in the NDU cabinet. This is not a standard part, and will need to be made up to suit the application.

12.8.3 ACTIVE DISPLAY

An active display is driven from the NDU display chain and is economical for large mimics. The Picture Frame Display (PFD) cabinet is suitable for housing an active display with a 12 way shielded cable linking it to the NDU (ref. Figures 12.8.3 and 12.8.4). No supervision requirements for this cable are specified in NZS 4512, but because some individual wires in the cable are not supervised (though the cable as a whole is), good fire alarm practice dictates that the distance between the panel and indicating unit should be limited for principal brigade mimics. The wiring should also be well protected by conduit, trunking or equivalent. An electrical limit of 30 metres applies to this connection.

The following parts are available for constructing displays of this type:

PA0742	PFD NZ DISPLAY EXTENDER BOARD,24V
PA0741	PFD DISPLAY 16 ALARM LED,24V (ALARM LEDS ONLY)
PA0754	PFD 16 ZONE,FULL STATUS,24V (ALL LEDS)
FP0646	16 ZONE ALARM KIT (PA0741,FRC LOOM,POWER LEADS)

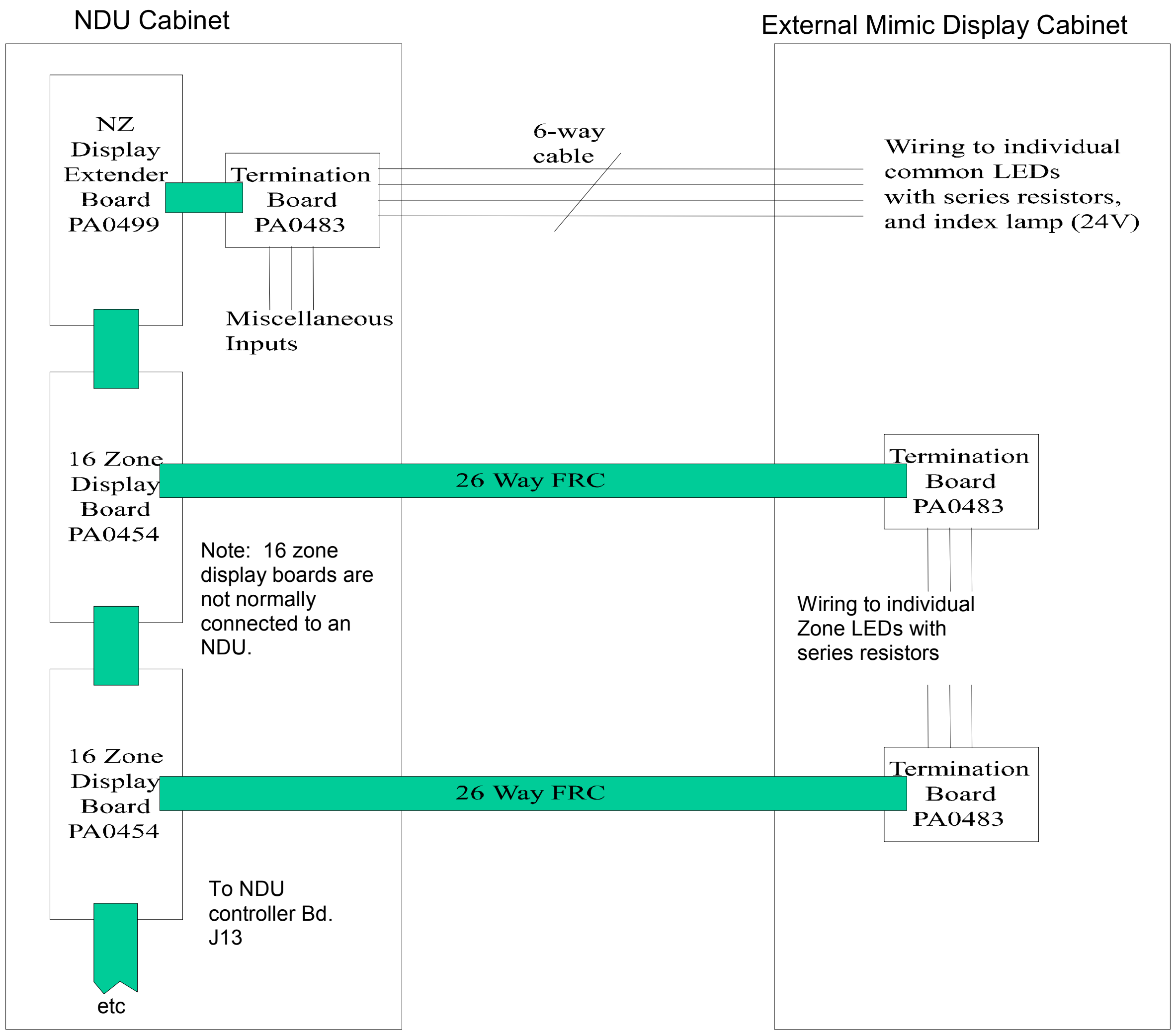
ACTIVE DISPLAY (CONTINUED)

FP0678	16 ZONE FULL STATUS KIT (PA0754,FRC LOOM,POWER LEADS)
PA0772	PFD TERMINATION BOARD (FRC TO MULTICORE)
PA0483	UNPROTECTED TERMINATION BOARD
LM0056	LOOM,DISPLAY EXTENDER FRC,1.4M,26 WAY
LM0046	LOOM, DISPLAY EXTENDER FRC,0.5M,26 WAY
LM0092	LOOM,CONTROLLER TO FIRST DISPLAY,1.2M
ME0073	PICTURE FRAME DISPLAY,F/S,EMPTY,003 LOCK,C/W INDEX
ME0074	PICTURE FRAME DISPLAY,F/S,EMPTY,60124 LOCK,C/W INDEX
ME0076	PICTURE FRAME DISPLAY,R/S,EMPTY,60124 LOCK,C/W INDEX

A PA0772 PFD Termination Board is mounted in the NDU cabinet and in the PFD.

12.8.4 DISPLAY EXTENDER BOARD MISCELLANEOUS TERMINATION

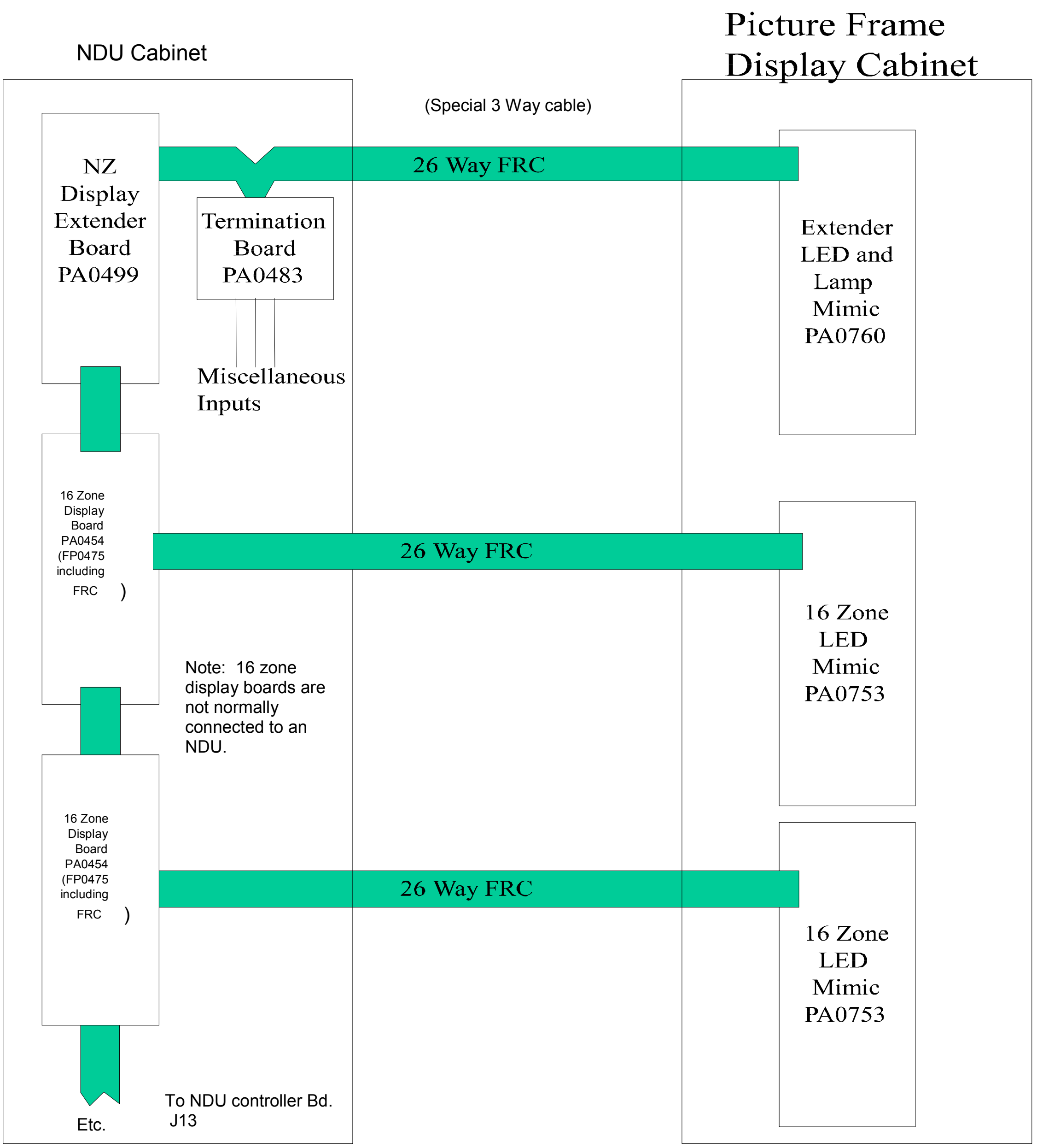
The miscellaneous signals available through a NZ Display Extender Board are accessible via a 26 way FRC and PA0483 unprotected termination board. A termination pin out diagram is given in Fig 12.8.5. Refer to section 3 for electrical specifications of these signals, and to section 12.2 for their logical functions.



Note: PA0769 Termination Board can be used instead of PA0483
PA0769 has resistors for LEDs already fitted to the PCB.

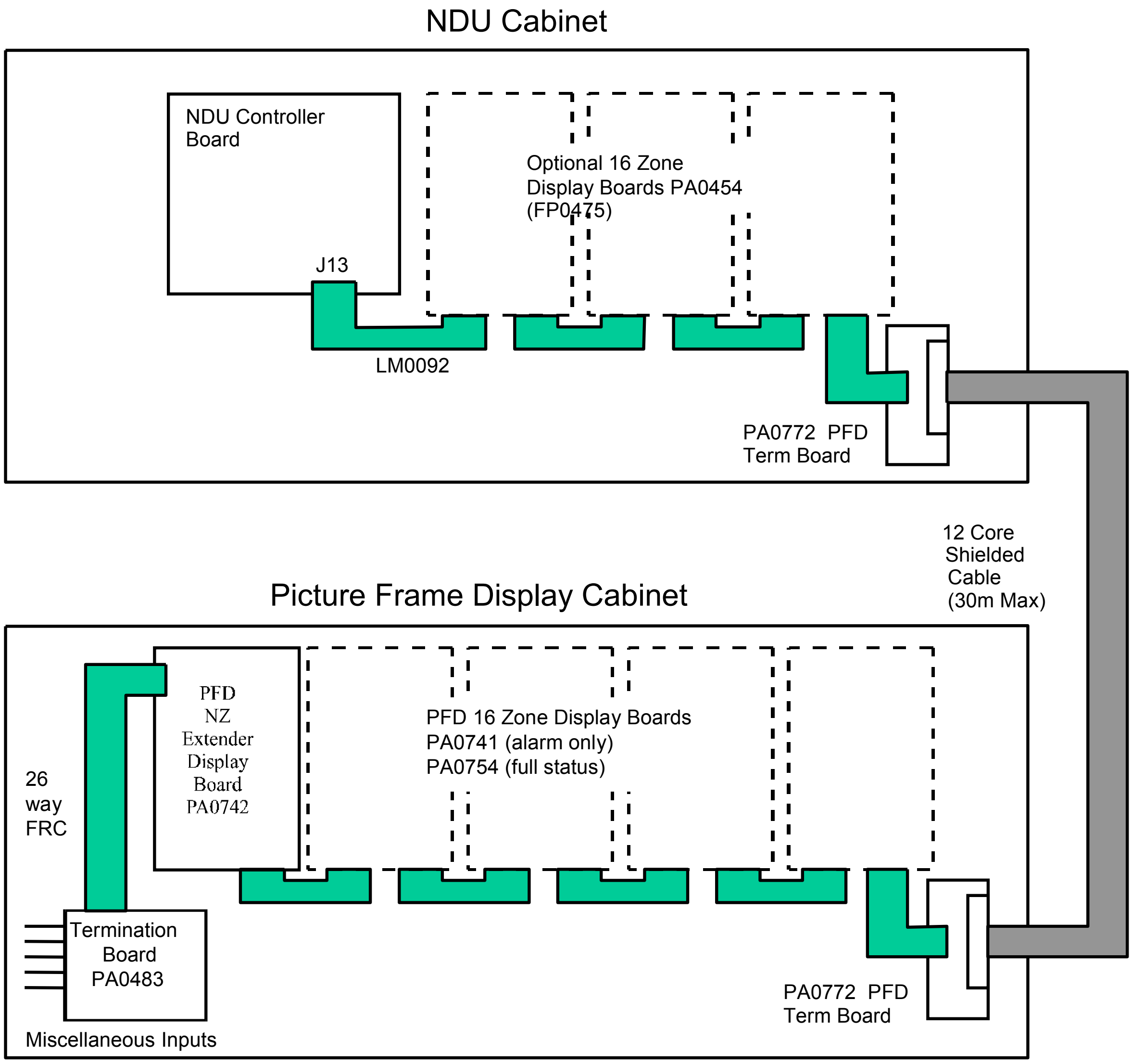
All shaded cables 26 way FRC.
The first cable from the NDU Controller must be LM0092 (FZ3031 kit)

FIG 12.8.1 - REMOTE PLAN MIMIC DISPLAY



All shaded cables 26 way FRC.
The First cable from the NDU controller must be LM0092 (FZ3031 kit).

FIG 12.8.2 - REMOTE MIMIC USING PICTURE FRAME DISPLAY CABINET



Note: This configuration will not generally be used. Refer to Section 12.8.1.

FIG 12.8.3
NDU WITH ACTIVE DISPLAY BOARDS
IN SEPARATE PICTURE FRAME DISPLAY CABINET

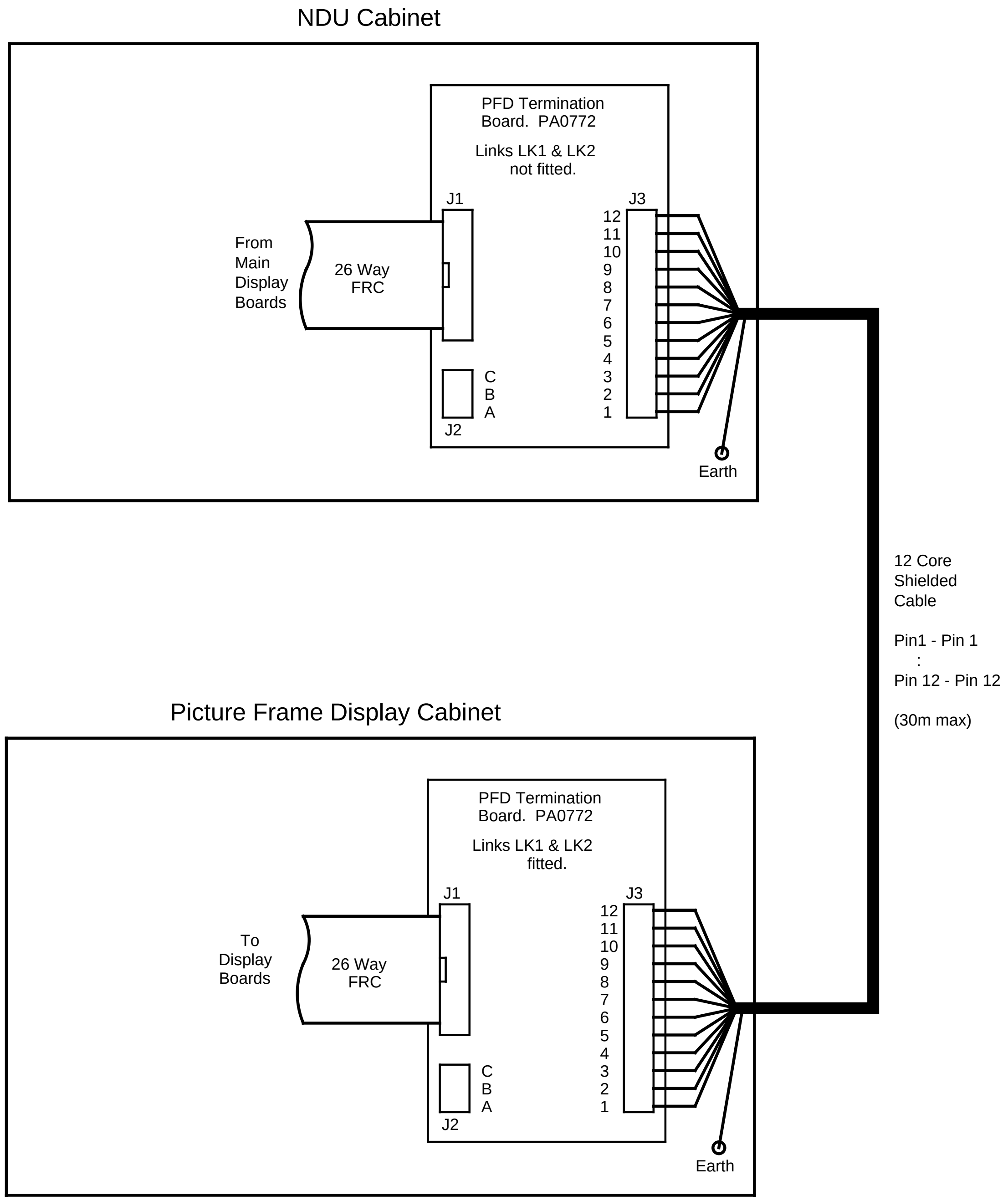


FIG 12.8.4
WIRING OF NDU TO PFD (ACTIVE DISPLAY)

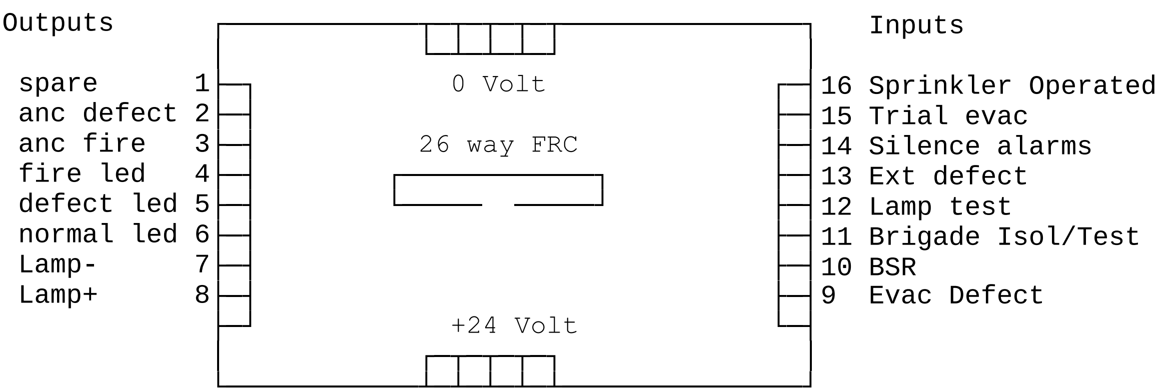


FIG 12.8.5
Terminations from NZ mode Display Extender Board on unprotected termination board (PA0483).

NOTE:

Sprinkler Operated and Trial Evac share the same input and are electrically connected on the Display Extender Board. On an F4000, input 10 is used as Brigade Test and Services Restore (BSR) is not provided.

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CHAPTER 13
TANDEM LCD MODE

13.1 TANDEM LCD MODE

Tandem mode allows the LCD and keyboard of an F3200 panel or NDU to be operated from a device on the printer/programmer port or from another device on the network.

F3200 or NDU V2.07 or later software allow Tandem LCD mode operation.

There are three "modes" of Tandem LCD operation and only one mode may be active at any one time.

1. Local Tandem LCD mode.
   A terminal or computer connected to serial port zero of the Controller can initiate local Tandem LCD mode by "pressing" the RETURN/ENTER key, entering the password and selecting the "L" option.

   This mode allows full programming of the Controller to be done including database load, save and verify, and "text load". "Text load" refers to the loading of text names for zones and relays.

   To initiate this using a local Tandem LCD connection, select the main text programming menu "1:site, 2:zone, 3:relay" etc, and press the EDIT key on the remote device's keypad. The remote text entry prompt will then be output.

2. "Controlled" Tandem LCD mode.
   A networked F3200 or NDU can have its LCD accessed across the network and be "controlled" via a Tandem LCD connection to the serial port of another panel on the network. In this mode, database save, load, verify and text load operations cannot be done.

3. "Controlling" Tandem LCD mode.
   A networked F3200 and NDU allows a Tandem LCD connection to its local serial port to access the LCD of another panel on the network. This mode is initiated by entering the SID number of the panel being connected to after entering the Tandem LCD password.

A password is required to enter tandem LCD mode. A password of up to 12 characters can be programmed using Option 7 from the F3200 text programming menu.

APPENDIX A1
COMPATIBLE ACTUATING DEVICES (DETECTORS)

The following detectors are compatible with the F3200 System. The maximum number of detectors per circuit is indicated by the columns 4mA and IS, for Standard and Intrinsically Safe applications. For IS application refer to Section 9.4.

DETECTORS COMPATIBLE WITH F3200 FIP			MAX NO.	
TYPE		DESCRIPTION	4mA	IS
B111B	#	BEAM TYPE SMOKE DETECTOR (SEE NOTE 7)	40	0
B21B		BEAM TYPE SMOKE DETECTOR	1	0
C23B	*&	IONISATION SMOKE DETECTOR	40	0
C23BEx	x*&	IONISATION SMOKE DETECTOR (IS)	40	35
C24B		IONISATION SMOKE DETECTOR	40	0
C29B		IONISATION SMOKE DETECTOR	40	0
C29BEX	x	IONISATION SMOKE DETECTOR (IS)	40	40
DL01191A		BEAM SMOKE DETECTOR	1	0
FW81B	#	HEAT DETECTOR CABLE FW68, FW105 (IS)	1	1
P24B		PHOTOELECTRIC SMOKE DETECTOR	40	0
P29B		PHOTOELECTRIC SMOKE DETECTOR	36	0
P61B	*	PHOTOELECTRIC SMOKE DETECTOR (REV J)	40	0
P76B		PHOTOELECTRIC SMOKE DETECTOR NON LATCHING	10	0
P136		PHOTOELECTRIC SMOKE DETECTOR NON LATCHING	8	0
R23B	&	INFRARED FLAME DETECTOR	36	0
R24B		DUAL SPECTRUM INFRARED FLAME DETECTOR	8	0
R24BEX	x+	DUAL SPECTRUM INFRARED FLAME DETECTOR(IS)	8	7
T54B	+x#	PROBE TYPE E HEAT DETECTOR -IS/FLAMEPROOF	40	40
T56B	x	HEAT DETECTOR TYPES A, B, C, D	40	40
V41B	+x#	ULTRAVIOLET FLAME DETECTOR	40	40
V42B	+x#	ULTRAVIOLET FLAME DETECTOR SLAVE	N/A	N/A
V44B	+x#	ULTRAVIOLET FLAME DETECTOR	40	40
SU0600		15V MCP	40	-

Table I Grinnell Detector Range

DETECTORS COMPATIBLE WITH F3200 FIP		MAX NO	
TYPE	DESCRIPTION	4mA	IS
MD614	HEAT DETECTOR	40	-
MF614	IONISATION SMOKE DETECTOR	40	-
MR614	PHOTOELECTRIC SMOKE DETECTOR	40	-
MR614T	HIGH PERFORMANCE OPTICAL SMOKE DETECTOR	40	-
MU614	CARBON MONOXIDE DETECTOR	40	-
MS302Ex	INFRA-RED FLAME DETECTOR	40	40
S111	INFRA-RED FLAME DETECTORS (IS)	40	35
S121	INFRA-RED FLAME DETECTORS (IS)	40	40
S131	INFRA-RED FLAME DETECTORS (IS)	40	35
S231i+/f+	INFRA-RED FLAME DETECTOR (refer Sections 9.4 and 9.6)	5	11
MF301Ex	IONISATION SMOKE DETECTOR	40	40
MR301Ex	PHOTOELECTRIC SMOKE DETECTOR	40	40
MR301TEX	HIGH PERFORMANCE OPTICAL SMOKE DETECTOR	40	40
WITH M614 OR M300 BASE AS APPROPRIATE			

Table II
Tyco Detectors

DETECTORS COMPATIBLE WITH F3200 FIP		MAX NO	
TYPE	DESCRIPTION	4mA	IS
4098-9618EA	HEAT DETECTOR – TYPE A	40	-
4098-9619EA	HEAT DETECTOR – TYPE B	40	-
4098-9621EA	HEAT DETECTOR – TYPE D	40	-
4098-9603EA	IONISATION DETECTOR	40	-
4098-9601EA	PHOTOELECTRIC DETECTOR	40	-

Table III
Simplex Detectors

BASES COMPATIBLE WITH DETECTORS										
DET/ BASE	Z51B	Z52B	Z54B & Z54B MK2	Z55B	Z56	Z56N	Z500	Z500 N	Z91C & Z94C	Z94 & MH2
C24B	✓	X	✓	X	✓		✓			
C29B	✓	X	✓	X	✓		✓			☹
C29B Ex		X		X					✓	
P24B	✓	X	✓	X	✓		✓			
P29B	✓	X	✓	X	✓		✓			
T56B	✓	✓	✓	✓	✓	✓	✓	✓		

Table IV
Grinnell Detector/Base Range

✓ These detector/base combinations are compatible.
X These detector base combinations have been used in the past, however they are technically incorrect (see Product Bulletin PBD0004).
☹ The combination of Z94 base and MH2 heater unit is not SSL approved.

Note that Z52, Z55, Z56N and Z500N are non-electronic bases (ie. non-latching, non-indicating) and do not add any extra voltage to the detector in alarm (eg. if a T56B heat detector is used with these, it shorts directly across the AZC).

DETECTORS COMPATIBLE WITH F3200 FIP		MAX NO.
TYPE	DESCRIPTION	4mA
DCD-A	(DCC-A & DCA-B-60R) HEAT DETECTOR TYPE A	40
DCD-C	(DCC-C & DCA-B-90R) HEAT DETECTOR TYPE C	40
DFJ-60B	(DFE-60B & DFB-60B) HEAT DETECTOR TYPE B	40
DFJ-90D	(DFE-90D & DFB-90D) HEAT DETECTOR TYPE D	40
SIJ-ASN	(SIH-AM & SIF-A)IONISATION SMOKE DETECTOR	40
SLR-AS	(SLK-A & SLG-AM) PHOTOELECTRIC SMOKE DETECTOR	40
HF-24A	ULTRAVIOLET FLAME DETECTOR	18
ALL WITH YBC-RL/4AH4, YBF-RL/4AH4 OR YBF-RL/4AH4M OR YBO-R/4A BASE		

Table V
HOCHIKI Detector Range

DETECTORS CERTIFIED WITH F3200 FIP		MAX NO.
TYPE	DESCRIPTION	4mA
SERIES 60	APOLLO HEAT DETECTOR TYPES A, B, C, D	40
SERIES 60	APOLLO PHOTOELECTRIC SMOKE DETECTOR	40
SERIES 60	APOLLO IONISATION SMOKE DETECTOR	40
ALL WITH 45681-200 BASES		
MK VIII*	FLAMEGUARD HEAT DETECTOR TYPE A	22
MK VIII*	FLAMEGUARD HEAT DETECTOR TYPE C	11
(NOTE 9)	DETECTOR HAS INTEGRAL LED & TERMINALS	
MK5*, MK6*	INTERTEC HEAT DETECTOR TYPES A,B,C,D	22
(NOTE 9)	DETECTOR HAS INTEGRAL LED & TERMINALS	
ZAU401 REV2	ZONE ADAPTOR UNIT (INTERFACE)	1

Table VI
Other Detectors

REMOTE INDICATORS (LEDS) WITH COMPATIBLE DETECTORS/BASES										
REM IND/ BASE	Z51B	Z52B	Z54B	Z54B MK2	Z55B	Z56	Z500	Z91C	Z94C	MUB
E500	✓		✓					✓	✓	
E500 MK2				✓		✓	✓	✓	✓	✓

DET/REM IND	E500	E500 MK2
C23B	✓	
R23B	✓	✓
R24B	✓	✓
P76B	✓	✓

Table VII
Grinnell Detector/Base & Remote LED Range

The E500 remote indicators are designed to operate across typically 5V.
E500 R = 180Ω, V_F LED = 2.2V typical
E500 Mk2 R = 1.2kΩ, V_F LED = 1.75V typical

ACTUATING DEVICE COMPATIBILITY
NOTES

1) The maximum number of detectors per AZC allowed by the standard is 40.

2) Those detectors shown in brackets are old models and have the same characteristics as the current models.

3) Detectors indicated by a "x" may be used in INTRINSICALLY SAFE AREAS in conjunction with approved and compatible, intrinsically safe adaptors. The number allowed in a particular circuit may be less than the maximum shown. See Section 9.4.

   V41/42/44B detectors have flameproof enclosures.

4) Detectors indicated by a "+", which are used in HOSTILE CLIMATIC ENVIRONMENTS, may be directly connected to the panel, if they are not required to be intrinsically safe.

5) Detectors indicated by a "*", are not current models and should not be used for new installations.

6) Detectors indicated by an "&", normally use an incandescent lamp which will have a low intensity when used in mode 1.

   The lamp can be replaced with an LED kit.

7) The B111B beam and V41B/V42B/V44B flame detectors require power from the fused +24 VDC supply.

8) Hard Contact devices are indicated by a "#". Where an AZC has only hard contact detectors the circuit resistance may be up to 150 Ohms maximum to guarantee voltage band B1 operation.

9) There is a 12V version of Flameguard which may be used by adding a Zener diode. The Intertec detectors require a series diode to be fitted for compatibility. Both of these are detailed in Product Bulletin PBF0080.

10) The Olsen FW81B code for fire wire has been replaced by FW followed by the temperature rating in °C, eg. FW68, FW105. Only FW68 is currently approved and listed.

APPENDIX A2
PROGRAMMING FOR DETECTOR TYPE

1. GENERAL

The default programming (i.e. pre-programmed options) for AZCs (circuits) and zones are shown on the top of the "F3200 INPUT CONFIGURATION" sheet in Appendix B. They are as follows:

Circuits

Alarm Text	Mode	Delay (Type)	Voltage Band B1 (0-3V)	Voltage Band B3 (13-17.5V)
1 Smoke	1 Standard	1 Standard	1 Instant Alarm	1 Instant Alarm

Zones

Latch/ Non-Latch	Mapped/Not to MAF	Mapped/Not to Anc1	Mapped/Not To Anc2	Mapped/Not To Bells	LED Map (Zone n)
Latch	Mapped	Mapped	Mapped	Mapped	LED n

The default "circuit" programming suits most of the common "electronic" (as opposed to "hard contact") smoke detectors and hard contact detectors in electronic bases, where these are not used with external (remote) LED indicators.

Where other types of detector are used, or detectors are used to switch remote LED indicators directly so that the alarm voltage is out of the B2 range (approx. 3V-13V), the circuit will have to be programmed accordingly. In some cases constraints are also applied to zone programming. For example, where a non-latching detector (e.g. Olsen P76B) is used for air duct sampling, then as well as programming the circuit for the appropriate RAD or SAD time delay sequence, the zone should be programmed as non-latching.

Programming circuits and zones is described in Sections 7.2 and 7.3 of this manual. The following describes the relationships between detector types and circuit programming.

2. ALARM TEXT

Choose the appropriate text for each detector type e.g. smoke (default) for smoke detectors, heat for thermal detectors, etc. There is provision for creating new names if the standard ones are not sufficient.

The Instant Alarm text may also be changed if required (default is manual).

3. MODE

Mode 1 (standard) suits most detectors where remote LEDs are not used.

High Current Detectors

The following detectors require the F3200 circuit to be programmed into high current mode (mode 2) to give sufficient LED (lamp) illumination current.

APPENDIX A2 (CONTINUED)

Olsen C23B, C23BEx, R23B, R24B (and Ex where applicable), Flameguard, Intertec, Apollo Series 60.

Remote LEDs

Where remote LEDs are used, mode 2 may have to be selected to give sufficient current for illumination, depending on the particular LED kit used.

Where mode 2 is selected, some detectors require voltage band B3 to be programmed as Alarm. See tables I-V.

4. DELAY TYPE

Delay types 2 and 3 with a delay out of alarm (Delay 2 greater than 0) require a non-latching detector (e.g. Olsen P76B).

5. VOLTAGE BANDS

The following tables I-V show the expected alarm voltage band for each type of detector in Mode 1 (standard) and Mode 2 (high current). A "-" means there is no need to use Mode 2 (and it should not be used).

Where a value other than B2 is shown (e.g. B1 or B3), then that voltage band must be programmed as Alarm.

Hard Contact Detectors

Hard contact detectors that are not fitted to an electronic base may also be connected directly across the circuit. Program the detector type as appropriate (e.g. heat, flowswitch) and voltage band B1 as Alarm (detector operated).

If detectors and MCPs are to be used on the same circuit, with differentiation between them (e.g. for AVF), then it is necessary to use 15V MCPs and program B3 = Instant Alarm. This means that 15V MCPs cannot be used on the same circuit as any detector that requires B3 = Alarm.

DETECTORS COMPATIBLE WITH F3200 FIP		VOLTAGE BANDS FOR MODES 1 & 2	
TYPE	DESCRIPTION	MODE 1	MODE 2
DCD-A	(DCA-B-60R & DCC-A) HEAT DETECTOR TYPE A	B2	B3
DCD-C	(DCA-B-90R & DCC-C) HEAT DETECTOR TYPE C	B2	B3
DFJ-60B	(DFB-60B & DFE-60B) HEAT DETECTOR TYPE B	B2	B3
DFJ-90D	(DFB-90D & DFE-90D) HEAT DETECTOR TYPE D	B2	B3
SIJ-ASN	(SIF-A & SIH-AM) IONISATION SMOKE DETECTOR	B2	B3
SLR-AS	(SLK-A & SLG-AM) PHOTOELECTRIC SMOKE DETECTOR	B2	B3
HF-24A	ULTRAVIOLET FLAME DETECTOR	B2	B3

Table I HOCHIKI Detector Range

DETECTORS COMPATIBLE WITH F3200 FIP		VOLTAGE BAND FOR MODES 1&2	
TYPE	DESCRIPTION	MODE 1	MODE 2
MD614	HEAT DETECTOR	B2	-
MF614	IONISATION SMOKE DETECTOR	B2	-
MR614	PHOTOELECTRIC SMOKE DETECTOR	B2	-
MR614T	HIGH PERFORMANCE OPTICAL SMOKE DETECTOR	B2	-
MU614	CARBON MONOXIDE DETECTOR	B2	-
MS302Ex	INFRA-RED FLAME DETECTOR	B2	-
S111	INFRA-RED FLAME DETECTORS (IS)	B2	-
S121	INFRA-RED FLAME DETECTORS (IS)	B2	-
S131	INFRA-RED FLAME DETECTORS (IS)	B2	-
S231i+/f+	INFRA-RED FLAME DETECTOR(IS)(Refer 9.6.1)	B2	-
MF301Ex	IONISATION SMOKE DETECTOR	B2	-
MR301Ex	PHOTOELECTRIC SMOKE DETECTOR	B2	-
MR301TEx	HIGH PERFORMANCE OPTICAL SMOKE DETECTOR	B2	-

Table II
Tyco Detectors

DETECTORS COMPATIBLE WITH F3200 FIP		VOLTAGE BAND FOR MODES 1&2	
TYPE	DESCRIPTION	MODE 1	MODE 2
4098-9618EA	HEAT DETECTOR – TYPE A	B2	-
4098-9619EA	HEAT DETECTOR – TYPE B	B2	-
4098-9621EA	HEAT DETECTOR – TYPE D	B2	-
4098-9603EA	IONISATION DETECTOR	B2	-
4098-9601EA	PHOTOELECTRIC DETECTOR	B2	-

Table III
Simplex Detectors

DETECTORS CERTIFIED WITH F3200 FIP (SSL # 336)		VOLTAGE BANDS FOR MODES 1 & 2	
TYPE	DESCRIPTION	MODE 1	MODE 2
B111B	BEAM TYPE SMOKE DETECTOR SEE NOTE 1	**B1**	-
B21B	BEAM TYPE SMOKE DETECTOR	**B3**	-
C23B	IONISATION SMOKE DETECTOR SEE NOTE 3	B2 *	**B3**
C23BEx	IONISATION SMOKE DETECTOR SEE NOTE 3	B2 *	**B3**
C24B	IONISATION SMOKE DETECTOR	B2	B2
C29B	IONISATION SMOKE DETECTOR	B2	B2
C29BEX	IONISATION SMOKE DETECTOR (IS)	B2 *	B2
DLO1191A	BEAM SMOKE DETECTOR	**B3**	**B3**
FW81B	HEAT DETECTOR CABLE FW68, FW105 (IS)	**B1**	B2
P24B	PHOTOELECTRIC SMOKE DETECTOR	B2	B2
P29B	PHOTOELECTRIC SMOKE DETECTOR	B2	B2
P61B	PHOTOELECTRIC SMOKE DETECTOR (REV J)	B2	-
P76B	PHOTOELECTRIC SMOKE DETECTOR (NOTE 2)	**B3**	**B3**
P136	PHOTOELECTRIC SMOKE DETECTOR (NOTE 2)	B2	-
R23B	INFRARED FLAME DETECTOR	B2 *	B2
R24B	DUAL SPECTRUM INFRARED FLAME DETECTOR	B2 *	**B3**
R24BEX	DUAL SPECTRUM INFRARED FLAME DETECTOR (IS)	B2 *	**B3**
T54B	PROBE TYPE E HEAT DETECTOR (IS OR FLAMEPROOF)	**B1**	-
T56B	HEAT DETECTOR TYPES A, B, C, D (IS WITH Z55 BASE) SEE NOTE 1	B2	B2
V41B	ULTRAVIOLET FLAME DETECTOR SEE NOTE 1	**B1**	-
V42B	ULTRAVIOLET FLAME DETECTOR SLAVE	-	-
V44B	ULTRAVIOLET FLAME DETECTOR SEE NOTE 1	**B1**	-
SU0600	15V MCP	**B3**	**B3**
DETECTORS WITH BASES AS APPLICABLE			

Table IV TYCO Detector Range

DETECTORS CERTIFIED WITH F3200 FIP (SSL # 336)		VOLTAGE BANDS FOR MODES 1 & 2	
TYPE	DESCRIPTION	MODE 1	MODE 2
SERIES 60	APOLLO HEAT DETECTOR TYPES A, B, C, D	B2 *	**B3**
SERIES 60	APOLLO PHOTOELECTRIC SMOKE DETECTOR	B2 *	**B3**
SERIES 60	APOLLO IONISATION SMOKE DETECTOR	B2 *	**B3**
ALL WITH 45681-200 BASES			
MKVIII	FLAMEGUARD HEAT DETECTOR TYPE A, 24V	- *	**B3**
MKVIII	FLAMEGUARD HEAT DETECTOR TYPE C, 24V	- *	**B3**
MK5, MK6	INTERTEC HEAT DETECTOR TYPES A,B,C,D	B2 *	**B2**
ZAU401	ZONE ADAPTOR UNIT (REV 2)	B2	**B2**

Table V
Other Detectors

<u>Notes</u>

1. Hard contact devices without "electronic" bases give voltage band B1 unless a 6V8 zener diode is wired in series with the contacts which gives B2 alarm.

2. The P76B requires band B3 to be programmed as Alarm (detector operated) though typical operation for both modes 1 and 2 will give B2 voltage (just less than 12V).

   For non-latching operation the zone must be programmed as non-latching.

3. The C23B and C23BEx (old types of detectors) may have a nominal 6V/30mA bulb in them which require Mode 2 for illumination. The bulbs may have been replaced with LEDs. Although the bulb would typically give B2 operation, it is safest to program B3 as Alarm. The R23B with an LED needs only B2 in Mode 2. (Note that the incandescent lamps do not meet the SSL005 Standard).

4. Detectors shown with an "*" need to be programmed for Mode 2 to give sufficient lamp illumination. The Flameguard detectors require Mode 2 for latching and require an extra resistor (270E, 5W) to be switched in from +VBF to the AZC+ terminal for LED illumination. If relay n is used to boost AZCm, the logic for the relay is Rn = ZmA.^ZmR.

5. For IS applications refer to Section 9.4.

WARNING

Detectors which require voltage band B3 to be programmed as Alarm (detector operated) cannot have an MCP with a 15V Zener Diode (e.g. SU0600) connected to the same circuit.

APPENDIX B

F3200 CONFIGURATION SHEETS

The following pages are suggested as master forms for programming. It is recommended that they be photocopied, and a complete set be filled out for each FIP before programming is started.

When programming is complete, the database printout should be checked against the sheets.

A copy of the database printout and completed sheets should be kept in the contract file for each installation.

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F3200/NDU SYSTEM CONFIGURATION PAGE 1 REF:...............

This set of configuration sheets contains all programmable parameters. Fill in values for all parameters that are being changed from the default settings.

....
(SITE NAME - 40 CHARACTERS MAXIMUM)

8 Zone modules : 0 – 8 ___________ MAF module present Y/N ______________

8 Relays modules : 0 – 8 ___________ LED Display boards : 0 – 4 ______________

	MAF RELAY OUTPUTS						
	ENABLE	LATCH	MAF	MODE	ISOL	TEST	SUP ACT
ANC1							
ANC2							
ANC3							

	NAME	LOGIC EQUATION
ANC1		
ANC2		
ANC3		
STANDBY		
FAULT		
ISOLATED		
ALARM		

ACCESS CODES 0-9					USER INITIALS				
0	1	2	3	4	5	6	7	8	9

F3200/NDU SYSTEM CONFIGURATION PAGE 2 REF:...............

AUTO TEST
Alarm test enable/disable Y/N:
Start time:
Inhibit dates:

SYSTEM OPTIONS

FIP MCP Zone 0 – 64		
All zones isolated = standby	Y/N	
Activate relay for Brigade Test	Y/N	
FFCIF zones: MAF only/all/none		
FFCIF type	2/3	
FFCIF auto ack enable/disable	Y/N	
FFCIF allow remote ack from RDU	Y/N	
FFCIF display cause by default	Y/N	
FFCIF alarm → Bells on	Y/N	
FFCIF flash non maf alarm LEDs	Y/N	
FFCIF send non maf alarm to RDU	Y/N	
Country coder 0 – 6		

Fault action text ……………………………………………………………

PSU/BATTERY OPTIONS

Mains enabled	Y/N		Mains Frequency	50/60	
8 hours mains fail = fault	Y/N		Battery connection test enable	Y/N	
Charger high/low = fault	Y/N		Hourly Battery test enable	Y/N	
Battery low = fault	Y/N		Daily Battery test enable	Y/N	

BUZZER OPTIONS

Zone alarm buzzer enable	Y/N		Remote sys fault reset silences	Y/N	
Zone fault buzzer enable	Y/N		Remote FFCIF action silences	Y/N	
System fault buzzer enable	Y/N		Remote any command silences	Y/N	
Non-maf zone faults buzzer	Y/N		Receive network sounder silence	Y/N	
Faults resound after 8 hours	Y/N		Send any key net sounder silence	Y/N	
Sounder after 8 hours isolate	Y/N		Allow net sounder silence cmd	Y/N	

NEW ZEALAND MODE OPTIONS

New Zealand mode enabled	Y/N		Evac defect is fault	Y/N	
Battery very low is alarm	Y/N		External defect is fault	Y/N	
NZ Display Extender bd present	Y/N				

F3200/NDU SYSTEM CONFIGURATION PAGE 3 REF:...............

Key	Non-FF Mode Door Open Key Enabled Y/N	FF Mode Door Open Key Enabled Y/N	Non-FF Mode Door Closed Key Enabled Y/N	FF Mode Door Closed Key Enabled Y/N
Prev				
Next				
Ack				
Reset				
Isolate				
Relay				
Bell Isol				
Warn Sys Isol				
AIF Mode				
Clear				
Recall				
Ancil Isol				
Zone				
System				
Numeric				
Enter				
Batt Test				
OR				
AND				
XOR				
NOT				
Print				
Set				
Test				
Alarm Test				
Fault Test				
Brigade Test				
	DEFAULT IS ALL ENABLED	DEFAULT IS ALL ENABLED	DEFAULT IS ALL DISABLED	DEFAULT IS ALL DISABLED

F3200/NDU SYSTEM CONFIGURATION PAGE 4 REF:...............

RDU PARAMETERS

RZDU protocol Type: LCD ☐ Non-LCD ☐

RZDU 1 – 8	Enabled Y/N	Protocol A/B	MCP Zone

ALARM TEXT NAMES					
Text No	Default	Program	Text No	Default	Program
1	Smoke		6	PSW	
2	Heat		7	SPKLR	
3	FSW		8		
4	Manual		9		
5	Valve				

F3200/NDU SYSTEM CONFIGURATION PAGE 5 REF:...............

Event printing enable/disable Y/N	
Printer lines per page 0 – 250	
Printer baud rate 300 – 9600	
Print relay activate/de-activate events Y/N	

EVENT TYPES LOGGED TO PRINTER AND HISTORY

	PRINTER Y/N	HISTORY Y/N
ZONES		
SYSTEM		
SYS RUN		
CIRCUIT		
POINT		
RELAY		

DAYLIGHT SAVING PARAMETERS

	START	END
MONTH		
HOUR		
MINUTE		
DAY: (one of next 1,2,3)		
1: LAST WEEKDAY OF (MON-SUN)		
2: Nth WEEKDAY OF (MON-SUN)		
3: DATE		
TIME DIFFERENCE:		
HOUR		
MINUTE		

F3200 AZC CONFIGURATION REF:...............

Number of Zone Modules Fitted …………………

8ZM NO.		CCT NO.	AZC PROGRAMMING								FIELD WIRING
			ALMT	MODE	DLY	B1	B3	DLY1	DLY2	INST	
			1	1	1	1	1	-	-	4	
1	1	1									
	2	2									
	3	3									
	4	4									
	5	5									
	6	6									
	7	7									
	8	8									
2	1	9									
	2	10									
	3	11									
	4	12									
	5	13									
	6	14									
	7	15									
	8	16									
3	1	17									
	2	18									
	3	19									
	4	20									
	5	21									
	6	22									
	7	23									
	8	24									
4	1	25									
	2	26									
	3	27									
	4	28									
	5	29									
	6	30									
	7	31									
	8	32									

F3200/NDU ZONE CONFIGURATION REF:...............

ZONE NO		ZONE PROGRAMMING						ZONE NAME
		LATCH	MAF	ANC1	ANC2	BELL	LED	
Defaults		L	M	M	M	M	ZONE NO.	
1	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
2	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
3	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
4	25							
	26							
	27							
	28							
	29							
	30							
	31							
	32							

F3200/NDU OPEN COLLECTOR OUTPUT FUNCTION & LOGIC EQUATION

REF:...............

8ZM NO.		OUT PUT	FUNCTION NAME	LOGIC EQUATION
1	1	1		
	2	2		
	3	3		
	4	4		
	5	5		
	6	6		
	7	7		
	8	8		
2	1	9		
	2	10		
	3	11		
	4	12		
	5	13		
	6	14		
	7	15		
	8	16		
3	1	17		
	2	18		
	3	19		
	4	20		
	5	21		
	6	22		
	7	23		
	8	24		
4	1	25		
	2	26		
	3	27		
	4	28		
	5	29		
	6	30		
	7	31		
	8	32		

F3200 RELAY CONFIGURATION REF:...............

8RM NO.		RLY NO.	ENABLE	LATCH	MAF	ISOL	TEST	SUP-AC	LED	TEXT NAME (30 CHARACTERS)
DEFAULTS			E	N	M	Y	Y	Y		
1	1	1								
	2	2								
	3	3								
	4	4								
	5	5								
	6	6								
	7	7								
	8	8								
2	1	9								
	2	10								
	3	11								
	4	12								
	5	13								
	6	14								
	7	15								
	8	16								
3	1	17								
	2	18								
	3	19								
	4	20								
	5	21								
	6	22								
	7	23								
	8	24								
4	1	25								
	2	26								
	3	27								
	4	28								
	5	29								
	6	30								
	7	31								
	8	32								

F3200/NDU RELAY FUNCTIONS & LOGIC EQUATIONS

REF:...............

8RM NO.		RELAY NO.	NAME	LOGIC EQUATION
1	1	1		
	2	2		
	3	3		
	4	4		
	5	5		
	6	6		
	7	7		
	8	8		
2	1	9		
	2	10		
	3	11		
	4	12		
	5	13		
	6	14		
	7	15		
	8	16		
3	1	17		
	2	18		
	3	19		
	4	20		
	5	21		
	6	22		
	7	23		
	8	24		
4	1	25		
	2	26		
	3	27		
	4	28		
	5	29		
	6	30		
	7	31		
	8	32		

F3200 RELAY FIELD WIRING REF:...............

Number of 8RMs:...............

8RM NO.		RELAY NO.	NAME	FIELD WIRING
	1	1		
	2	2		
	3	3		
1	4	4		
	5	5		
	6	6		
	7	7		
	8	8		
	1	9		
	2	10		
	3	11		
2	4	12		
	5	13		
	6	14		
	7	15		
	8	16		
	1	17		
	2	18		
	3	19		
3	4	20		
	5	21		
	6	22		
	7	23		
	8	24		
	1	25		
	2	26		
	3	27		
4	4	28		
	5	29		
	6	30		
	7	31		
	8	32		

F3200/NDU ZONE DISPLAY BOARD LED CONTROL

REF:...............
PAGE..... of ......

LOGICAL RELAY NO (65-256)	LED SET (1-64)	ALARM, FAULT, ISOLATE	LOGIC EQUATION

F3200/NDU TIMERS, VARIABLES, NETWORK VARIABLES & ZONE ISOLATE/ DEISOLATE/RESET EQUATIONS

REF:...............

TIMER/VARIABLE/ NETVARS/ZONE CMD/SNA	LOGIC EQUATION

F3200/NDU CONFIGURATION SHEETS REF:...............

NETWORK PARAMETERS
FILL IN VALUES FOR ALL PARAMETERS THAT ARE BEING CHANGED FROM DEFAULT.

NETWORK SETUP					
LOCAL SID NUMBER		NIC Y/N		RX TIMEOUT	
TX DELAY		ACK TIME		DUP TIME	
LEADING FF		TRAILING FF		LINK TX Y/N	
LINK TX TIME		LINK RX TIME		GROUPS	
ACK BROADCASTS Y/N		BAUD RATE		RETRIES	
SLOTS		MODE B 0 – 7		ACK BROADCASTS TO SPECIFIC SID	
MODE: MULTIDROP/POINT TO POINT M/P					

NETWORK MAF CONFIG			
REFRESH TX TIME		MAX COS RATE	
RECEIVE BELLS CONTROL Y/N		SEND BELLS SILENCE Y/N	
RECEIVE BELLS SILENCE Y/N			

NETWORK COMMAND CONFIG					
ACK TIME		WORK TIME		RX NET TIME/DATE Y/N	
TX NET TIME/DATE Y/N					

NETWORK FFCIF CONFIG					
TX ALARMS Y/N		DEDICATED TX SID		RX NET ACK Y/N	
TX ISO/RESET CMDS Y/N		TX ACK CMDS Y/N			

NETWORK EVENT CONFIG			
TRANSMIT EVENTS Y/N		TRANSMIT EVENT UPDATES Y/N	
TRANSMIT RELAY OPERATES Y/N		ZONE/RELAY CMD TEXT TX Y/N	
ZONE/RLY EVENT TEXT TX Y/N		SYSTEM EVENT TEXT TX Y/N	

NETWORK VARIABLE CONFIG					
TX ENABLED Y/N		TX REFRESH RATE		MAX COS TX RATE	

NETWORK STATUS REFRESH CONFIG					
REFRESH ENABLED Y/N		TX REFRESH RATE		FAST TX RATE	

F3200/NDU CONFIGURATION REF:...............
NETWORK SID LIST CONFIGURATION

SID NO. 1-254	LINK RX Y/N	LOG EVNT Y/N	RX FFCIF Y/N	TX CMD Y/N	RX CMD Y/N	USE MAF Y/N	USE TOTALS Y/N	STATUS SEARCH Y/N

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