VIGILANT
FIRE & EVACUATION SYSTEMS

RDU

REMOTE DISPLAY UNIT

INSTALLATION & PROGRAMMING MANUAL

RDU PRODUCT MANUAL

Document Number: LT0148

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- A P P R O V A L S -
AUSTRALIAN STANDARD AS1603.4 1987 (Incl. Amdt 1 & 2): **AUSTRALIAN STANDARD AS4050 1992 (Int)** **AUSTRALIAN/NZ STANDARD AS/NZS3548 1995 Class A** **NEW ZEALAND STANDARD NZS4512**

Vigilant Fire & Evacuation Systems
211 Maces Road
Christchurch
NEW ZEALAND

Tel : +64-3-389-5096
Fax : +64-3-389-5938

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END USER LIABILITY DISCLAIMER

The RDU 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 RDU. It is possible for the user to program operational features that prevent the installed RDU from meeting statutory requirements.

VIGILANT FIRE & EVACUATION SYSTEMS does not accept responsibility for the suitability of the functions programmed by the user.

AS3548 NOTICE

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

AMENDMENTS

ISSUE	DATE	COMMENTS	ECN
1	20/07/94	Original. Corresponds to V1.35 software, full functionality for both MAF & Non-MAF configured systems	
2	08/12/97	Corresponds to V2.00 software. Includes New Zealand mode. Controller was 1931-2-2.	2735
2.10	29/04/98	V2.01 software. Provides EEPROM software write protection and zone name download from FIP through RZDU link. Sections 1.3.2, 3.6, 4.1, 6.1.4, 6.2.1, 6.3, 6.4, 6.6, 7.1.3 and 8.2.	2791
2.11	11/08/98	V2.02 software. Fault action text, programmable accept FIP time/date, FFCIF type 3 provides global ack option, text name loading from a PC.	2848
2.12	01/12/98	AS3548 Class A note added (Page ii)	2897
2.13	30/09/99	Changed for software V2.10 & V2.11. Wordified and re-printed.	2936 3014
2.14	22/01/01	Corrected and extended information on NZ Display Extender Boards throughout, Section 7.4 extensively rewritten.	

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

1.1 SCOPE

This manual provides information for the personnel responsible for planning, ordering, installing and programming a Remote Display Unit (RDU) for a Vigilant 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 RDU is used in both New Zealand and Australia and this manual describes the operation of both. There are some differences in operation between the two countries and these are listed in section 2.4. The country mode is selected with a programmable parameter.

The manual is divided into the following chapters:

Chapter 1 **Introduction:** Information on this manual.

Chapter 2 **System Description:** A description of the RDU and how it interacts with the FIP.

Chapter 3 **System Specifications:** A detailed specification for the RDU.

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

Chapter 5 **Configuring an RDU:** General information and detail on fitting of the various links and resistors when configuring a system.

Chapter 6 **Programming:** Details for the programming of an RDU.

Chapter 7 **Installation & Wiring:** Detail of installation and field wiring.

Chapter 8 **Alignment, Adjustment & Placing Into Operation:** Detail on how to adjust an RDU in the field and place it into operation.

Appendix A **RDU Configuration Forms:** A set of master forms for recording programming information for an RDU.

1.2 ASSOCIATED DOCUMENTATION

1.2.1 PRODUCT RELATED

The following manuals for the RDU are available:

RDU Installation & Programming Manual	This Manual, Part No. LT0148.
RDU Operator's Manual	Provides information on operation of the RDU, Part Number LT0133.

1.2.2 STANDARDS

This manual makes reference to the following Australian 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.
AS1670	Automatic Fire Detection and Alarm Systems - System Design, Installation and Commissioning.

and to New Zealand standard:

NZS4512	Automatic Fire Alarm Systems in Buildings

1.3 PRODUCT HISTORY LOG

1.3.1 HARDWARE

Part No.	Description	Iss	Rev	Date	Comments
PA0495	Controller/	A	1	11/11/93	Original
	Display	A	2	24/02/94	R50, R77, VR1 Values
		A	3	16/06/94	R40 & R41 were 15K (sheet 2)
PA0798	Controller	B	2	29/09/97	Re-laid PCB. Replaces PA0495.
PA0491	MAF/PSU	A	1	13/10/93	Original
		B	2	28/02/94	RL1-4 Changed
PA0703	Remote/	A	1	None	Original
	Termination	A	2	30/05/94	Added J7 & C5, changed C3, 4 from 10N to 1N

1.3.2 SOFTWARE

Part No.	Description	Revision	Date	Comments
SF0092	RDU EPROM	V1.00 - V1.3	13/05/94	Pre-production
SF0092	RDU EPROM	V1.35	19/07/94	1st production
SF0179	RDU EPROM	V2.00	01/12/97	2nd release
		V2.01	29/04/98	3rd release
		V2.02	12/08/98	4th release
		V2.10	22/03/99	Add FFCIF text
		V2.11	30/09/99	Add point & circuit events

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)
RMS	:	Root Mean Square
Reqd	:	Required
RTC	:	Real Time Clock
RDU	:	Remote Display Unit
sq mm	:	square millimetre
Tmnl	:	Terminal
VA	:	Volts Amperes
VB	:	Battery Backed Voltage
VNB	:	Non Battery Backed Voltage
+VBF	:	Fused Battery-Backed Voltage

GLOSSARY OF ABBREVIATIONS (CONTINUED)

+VNBF	:	Fused Non-Battery-Backed Voltage
Z1	:	Zone Number 1 (program abbreviation)
Zn1	:	Zone Number 1 (text abbreviation)

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 RDU 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 RDU to other equipment
Default	:	Pre-programming option or logic equation ie. one that exists without the user programming it.
Detector	:	Alarm Detection Device (electrical transducer)
Fire Control Station	:	Fire Brigade Authority, or any other authority which receives the 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 RDU, and associated with the FIP AZC of the same number.
Display extender board	:	Used with New Zealand operation only. It has common normal, fire and defect leds.

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CHAPTER 2
SYSTEM DESCRIPTION

2.1 OVERVIEW

2.1.1 GENERAL

The RDU may be used in either Australian mode or New Zealand mode and this manual describes the operation for both modes. The differences between Australian and New Zealand mode are described throughout this manual and listed in section 2.4. The country mode is selected with a programmable parameter.

The RDU is an intelligent Remote Display Unit (RDU) which performs the functions of a Fire Fighter's Control and Indicating Facility (FFCIF) as specified by the Australian Standard AS4050 int for Australian use and NZS4512 for New Zealand use.

It can connect to an F3200, F4000 LCD or F4000 Non-LCD FIP system to remotely indicate FIP zone status and optionally control the FIP. Up to 8 RDUs can be multi-drop connected to a FIP to achieve a distributed control and indication capability. The functionality of a Non-LCD FIP, in particular, is significantly enhanced by the connection of an RDU because of the added capability to display text messages and prompts.

The RDU has a high degree of flexibility. It can be programmed as to which of zones 1 to 528 that it will process. This means that in multiple RDU systems each RDU can be assigned the zones corresponding to its own particular sector, alternatively all RDUs can be configured for all zones if required. An RDU can be programmed to simply mimic the FIP zone status, or it can be programmed for control as well, thus allowing the operator to acknowledge, reset or isolate zones from the RDU. Please refer to Section 6.5.4 "Mode" programming for more information.

The RDU is ideally suited to annunciate both relay control and alarm type events. The following features of the RDU make it ideally suited for these applications:

- Programmable as to which zones are alarm type and which are relay, this should be the same as the FIP.
- Programmable zone name, eg. AIR CON. CONTROL CIRCUIT 5, LOWER GROUND FLOOR ALARM.
- Individually programmable zone mapping to LCD and LED number, and for FP0558 RDUs, MAF Brigade relays, Bells, and Ancillary 1 & 2 Relays.
- One to one, selective or multiple zone status to LED mapping where 16 Zone LED Display boards are fitted.
- Capability to install 16 Zone Relay Driver boards instead of 16 Zone LED Display boards in applications where outputs are to be switched on a per zone basis.

These features allow the RDU to be easily configured to suit a wide range of applications. Eg. annunciation and control for FIPs configured for automatic fire detection, AS1668 Air Conditioning Control, Gas Flood Control etc.

Three versions of the RDU are available, FP0558, FP0559 and FP0772 as shown in Figures 2.1.1, 2.1.2 and 2.1.3 respectively.

GENERAL (CONTINUED)

FP0558 is supplied in a 15U cabinet (750H, 550W, 230mmD) complete with a MAF/PSU module and Manual Call Point MCP. There is space for mounting up to four 16 Zone LED Display Boards as an optional extra.

FP0559 is a much smaller, minimally configured RDU unit. It is a wall mounting, low profile 4U, 177H, 450W, 50mmD unit which is line powered from the FIP. It does not have a MAF/PSU module and there is no provision for internal mounting of 16 Zone LED Display boards or a Manual Call Point MCP. 16 Zone LED Display boards and a MCP can be connected externally, if required providing suitable provision can be made for physical mounting eg. extender cabinet plus the extra power required to drive the LEDs.

The FP0772 is a flush mounting version of FP0559.

The FP0558 MAF configured RDU is the better option if 16 Zone LED Display boards are to be connected, or MAF relay outputs are required.

2.1.2 DISPLAYS

The primary display of the RDU 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 boards. The 16 Zone LED Display boards include as standard, an open collector transistor output for each zone which can be used to drive an internal or remote mimic display.

For New Zealand mode an optional Display Extender Board may be fitted and is connected at the end of the 16 zone LED display board chain and provides 3 common status LEDs and some supplementary inputs and outputs.

2.1.3 SERIAL COMMUNICATIONS PORT

A serial port is included in the RDU to provide the 3 wire (FP0558) or 4 wire (FP0559) link required for connection to the FIP.

2.1.4 PRINTER/PROGRAMMER PORT

The RDU also has a serial port to drive a logging printer, which records all events, time and date stamped as they occur. This port can also be used to save or load the programmed database (refer to Section 6.3.4).

2.1.5 FP0558: MAF-CONFIGURED RDU ONLY

2.1.5.1 MAF OUTPUTS

The FP0558 provides 7 relays as standard on the MAF/PSU module. These can be used to switch alarm bells and ancillary equipment such as door holders, air-conditioning shutdown, etc. The MAF standby, alarm, fault and isolate relays should not be used for signalling to the brigade, the brigade connection should be made to the FIP.

Each zone can be programmed to operate these relays when the appropriate condition is present, eg Alarm, Fault, Isolate etc.

2.1.5.2 POWER SUPPLY

The MAF configured RDU 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.

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.

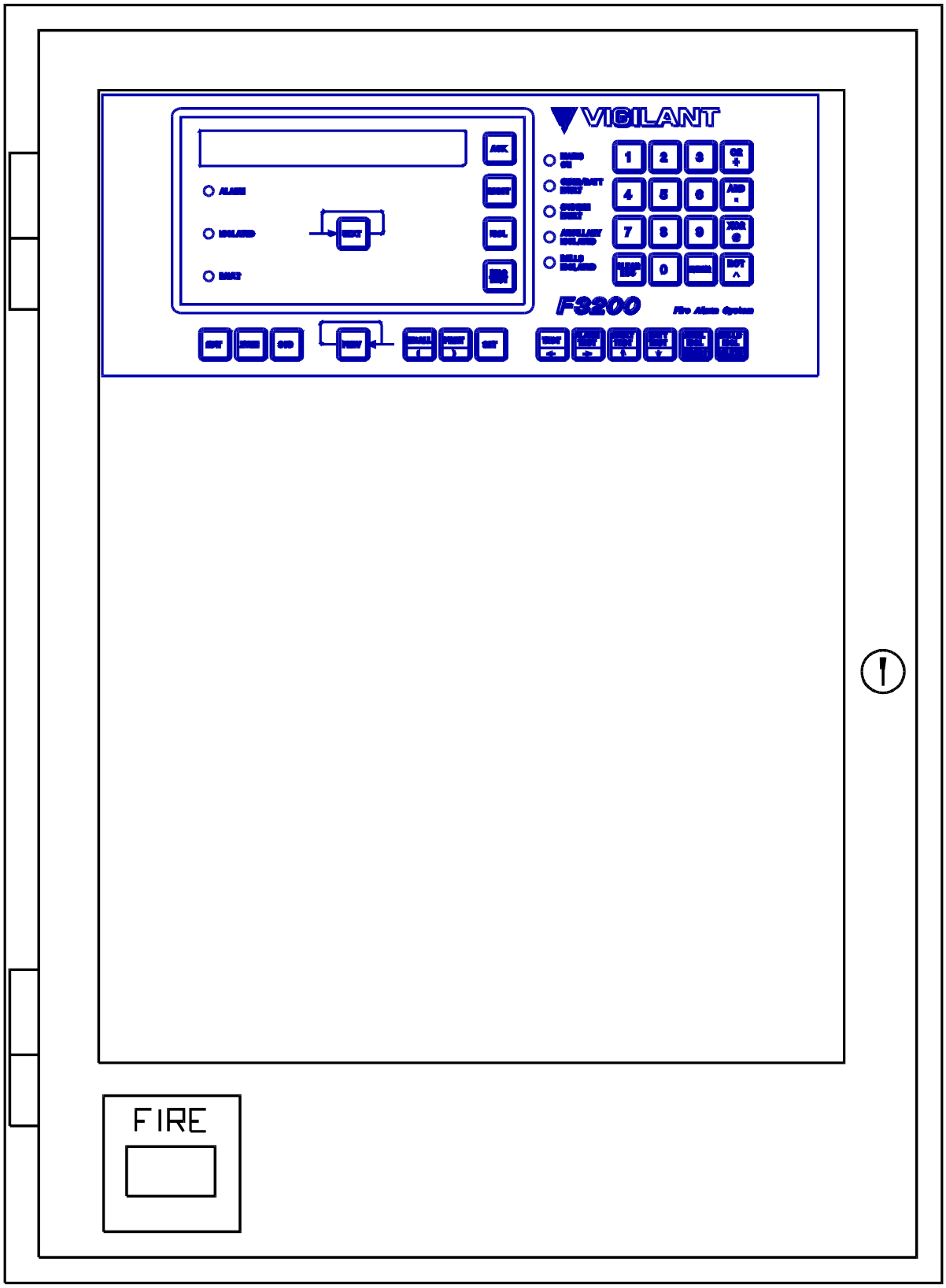


FIG 2.1.1
FP0558 MAF Configured RDU

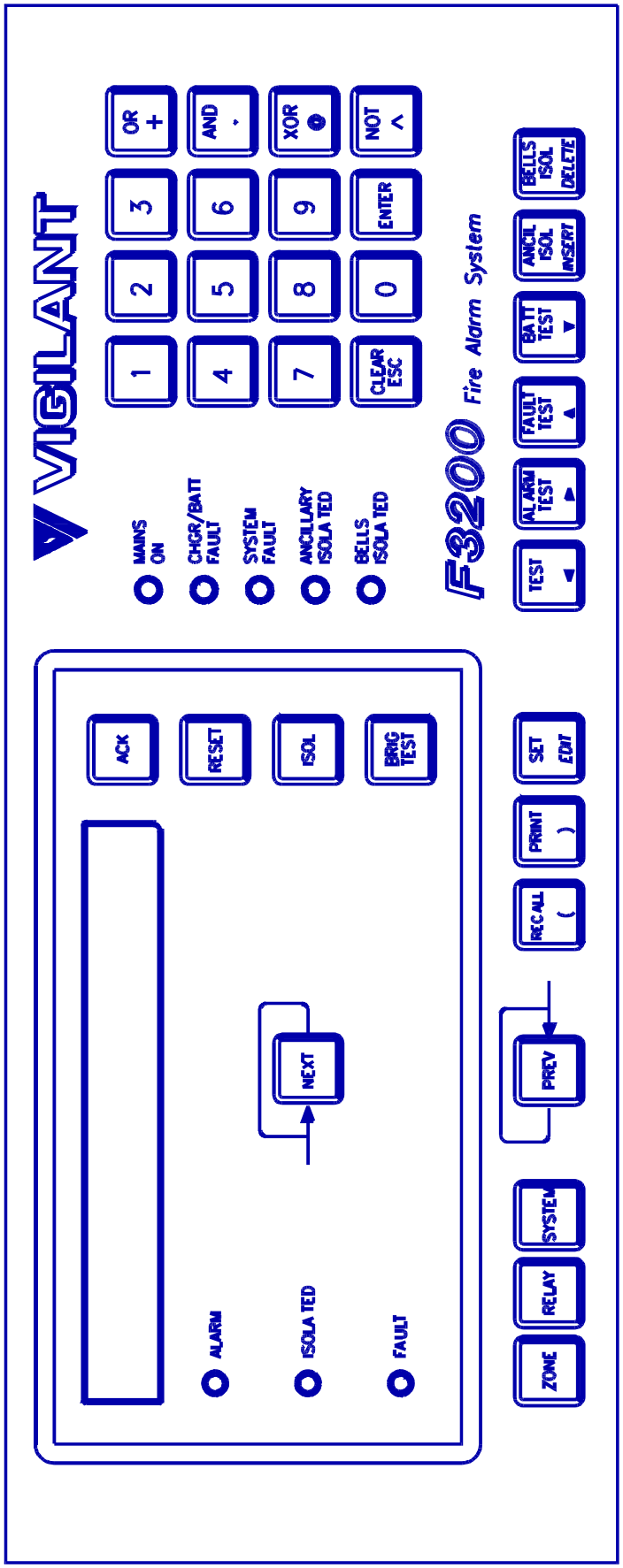


FIG 2.1.2
FP0559 Non-MAF Configured RDU

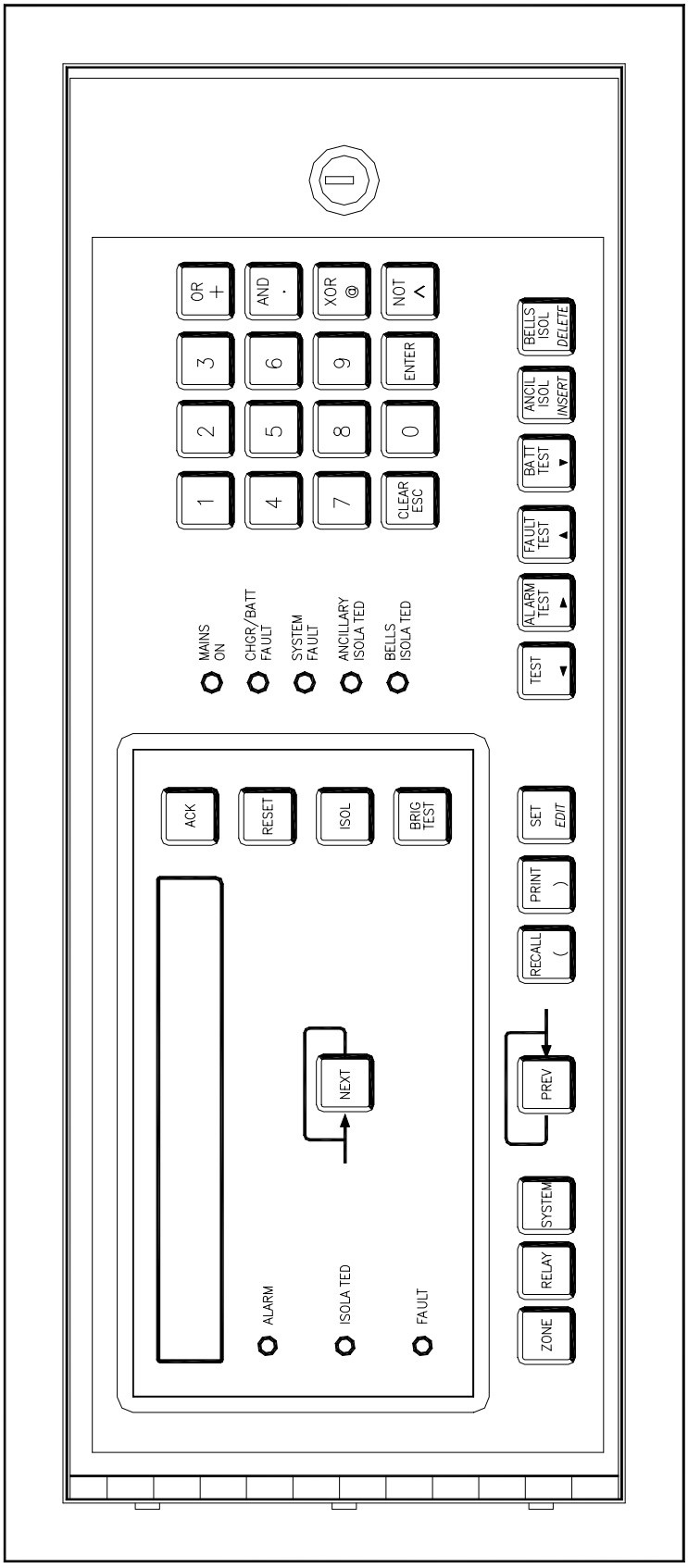


FIG 2.1.3
FP0772 Non-MAF Configured RDU (Flush Mounting)

2.2 PHYSICAL STRUCTURE

2.2.1 FP0558 MAF CONFIGURED RDU

The FP0558 has a rugged, lockable painted steel cabinet, which houses 19 inch rack-mount equipment of up to 15U height (667mm). The FP0558 comes complete with a MAF/PSU module mounted in the cabinet and room for batteries below. Refer to Figure 2.2.1.

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.

The remaining space is covered by a blanking plate, but there is provision for mounting other equipment below the Operator Display.
Eg. a 7U hinged inner door for a mimic, or to mount the 16 Zone LED Display boards, may be fitted directly below the Operator Display.

There is provision for mounting equipment in the bottom 4U (eg. an AS1668 control rack) but this could encroach on battery space.

The outer door has an MCP (Australian panels only - not NZ) on the outside and a large acrylic window to allow viewing of the equipment inside.

For New Zealand operation the display extender board, unprotected termination board and optional brigade keyswitches could be mounted in this cabinet or an external “picture frame” cabinet. Refer to section 7.4.

2.2.2 FP0559 NON-MAF CONFIGURED RDU

The FP0559 (Refer to Figure 2.1.2) is a wall mounting, low profile 4U, 177H, 450W, 50mmD unit. It is powered from the FIP via the +24 and 0 volt wires of the 4 wire cable that is terminated onto the 1931-27 Remote Interface board inside the RDU. It is intended as a small stand-alone unit that provides a Fire Fighter's Control and Indicating Facility (FFCIF) as detailed in Australian Standard AS4050 int.

For New Zealand operation an external cabinet could be provided to house a Display Extender Board and any 16 Zone LED Display boards.

2.2.3 FP0772 NON-MAF CONFIGURED RDU

The FP0772 RDU (refer to Figure 2.1.3) is a flush mounted version of FP0559 and has outer dimensions of 219mm (H), 502mm (W), 75mm (D).

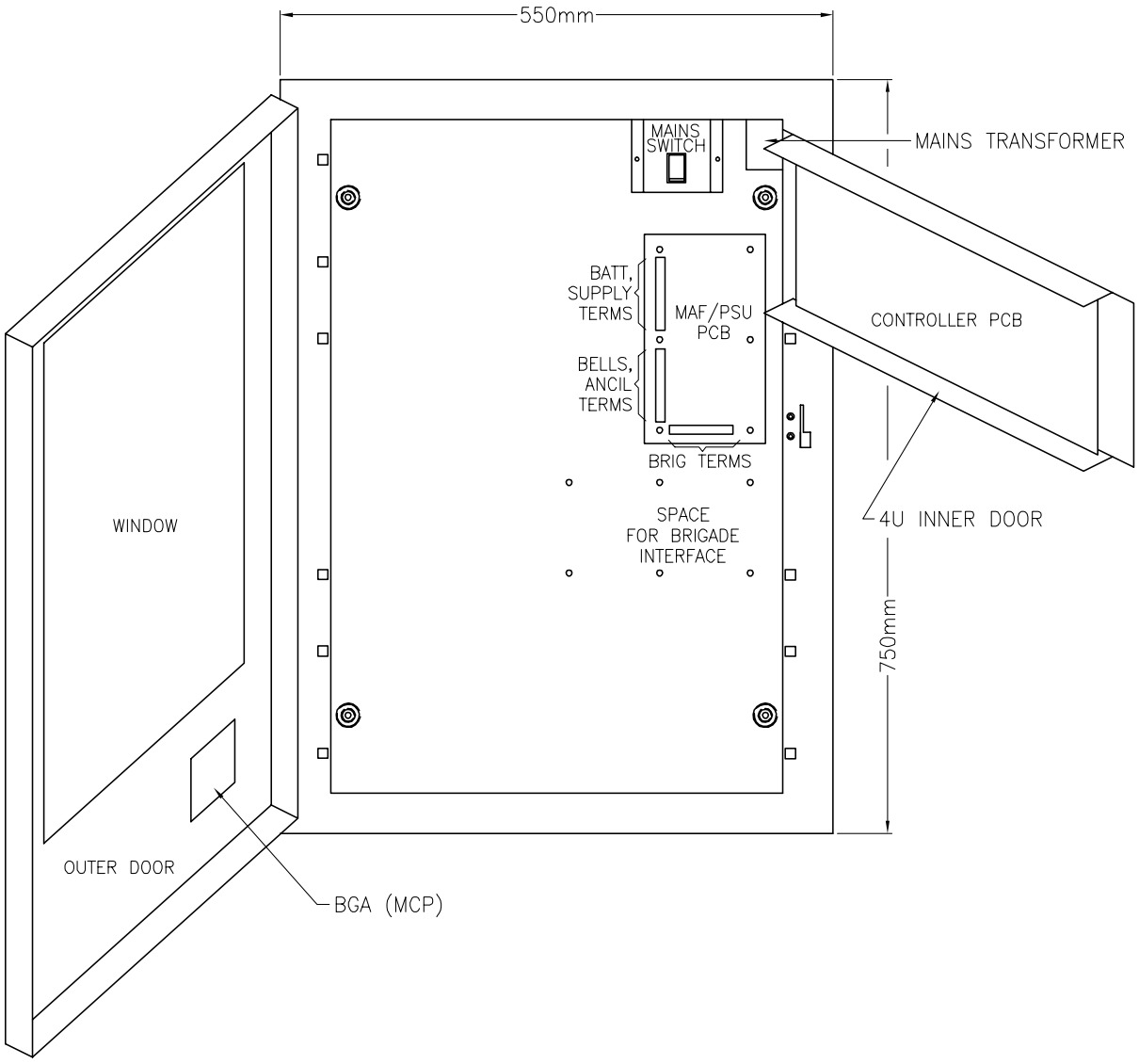


FIG 2.2.1
FP0558 - INTERNAL LAYOUT

2.3 SYSTEM STRUCTURE

2.3.1 PCB MODULES: FP0558

The printed circuit boards which can be used in the FP0558 RDU are:

Controller/Display (PA0798)

Mounts on 4U inner door.

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

MAF/PSU (PA0491)

Mounts on cabinet rear wall.

Includes: Battery charger/PSU
Brigade & Ancillary relays and supervision circuitry
MCP & door switch inputs
Screw terminals (mostly demountable) for field wiring
FRC connection to other modules.

16 Zone LED Display (PA0454) Optional Extra

Mounts on 7U inner door.

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

16 Relay Driver (PA0461) Optional Extra

Mounts on 7U inner door.

Includes: 16 open collector outputs for driving the 16 Relay Bd.

16 Relay Board (PA0470) Optional Extra

Mounts internally in cabinet.

Includes: 16 sets of voltage free change-over contacts driven by the open collector outputs on the mimic connector of either the 16 Zone LED Display boards or the 16 Relay Driver boards.

NZ mode Display Extender Board (PA0499 or PA0742)
Termination Board (PA0483)
Used for New Zealand operation only. Refer to section 7.4
The Display Extender Board can mount on the 7U inner door (PA0499) or in a “pictureframe” cabinet (PA0742).
Includes: 3 LEDs, 5 inputs, index lamp output, 5 outputs

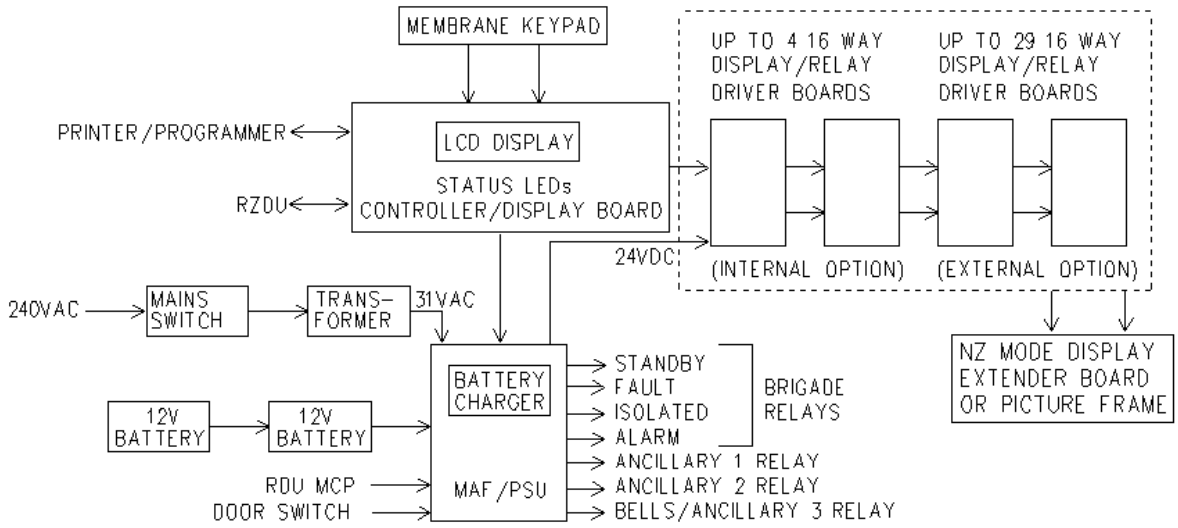


FIG 2.3.1
SYSTEM STRUCTURE: FP0558 MAF CONFIGURED RDU

2.3.2 INTER-CONNECTION & STRUCTURE : FP0558

A basic MAF Configured RDU system has one Controller/Display and one MAF/PSU, interconnected by Flat Ribbon Cable (FRC), as shown in Fig 2.3.1. For New Zealand operation, a Display Extender Board is normally also used.

2.3.2.1 16 Zone LED Display Boards

16 Zone LED Display boards are driven from the "LED DISPLAY" serial bus on the Controller/Display PCB. They receive power from the MAF/PSU via two power leads. Where more than one is required they are connected in series from right to left (as viewed from the front) on the RDU. The 34 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" mini-jump connector, (link LK1), to be fitted. Up to four 16 Zone LED Display boards can mount internally. Additional Display boards can be mounted externally, up to 33 in total, to provide individual zone status indication for all 528 zones. The additional loading due to extra Display boards will need to be carefully considered when planning the system battery/PSU configuration. Refer to Section 5.3.

LED Display boards may also annunciate FIP Relay status, ie. Alarm <-> relay activated, Isolated <-> relay isolated, Fault <-> relay wiring fault (ie. supervision fault). The default is that status information as received from the FIP is treated as zone status information at the RDU. If relay status information is to be processed correctly then the RDU must be specifically programmed as to which zones are relay type (see Section 6.6.1.4). Relay type zones do not generate FFCIF type alarm events at the RDU and any alarm LEDs do not flash on receipt of relay activated status from the master.

The default zone to LED mapping maps Zone 1 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). Mapping zones and relays to LEDs in other patterns is programmable. Multiple zone to LED mapping is also possible, refer to Section 6.6.1.1.

The RDU can be configured to have a lesser number of Display boards than that required by the default 1 to 1 mapping. Selective mapping of zones/relays to Display LEDs or multiple zone to LED mapping can achieve this.

2.3.2.2 16 Way Relay Boards

The 1901-64 16 Way Relay board (PA0470) can be connected to the 1901-25-1 16 Zone LED Display board (PA0454) or the 1901-25-2 Relay Driver Module (PA0461) to provide 16 clean contact relay outputs for the alarm or relay operated conditions. The possible configurations are shown in Figure 2.3.2(b).

Note that the RDU must be programmed for board N Type = Relay, if 16 Zone LED Display boards or relay driver modules are to be used to drive 16 Way Relay boards (Refer Section 6.5.3). This prevents pulsing of the open collector outputs. 16 Zone LED Display boards programmed as type relay will not flash their zone alarm LED on receipt of an unacknowledged alarm from the master.

2.3.2.3 New Zealand mode Display Extender Board.

The Display Extender Board (PA0499) is used for New Zealand operation only. Two versions are available: PA0499 has the same format as standard 16 Zone LED Display boards for internal mounting; PA0742 is suitable for installation in an external “picture frame” style cabinet.

The Display Extender Board provides common Normal, Fire, and Defect LED indicators. Inputs for brigade keyswitches (Silence Alarms, Evacuation, Building Services Restore), and termination for some other miscellaneous signals, are available by connection of an Unprotected Termination Board (PA0483) via a 26 way FRC. (Lamp Test, External Defect input, Ancillary Fire and Defect outputs, Index Lamp output). It connects either to the end of the 16 zone LED display board/ 16 relay driver module chain or if there are no other 16 zone LED / relay boards then it connects directly into J13 connector of the controller. The "end of bus" link, LK1, on the last 16 zone display/relay board should be removed when a Display Extender Board is connected.

The common normal LED (green) is on steady when both the FIP and RDU are completely normal. The common alarm LED flashes at 2 Hz when the FIP indicates there is an alarm in the system. The common defect LED flashes at 2 Hz when there is a defect present at the FIP or RDU. Up to three additional 16 zone LED display boards may be mounted inside the picture frame cabinet if necessary.

Refer to section 7.4 for more specific details of NZ mode display configuration.

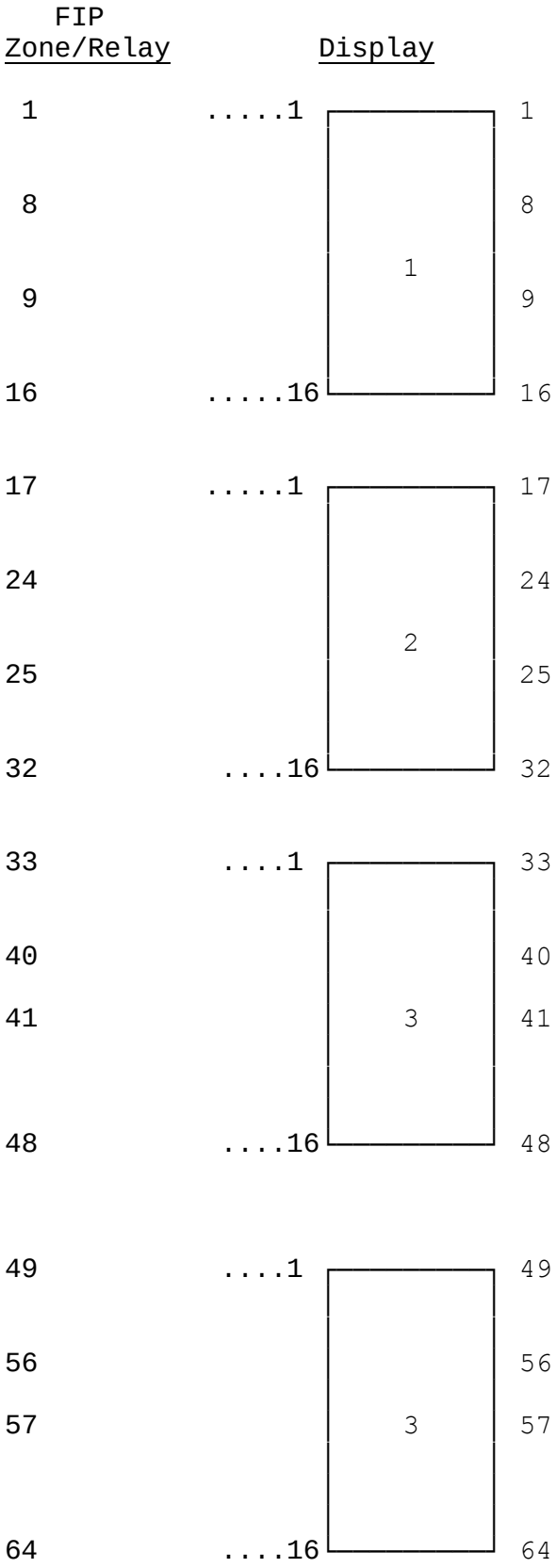


FIG 2.3.2(a)
DISPLAY STRUCTURE
(DEFAULT ZONE->LED MAPPING FOR 4 DISPLAY BOARDS CONNECTED)

2.3.3 PCB MODULES: FP0559 & FP0772 RDU

The printed circuit boards which are used in a Non-MAF configured RDU are as follows:

- **Controller/Display** as described in Section 2.3.1.

- **16 Zone LED Display** as described in Section 2.3.2,
  optional, externally mounted.

- **16 Relay Driver Module** and **16 way Relay Module** as described in Section 2.3.2.
  optional, externally mounted.

- **Remote Termination Board.**

- **Display Extender Board** (NZ operation only) - refer to section 2.3.2.3 and section 7.4.

Their arrangement is shown in Figure 2.3.3.

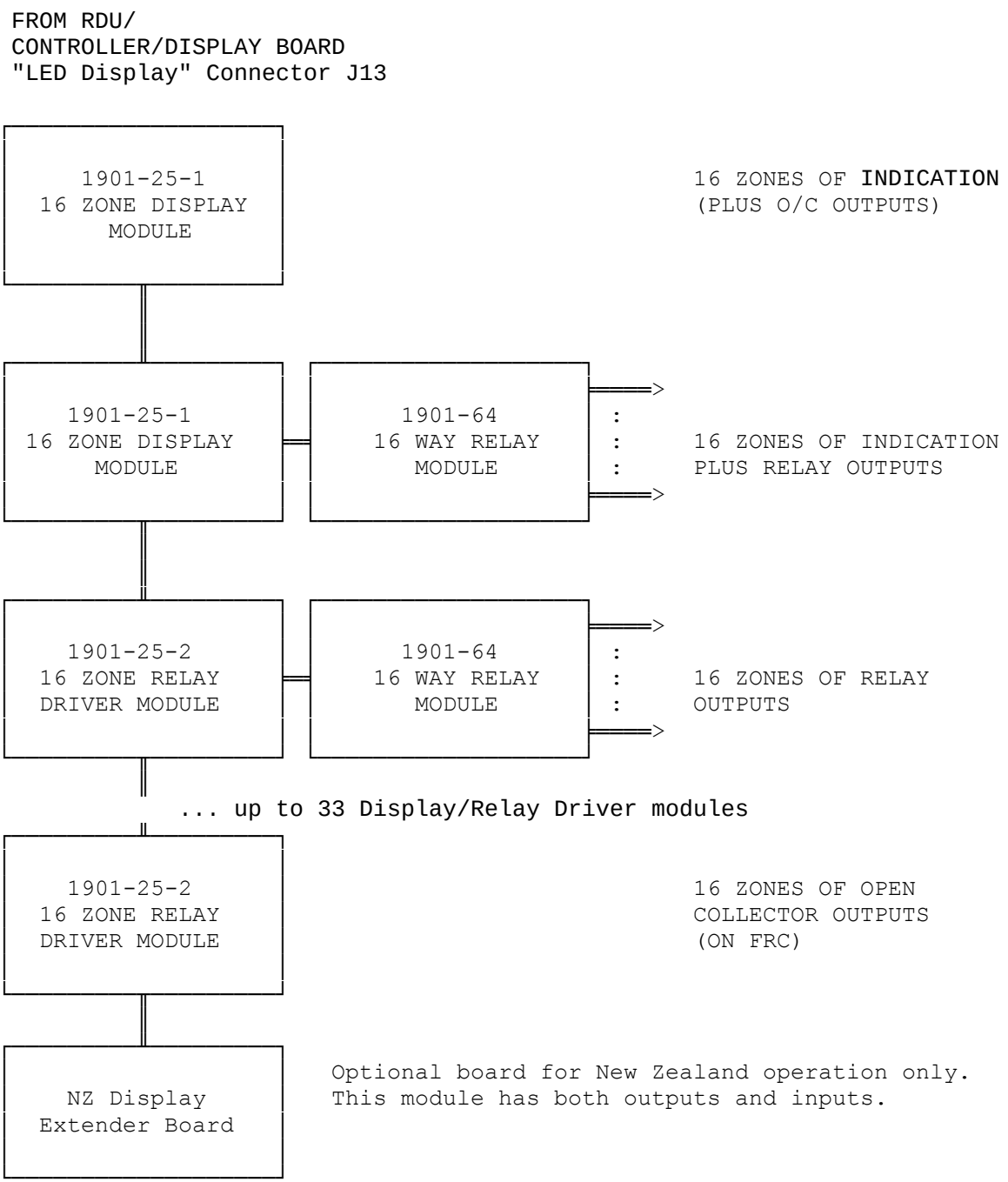
2.3.4 INTER-CONNECTION & STRUCTURE: FP0559 & FP0772

A minimally configured Non-MAF RDU has one Controller/Display and one Remote Termination board.

The front panel keyswitch connects to the Remote Termination board such that the keypad is enabled when the keyswitch is operated hard counter-clockwise or centre position, ie. key cannot be removed.

The Remote Termination board is also used to terminate the 4 core cable from the FIP for the power and communications input required. The Non-MAF RDU is line powered from the FIP hence the +24 and 0v feeds from the FIP are connected to the same terminals on the Remote Termination board. Similarly Tx from the FIP is terminated into Rx terminal on the RDU Termination board and Rx from the FIP is terminated into the Tx terminal.

An MCP (Refer Section 7.3), 16 Zone LED Display boards (33 Max) or Relay driver modules or 16 way Relay Module combinations (Refer Section 2.3.2) and a Display Extender Board (NZ operation), can be connected externally to the RDU Controller/Display board. Suitable provision must be made for physical mounting (eg. extender cabinet) plus the extra power required to drive the boards.



Note: Relay Outputs are clean contact, 1 pole change-over, rating 1 AMP DC resistive @ 30 VDC.

FIG 2.3.2(b)
POSSIBLE INDICATION/RELAY OUTPUT COMBINATIONS

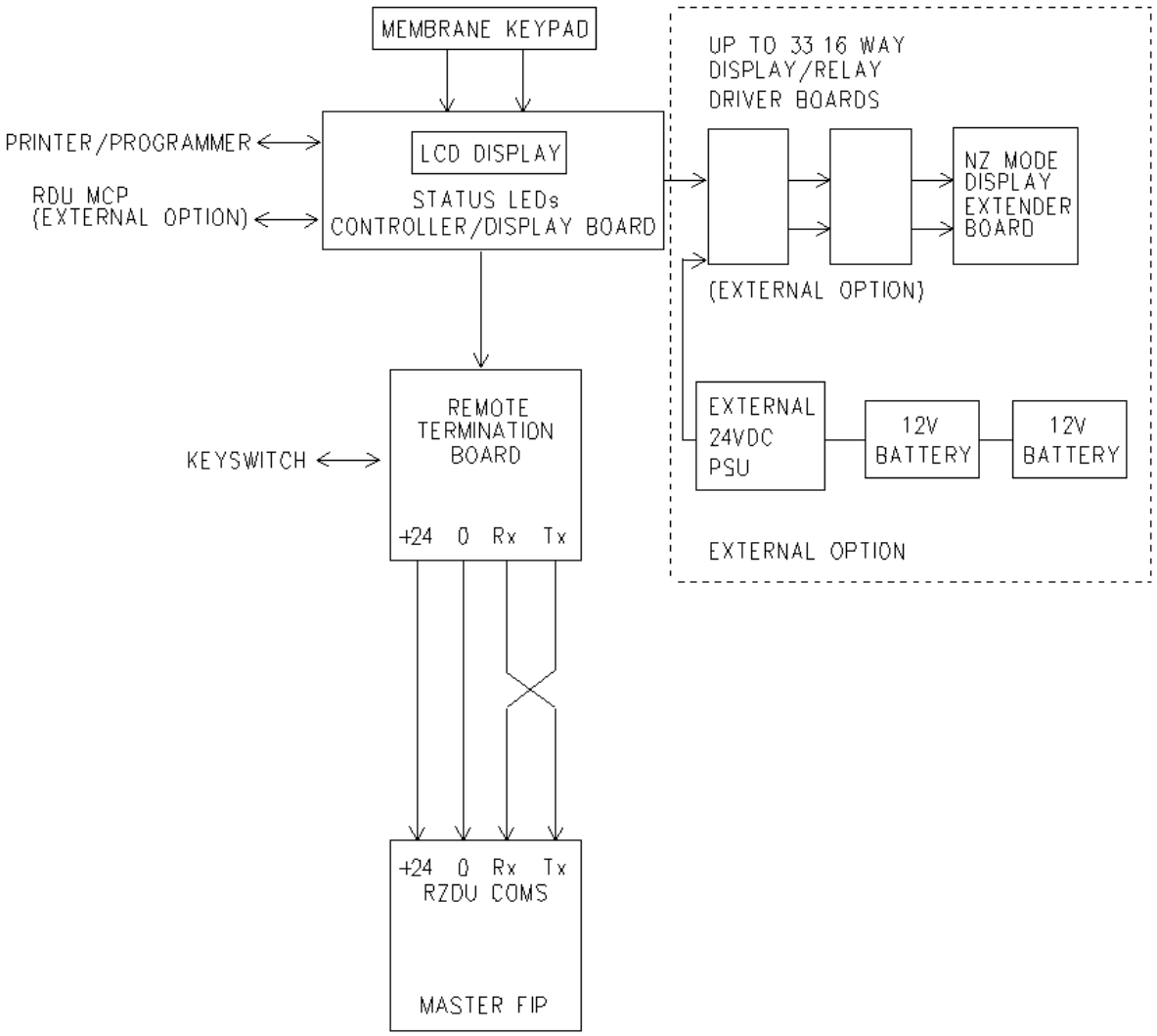


FIG 2.3.3
SYSTEM STRUCTURE: FP0559 & FP0772 NON-MAF CONFIGURED RDU

2.4 NEW ZEALAND MODE OPERATION

The RDU may operate in either Australian or New Zealand mode, which is selected with a programmable parameter ("NZ mode" option in system config level 2 menu). The differences between Australian and New Zealand operation are listed here.

1. Display Extender Board.

This is an optional board (PA0499 or PA0742) which may be used in NZ mode and in conjugate with a termination board provides some outputs and inputs as follows. Refer to section 7.4 for options and wiring. If a Display Extender Board is connected then it must be enabled with a programmable parameter (system config level 2).

Outputs	-	common normal, alarm and defect LEDs
	-	ancillary fire and defect outputs
	-	index lamp output
Inputs	-	silence alarms, trial evac, building services restore, lamp test, external defect.

External defect input.
When this input is asserted, a fault condition occurs in the RDU (the buzzer will turn on, an event is logged, and a fault condition is transmitted to the FIP (the FIP will annunciate a fault and energise the Brigade Fault relay).

Lamp Test.
When this input is asserted a lamp test will be initiated which tests the front panel LEDs of the RDU, the three common LEDs and the index lamp, plus all the 16 zone LED Display Boards LEDs.

Ancillary Fire output.
This output is under control of the FIP and is turned on when a fire condition is present. The output can be isolated - refer to section 6.7 ancillary isolate/building services restore operation.

Ancillary Defect output.
This output is under control of the FIP and is turned on when a defect condition is present or when a communications failure occurs. The output can be isolated - refer to section 6.7 ancillary isolate functions/building services restore operation.

Index Lamp Output.
This output is turned on whenever the FIP index lamp is turned on or whenever the RDU bells relay (if any) is energised.

Trial evac input.
The trial evac input on the Display Extender Board can be used to energise the bells relay at the FIP or RDU and has its own set of programmable options of passon, follow and local. Refer to chapter 6.

NEW ZEALAND OPERATION (CONTINUED)

Building services restore input.
The BSR input on the Display Extender Board can be used as an ancillary isolate function and has its own set of programmable options of passon, follow and local. Refer to chapter 6.

Silence Alarms.
Depending on programming (refer section 6.7) this input can be used to turn the bells off.

2. FIP battery very low alarm event.

When the FIP powers up it will immediately generate a battery very low alarm and signal brigade alarm until reset. It will also send an event to the RDU for this which will go into the RDU FFCIF alarm list. This event can be acknowledged and reset at the RDU (or FIP) providing ack and reset are enabled at the RDU. A battery very low status can also occur at the RDU and this will be logged to the history and a defect condition generated but there is no FFCIF event or brigade alarm signalled for this. Not all versions of FIP software will send the FIP battery very low event to the RDU - F4000 FIP software versions 2.20 onwards do.

3. MAF board usage.

The MAF board used for Australian operation may also be used for New Zealand operation as a convenient way of powering the RDU and also provides some relay outputs which may be useful. For example, the ancillary 1 relay can be programmed to energise when 1 or more selected zones are in alarm. In NZ mode, the brigade alarm relay is normally energised and de-energises for alarm - the opposite of Australian mode. The "MCP" (manual call point) input on the MAF board cannot be used when in New Zealand mode and is ignored.

4. Bells isolate and Silence Alarms operation.

The Silence Alarms input on the Display Extender Board is normally connected to a keyswitch which can be used to silence the bells i.e. de-energise the bells relay at either or both the RDU and the FIP.In NZ mode the programmable options of "passon", "follow" and "local" which may be programmed for the operation of bells isolate are also applied to the Silence Alarms input on the Display Extender Board (if any). Refer to chapter 6.

5. Battery low monitoring.

In New Zealand mode, the battery low input is monitored continuously (Australian mode only monitors the battery low input during a battery test). A daily automatic 40 minute battery test is done as part of the daily "Auto Test" initiated by the FIP. A one minute battery test can be initiated from the RDU front panel keypad. A battery test can only be done if the RDU has a MAF board connected. In New Zealand mode, the battery test resistors on the MAF board need to be removed (if not already).

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CHAPTER 3
SYSTEM SPECIFICATIONS

3.1 GENERAL

3.1.1 FP0558 RDU PART NUMBER & DESCRIPTION

FP0558, MAF CONFIGURED RDU, No 16 Zone LED Display boards

Includes: Full size cabinet complete with MCP mounted externally
Controller/Display with FFCIF LCD & Keypad
MAF/PSU includes 7 relays, 3A PSU
Blanking plate covering lower 7U of 15U height cabinet.

The system can be expanded to include up to four of the optional 16 Zone LED Display or Relay Driver boards. This involves installing a 7U hinged inner door into the lower portion of the 15U cabinet. The boards then mount onto plastic standoffs onto the back of the door. Please refer to Section 3.7 "Optional Additional Display" for detail on the extra items required for this option. For New Zealand operation this does not include a Display Extender Board.

Where more than four Display or Relay Driver boards are to be added, they must be mounted externally via a suitable mounting arrangement eg. extender cabinet. Any extra PSU loading due to additional Display boards must be carefully considered when planning a system. Please refer to Section 5.3 for PSU loading and battery size calculations.

3.1.2 FP0559 RDU PART NUMBER & DESCRIPTION

FP0559, NON-MAF CONFIGURED RDU

Includes: Wall mount low profile cabinet
Controller/Display with FFCIF LCD & Keypad

Note
16 Zone LED Display or Relay Driver boards can be added externally up to 33 Max plus an optional Display Extender Board (NZ), if a suitable mounting arrangement e.g. extender cabinet is provided. The FP0559 RDU is line powered from the FIP, thus any extra PSU loading due to additional Display boards must be carefully considered when planning a system.

3.1.3 FP0772 RDU PART NUMBER & DESCRIPTION

FP0772 NON-MAF CONFIGURED FLUSH MOUNTED RDU.

Includes: Flush-mounted cabinet
Controller/Display with FFCIF LCD and keypad

Note
16 Zone LED Display or Relay Driver boards can be added externally up to 33 Max plus an optional Display Extender Board (NZ), if a suitable mounting arrangement e.g. extender cabinet is provided. The FP0559 RDU is line powered from the FIP, thus any extra PSU loading due to additional Display boards must be carefully considered when planning a system.

3.1.4 ENVIRONMENTAL: MAF & NON-MAF CONFIGURED RDU

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

3.2 MECHANICAL SPECIFICATIONS

3.2.1 FP0558

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 zinc coated mild steel
Size	:	750mm (H) x 550mm (W) x 210mm (D) * MCP is an additional 20mm.
Finish	:	Powdercoat BFF-998-CW Cream Wrinkle (Iron Phosphate pre-treat)
Weight	:	20kg (Unpackaged); 22kg (Packaged)

3.2.2 FP0559

Style	:	Wall mounting low profile 4U Display mounted on hinged door Door hinges left 003 key lock.
Construction	:	Welded steel
Material	:	1.2mm zinc coated mild steel
Size	:	177mm (H) x 450mm (W) x 50mm (D)
Finish	:	Powdercoat PR12/816C Grey (Iron Phosphate pre-treat)
Weight	:	2.8kg (Unpackaged); 3kg (Packaged)

3.2.3 FP0772

Style	:	Flush mounting 4U Display mounted on hinged door Door hinges left 003 key lock
Construction	:	Welded steel
Material	:	1.2mm zinc coated mild steel
Size	:	219mm (H) x 502mm (W) x 75mm (D)
Finish	:	Powdercoat PR12/816C Grey (Iron Phosphate pre-treat)
Weight	:	4.6kg (Unpackaged); 4.8kg (Packaged)

3.3 ELECTRICAL SPECIFICATIONS

3.3.1 FP0558

3.3.1.1 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

3.3.1.2 BATTERY CHARGER & PSU

Input Voltage	:	31Vac rms (Transformer sec)
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 (Charger, Quiescent & Alarm)
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 (eg. for door holders)

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

Current Limit	:	
Battery to MAF/PSU	:	PTC, 6A nom, 4.8A min
PSU/Charger	:	3.5A nom, 3.1A min

The following table lists the monitoring voltages which are the same for both Australian mode and New Zealand mode. A single pot adjusts all three monitoring voltages - charger, battery low and battery very low (standby off).

STATE	MIN	NOM	MAX	COMMENTS
Charger High	28.10	28.125	28.15	Adjust with pot
Charger Low	26.47	26.57	26.67	
Battery Low	24.26	24.33	24.40	
Standby Off	21.5	22.0	22.5	For voltage falling
Standby On	22.0	22.5	23.0	For voltage rising

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 3.3.1.2
BATTERY AND CHARGER MONITORING VOLTAGE SPECIFICATIONS

3.3.1.3 BATTERY

Battery Voltage : 24Vdc nominal (2 x 12Vdc)

Compatible Makes : Sonnenschein A200 series
Sonnenschein A300 series
Powersonic PS12 series
Yuasa NP series

Capacity : 6 to 50 Ahr (dependent on configuration)

Space : Up to 220H x 520W x 175D
(ie. 2 of 220 x 260 x 175)

Battery Test Load : 46 Ohm nominal. Suitable for 6 Ahr battery.
Provision for fitting extra resistors.

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

3.3.1.4 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

3.3.1.5 QUIESCENT & ALARM CURRENTS

At 24Vdc battery supply, nominal currents:

	Quiescent	Alarm
FP0558 Australian Mode (Notes 1-2) (includes 16mA for energised standby relay)	44mA	152mA
FP0558 New Zealand Mode (notes 1-2) (includes 16mA for energised alarm relay)	76mA	136mA
MAF/PSU		
- all relays off	9mA	
Current per Ancillary Relay (includes bells)	11mA	11mA
Current per Brigade Relay	16mA	16mA
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 (optional)	0mA	16mA/LED (steady)
16 Way Relay Bd (optional)	0Ma	11.5mA/relay
Total electronics max rating	2000mA	

Notes

1. FP0558 current includes Controller/Display and MAF/PSU but no 16 Zone LED Display or Relay Driver boards.
2. Quiescent and alarm currents do not include external loads eg. door holders, bells, NZ index illumination bulb, etc.

3.3.2 FP0559 & FP0772

3.3.2.1 DC SUPPLY

Voltage	:	24Vdc (18-28V). Operation at 12V also possible.
Termination	:	For up to 2.5sq mm TPS 3 Way block with wire protectors

3.3.2.2 FUSES

Location : Remote Termination PCB

Number	Size	Rating	Type
F1	5 x 20mm	2A	Glass Cartridge, Std

3.3.2.3 QUIESCENT & ALARM CURRENTS

At 24Vdc battery supply, nominal currents:

	Quiescent	Alarm
FP0559 (excludes any Zone LEDs)	19mA	78mA

Refer to 3.3.1.5 for optional module currents. For New Zealand mode with display extender board, add 16mA to these values.

3.4 INPUT SPECIFICATIONS

3.4.1 FP0558 INPUTS

General

Terminations:

On MAF/PSU module:
- RZDU communications input/output
- Battery Termination, AC Input, Door Switch, MCP and spare inputs.

On Display Extender Board (NZ mode only)
- Silence alarms, trial evac, building services restore, lamp test, external defect.

3.4.1.1 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 (not NZ mode)	5V, 1mA Supervised 2k7 EOLR 4 Way .1" pcb header, J6
Relay Supervision	
Anc 1 Sup/Anc 2 Sup	One screw terminal each
Modes of Operation	1 Door holder 2 Load

		Relay Off	Relay On
1.	Door Holder Mode expects	Voltage Present	No Voltage Present
2.	Load mode expects	Resistive to 0V	Open Circuit or Voltage Present

Default Modes Anc 1 Anc 2	 Door Holder, Disabled Load, Disabled
Voltage Threshold (Door Holder Mode)	3.65V Nom
Supervision Current	0mA @ +5V 1mA @ 0V

MAF/PSU INPUTS (CONTINUED)

Load Resistance (Load Mode)	400 Ohm - 10k Ohm less than 400 Ohm with series diode at load. 14 Ohm absolute minimum
Bells Supervision	
Input Termination	Output terminals BELLS +, -
Form	Reverse polarity Requires series diode at each device Resistor EOL 1, 2 or 3 circuits

End of Line

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.

3.4.1.2 CONTROLLER/DISPLAY INPUTS

Spare DC Input/Output	24Vdc nom 4 Way demountable screw terminal, J5
Spare Input	22V, 10k Ohm pull up resistor Provision for supervision (up to 5 band)
Serial I/O RDU Comms & Power	Termination to TX, RX, 0V, +24V demountable screw terminal connector J11.

3.4.1.3 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 7.4 for wiring.

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

3.4.2 FP0559 & FP0772 INPUTS

General

Terminations On Remote Termination board:
- RDU communications input/output
- RDU power supply input
- key micro-switch input.

On Display Extender Board (NZ mode only)
- silence alarms, trial evac, building services restore, lamp test, external defect.

On Controller/Display board:
- RDU MCP input. (Australian mode only)

3.4.2.1 REMOTE TERMINATION INPUTS

Key switch Input - Termination via 4 Way .156" male molex (J7) Routes via J6 FRC header to 5V, 15K Ohm pull up.

RDU Comms - Termination to TX, RX, 0V, +24V screw terminals & Power of 6 Way connector (J1).

3.4.2.2 CONTROLLER/DISPLAY INPUTS

Spare DC Input/Output 24Vdc nom
4 Way demountable screw terminal, J5

Spare Input RDU MCP 10k EOL

3.4.2.3 NZ MODE DISPLAY EXTENDER BOARD INPUTS

The FP0559 & FP0772 versions of the RDU may have an external Display Extender Board connected. Refer to section 3.4.1.3.

3.5 OUTPUT SPECIFICATIONS

3.5.1 MAF & NON-MAF CONFIGURED RDU

CONTROLLER/DISPLAY OUTPUTS

Spare Parallel Outputs (not fitted)

Number	6
Type	Darlington open collector Switch to 0V
Voltage Rating	28.5V max "off" state No transient protection 1V max @ 30mA "on" state 1.1V max at 100mA
Current Rating	100mA max
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) 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

MAF & NON-MAF CONFIGURED RDU (CONTINUED)

Serial Port 0 10 Way FRC header, J2

UART signals
RXD, TXD, RTS-, CTS-, DCD-
5V levels
0V, +5V, (+12V)

16 LED DISPLAY / RELAY DRIVER Bd Optional

16 Zone LED Mimic Outputs

The most common use for the open collector outputs will be to switch LEDs on "mimic" displays. The mimic outputs can also be used to drive the 16 way Relay Bd PA0470.

Output Type : 16 * Open Collector driven off alarm LED

Output Rating : 200mA max current sink capability @ 30V

16 Zone Mimic Outputs are as follows:

J3-1:	Zone 6 Alarm
J3-2:	Zone 5 Alarm
J3-3:	Zone 7 Alarm
J3-4:	Zone 4 Alarm
J3-5:	Zone 8 Alarm
J3-6:	Zone 3 Alarm
J3-7:	0V
J3-8:	Zone 2 Alarm
J3-9:	0V
J3-10:	Zone 1 Alarm
J3-11:	0V
J3-12:	0V
J3-13:	0V
J3-14:	0V
J3-15:	+V EXT
J3-16:	+V EXT
J3-17:	+V EXT
J3-18:	+V EXT
J3-19:	Zone 9 Alarm
J3-20:	Zone 16 Alarm
J3-21:	Zone 10 Alarm
J3-22:	Zone 15 Alarm
J3-23:	Zone 11 Alarm
J3-24:	Zone 14 Alarm
J3-25:	Zone 12 Alarm
J3-26:	Zone 13 Alarm

MAF & NON-MAF CONFIGURED RDU (CONTINUED)

16 Way Relay Module PA0470

Relay Output Rating	:	1A @ 30VDC resistive
Relay Isolation	:	500Vdc
Option	:	Snip LK1 when supplying relay coil +24V externally. This stops voltage being fed back into the Controller through the display cables.

16 Way Relay Bd Outputs are as follows:

(a) J1:RLY01

J1-1 RELAY 1-C
J1-2 RELAY 1-NC
J1-3 RELAY 1-NO

(b) J2-J16:RLY02-RLY16 CONNECTOR

JX-1 RELAY X-C where X = relay number
JX-2 RELAY X-NC)
JX-3 RELAY X-NO)

NZ Mode Display Extender Board Outputs

This is used in New Zealand mode only. Refer to section 7.4 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 –

3.5.2 FP0558 OUTPUTS

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

FP0558 OUTPUTS (CONTINUED)

Standard Format	Bells Switched 24Vdc output 2 terminals, Bells +, - Demountable screw terminals 1.5sq mm max cable
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)

FP0558 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

3.5.3 FP0559 & FP0772 OUTPUT SPECS

REMOTE TERMINATION BOARD OUTPUTS

RZDU Comms & Power

Tx, Rx, 0V, +24V	3 Wire Tx, Rx, & 0v comms connection to J2 plus +24V input connection to J1 for power ie. 4 wire connection to FIP.
Transmission Rate	1200 Baud
Protocol	Vigilant F4000

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 RDU Operator's Manual for description

INTERNAL CONTROLS

Mains On	:	Switch in cabinet MAF configured RDU only

Database Write Protect

Function	:	Enables/disables writing to EEPROM
Form	:	2 position minijump shunt, Lk7 on Controller/Display PCB Note: with V2.01 (or later) RDU software and software write protection enabled, Lk7 may be left in the write enable position to enable zone name download from the FIP.

E2 INIT

Function	:	Initiates self-programming of system configuration on system power up (ie. 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 during power up to initiate.

BUZZER

Mounted on Controller/Display pcb

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

DISPLAY EXTENDER BOARD KEYSWITCH INPUTS (NZ mode only)

Keyswitch inputs which may be used are : Silence Alarms, Trial Evacuation, and Building Services Restore.

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 for the left hand position
1-3 x FP0475 for the remaining positions as required

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

FZ3031, 16 ZONE LED DISPLAY, LHS POSITION, F3200

FP0475, 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. Eg. 2 lines of 23 characters at 10 per inch.

NZ mode Display Extender Board

Used in New Zealand mode only and provides three common LEDs - Normal (green - steady = normal), Defect (yellow, 2 Hz flash = defect) and Fire (red, 2 Hz flash = fire).

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CHAPTER 4
ORDERING INFORMATION

4.1 ORDERING INFORMATION

The following lists the Vigilant part numbers for the range of products associated with an RDU. It includes a brief description where considered necessary.

FP0475 FP,16 ZONE LED DISPLAY EXTENDER KIT,1901-26
(LED Display Bd, 0.5m FRC, power leads and label master).

FP0486 FP,DISPLAY/RELAY DRIVER, KIT 1901-26
(Relay Driver Bd, 0.5m FRC and power leads).

FP0556 FP,F3200 EMPTY CAB,C/W WINDOW

FP0557 FP,F3200 EMPTY CAB,C/W BLANK DOOR

FP0558 FP,REMOTE LCD DISPLAY UNIT,FULL CABINET & MAF/PSU
(Controller/Display and MAF/PSU housed in 15U cabinet, C/W DOOR, WINDOW, LOCK, and MCP mounted externally).

FP0559 FP,REMOTE LCD DISPLAY UNIT,SLIMLINE,WALL MOUNT
(Small, low profile RDU C/W Controller/Display).

FP0577 FP,REMOTE LCD DISPLAY UNIT,4U 19",RACK MOUNT
(Controller/Display 4U module for mounting in a 19" rack cabinet).

FP0772 FP, REMOTE LCD DISPLAY (RDU), SLIMLINE, FLUSH MOUNT
(Small, low profile RDU in flush mounting cabinet).

FP0585 FP,REMOTE LCD DISPLAY,SMALL CABINET C/W MAF/PSU
(Controller/Display and MAF/PSU housed in an 8U cabinet).

FZ3031 FP,KIT,F3200 DISPLAY EXTENSION KIT,
(Same as FP0475, but with special 1.2m FRC, allows mtg of Display Bd in furthest left position and connection to 1931-84 Controller).

KT0177 KIT,RDU,UPGRADE KIT FOR 1931-2-2 CONTROLLER
This kit contains the latest software, a new RAM IC, an Operator's Manual and some Upgrade Instructions (LT0227), so that a V1.XX RDU containing a 1931-2-2 Controller can be upgraded to the latest software.

LM0041 LOOM,1888-58,PROG PORT TO 9 PIN SERIAL
(cable to connect computer to Controller).

LM0042 LOOM,1888-62,PROG PORT TO 25 PIN SERIAL
(cable to connect printer to Controller).

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

ORDERING INFORMATION (CONTINUED)

LM0056 LOOM 1901-81-5,DISPLAY EXTENDER FRC,1.2M
(connects Display Bd to Controller, allows mounting of Display Bd in furthest left position).

LM0092 LOOM, 1931-88, F3200 CONTROLLER TO 1ST DISPLAY, 1.2M

ME0060 MECH ASSY,1901-79,RAC CABINET,EXT INNER DOOR
(hinged 7U inner door for mounting Display Bds on, includes screws, cage nuts and pcb standoffs and 64 zone window).

ME0258 MECH ASSY,1919-21-2,RAC CABINET,1U SHELF,135 DEEP
(includes screws and cage nuts for mounting in FP0558 RDU)

PA0470 PCB ASSY,1901-64-1,16 WAY RELAY BD, 24V

RR0509 RESISTOR,WIRE WOUND,10W,68 OHM

SF0179 SOFTWARE,RDU V2.11,EPROM
Latest software EPROM.

NEW ZEALAND OPERATION ONLY

A variety of display options are available to satisfy varying NZ requirements. These are covered in detail in Section 7.4. 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 AN RDU

5.1 GENERAL

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

- fitting and connecting any LED Display or Relay driver bds;
- adding appropriate battery test resistors when necessary;
- MAF configured RDUs only;
- adjusting or removing links on the pcbs;
- programming the RDU.

The manual call points (MCPs), display/relay bds, warning devices and ancillary equipment that are connected to the RDU must match the RDU configuration.

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

All programmable options have a default setting 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 Chapter 6. The rest of this chapter describes configuration of the hardware.

5.2 MODULE CONFIGURATION

The RDU does various self-tests on start up and includes checking to see what modules are physically present. It then displays the results on the LCD as to whether a MAF/PSU module is installed and how many 16 Zone LED Display / Relay Driver bds are present. If the modules present do not agree with the programmed database then the RDU annunciates this via the system fault buzzer, system fault LED and by writing an error event to the printer and history queues.

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. "Display" is the Default board type stored in the database following E2 Initialisation. If there are any Relay Driver boards installed or the open collector mimic outputs are to be used to drive relays then they must be specifically programmed as type "Relay". Refer to Section 6.5.3.

Where it is desired to change the installed configuration of an existing system, modules can be fitted or removed as required and the database re-programmed through the keyboard. Refer to Section 6.5, System Configuration Menu.

If a Display Extender Board (PA0499 or PA0742) is found to be connected at E2 Initialisation, then the database will be setup for New Zealand operation, otherwise, Australian operation is selected.

5.3 BATTERY & POWER SUPPLY

5.3.1 GENERAL

The FP0558 RDU has a dc power supply, which also serves as a battery charger and requires a 24V sealed lead acid battery (ie. 2 x 12V batteries in series) to be fitted. (See Section 3.3.1.3 for compatible batteries). Battery leads with 4.8mm Quick Connect receptacles (for connecting to the battery tabs) are included. The figures and calculations given in this section are for Australian operation. The same calculations can be done for New Zealand operation but noting that quiescent power consumption in NZ mode is higher as the brigade alarm relay is normally energised and also that the charger must fully recharge the batteries within 24 hours under non-alarm conditions.

The FP0559 & FP0772 RDU is DC line powered from the FIP. Section 5.3.3 contains a sample calculation detailing the extra loading on the FIP dc power supply and battery due to connection of one or more RDUs.

Charger Rating (Refer to AS1603.4 Sections 2.8.4 and 2.8.6)

The standard MAF configured RDU has a 3A power supply. A 6A upgrade is available but is not currently approved.

This requires a second mains transformer, a 3A rectifier PCB and a larger heatsink connected to the MAF/PSU.

When a 6A power supply is fitted, additional battery protection is also required (see Section 5.3.6).

To comply with AS1603.4 the power supply rating must be sufficient to charge the batteries while powering the panel with 2 zones in alarm
including any connected ancillary loads plus all remaining quiescent loads. (This is not required in NZ).

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 RDU quiescent load ie. non-alarm with mains off followed by 0.5 hour of alarm load.

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

Battery Rating (Refer to AS1603.4 Section 2.8.10).

The battery capacity must be sufficient to support 24 hours of quiescent load (ie. non-alarm with mains off), followed by 0.5 hour of alarm.

Notes

1. The quiescent load includes the RDU 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 RDU electronics (in alarm state) plus any external loads such as bells, air conditioning shutdown relays, etc.

GENERAL (CONTINUED)

3. The capacity of a battery depends on the rate (ie. current) at which it is discharged. Most batteries are quoted at a 20 hours discharge eg. a 10Ahr battery will supply 0.5A for 20 hours. At 3 times the current (ie. 1.5A) the same battery will discharge in typically 12.3 hours, ie. the capacity is only 18.5Ahr. At 10 times the rate the capacity is approximately 75% of the 20 hour rate capacity (ie. 15Ahr). Hence for alarm loads it is safest to derate the capacity to 75%.

4. 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 RDU quiescent load (Iq) from the figures given in Sections 3.3.1 for a MAF configured RDU or 3.3.2 for a Non-MAF configured RDU. Calculate In separately, where In is the external non-alarm, non-battery backed load on the RDU PSU (eg. door holders).

2. Calculate the RDU alarm load (Ia) for 2 zones in alarm from Section 3.3.1 or 3.3.2 as appropriate. (Include all external loads eg. 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 (ie. 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) ¸ 24 where I is the greater of Iq + In, or Ia.

5. Calculate the battery capacity as follows:
   Cap (24 hr) = (24 x Iq + 0.66 Ia)

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

5.3.3 EXAMPLE BATTERY/CHARGER CALCULATIONS

FP0558 RDU BATTERY/CHARGER CALCULATION EXAMPLE

An example FP0558 RDU has the following configuration:

FP0558 inc. MAF/PSU module, no 16 Zone Display/Rly bds
350mA of door holders off +VNBF
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:
   44mA (MAF configured RDU, standby relay held)

   Use Iq ~= 0.05A.
   The quiescent load for mains on is Iq plus the door holders (In = 0.35A) ie. 0.40A.

2. Say, one or a number of zones go into alarm at the FIP, and that collectively those zones map to the MAF, ANC1, ANC2 and Bells relay at this RDU.

   The alarm load at the RDU is therefore:

   152mA (RDU inc. MAF alarm, ANC1, ANC2, Bells relays held)
   \+ 100mA (Ancillary 1 relay load)
   \+ 750mA (Bells load)
   1002mA

   Say Ia = 1.00A (the door holders are switched off in alarm).

3. Cap (5 hr) = 5 x 0.05 + 0.66 x 1.00 Ahr = 0.91 Ahr

4. Battery charger current required is:

   Ia (1.00A) is greater than Iq + In, (0.40A), therefore:

   Ic = 1.00A + (0.91/24) = 1.04A
   ie. 3A is sufficient.

5. Battery capacity:

   Cap (24 hr) = [(24 x 0.05) + 0.66 x 1.00] x 1.1 = 2.05 Ahr

   Suggest two 12V, 6 or 6.5 Ahr sealed batteries from list in Section 3.3.3. Note that 6 Ahr capacity is ample and has been chosen here because it is a standard stock item.

   Note also that a battery capacity of greater than 6.5 Ah requires fitting of special battery test resistors to the MAF board. Refer to Section 5.3.5.

EXAMPLE BATTERY/CHARGER CALCULATIONS (CONTINUED)

FP0559 & FP0772 RDU BATTERY/CHARGER CALCULATION EXAMPLE

An example system comprises a FIP and 8 Non-MAF configured RDUs (FP0559 & FP0772), DC line powered from the FIP. There are no 16 Zone Display or Relay Driver bds connected at any RDU. Calculate the extra FIP battery and power supply capacity required.

Steps

1. The quiescent load (Iq) is:

   19mA (Controller/Display, LCD backlight off

   Use Iq = 0.02A.

   The quiescent load used is thus Iq + In = 0.02A In its standard configuration an FP0559/FP0772 is line powered from the FIP hence In = 0A).

2. If one or a number of zones go into alarm at the FIP, and one or more of those zones is mapped to this RDU, then the alarm load at the RDU is:

   78mA Controller/Display, LCD backlight on, Com Alarm LED on

   Use Ia ~= 0.08A.

3. The charger capacity is therefore:

   Cap (5 hr) = 5 x 0.02 + 0.66 x 0.08 Ahr = 0.16 Ahr

4. Battery charger current required at FIP to charge extra battery capacity required for connection of 1 RDU is:

   Ia (0.08A) is greater than Iq + In, (0.02A), therefore:

   Ic = 0.08A + (0.61/24) = 0.11A

5. Battery capacity

   Cap (24 hr) = [(24 x 0.02) + 0.66 x 0.08] x 1.1 = 0.53 Ahr

   The extra battery capacity required at the FIP for connection of each RDU is an additional 0.53 Ahr.

   Hence the extra capacity required at the FIP for 8 RDUs is:

   0.9 A extra FIP battery charger current
   4.3 Ah extra FIP battery capacity.

5.3.4 BATTERY SIZE

The maximum battery size given in the specification, Section 3.3.1.3, of 220mm x 520mm x 175mm, is comprised of two 220H * 260W * 175D batteries. 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.

5.3.5 BATTERY TEST RESISTORS (R52, R53)

NEW ZEALAND MODE

For New Zealand operation the battery test resistors (R52, R53), MUST be removed before installation of the RDU to allow the daily 40 minute battery test to be done without flattening the batteries or burning out the resistors.

AUSTRALIAN MODE

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 RDU 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. Eg. 1A test current is required for a 10Ahr battery.

The standard battery test current of 0.65A includes RDU 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 FP0558. In general, a RDU requiring larger batteries will have a higher quiescent current than that of a base FP0558, and so a smaller additional test current than that shown could be used.

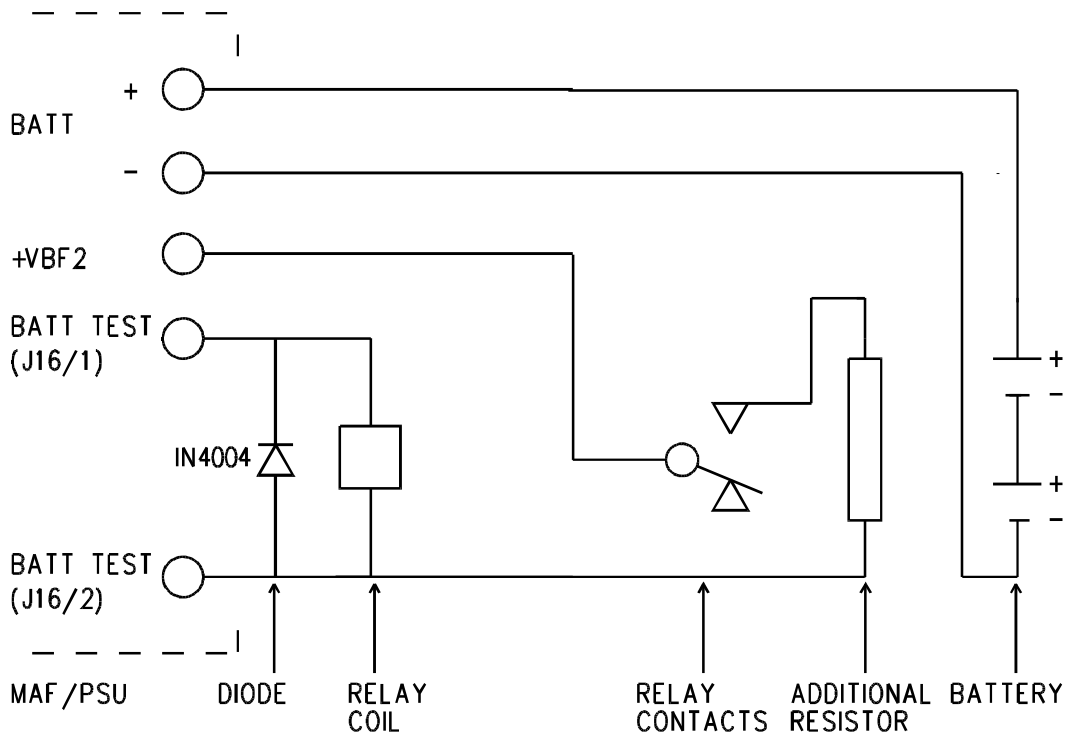
Because the battery test runs only for 1 minute and is then disabled for greater than 1 minute, resistors may be used at full power rating, or even slightly greater. (Resistors of power ratings greater than that shown may be used).

BATTERY TEST RESISTORS (CONTINUED)

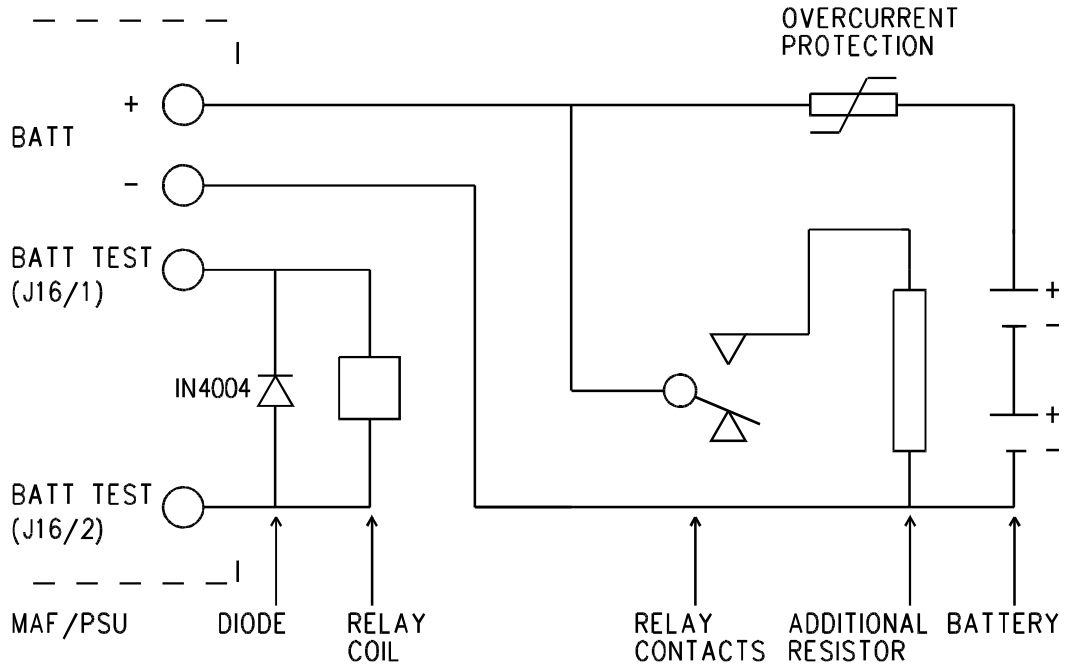
Battery Capacity Ahr	Total Test Current A	Additional Test Current A	Additional Resistance Ohms	Relay Resistor Combination Ohms/Watts	Rating Amps (at 24Vdc)
6.5	.65	-	-	-	-
10	1.0	.35	71.4	68E 10W	-
17	1.7	1.05	23.8	22E 20W OR 27E 20W// 180E 5W	2
28	2.8	2.15	11.6	12E 50W// 330E 2W OR 10E 50W	2.5
33	3.3	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
BATTERY TEST RESISTORS
(AUSTRALIA ONLY)



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
CONNECTION OF BATTERY TEST RELAY/RESISTOR

5.3.6 BATTERY OVERCURRENT PROTECTION

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

Where the Alarm load from the battery to RDU is greater than 3A (ie. 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 eg. 10A) 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).

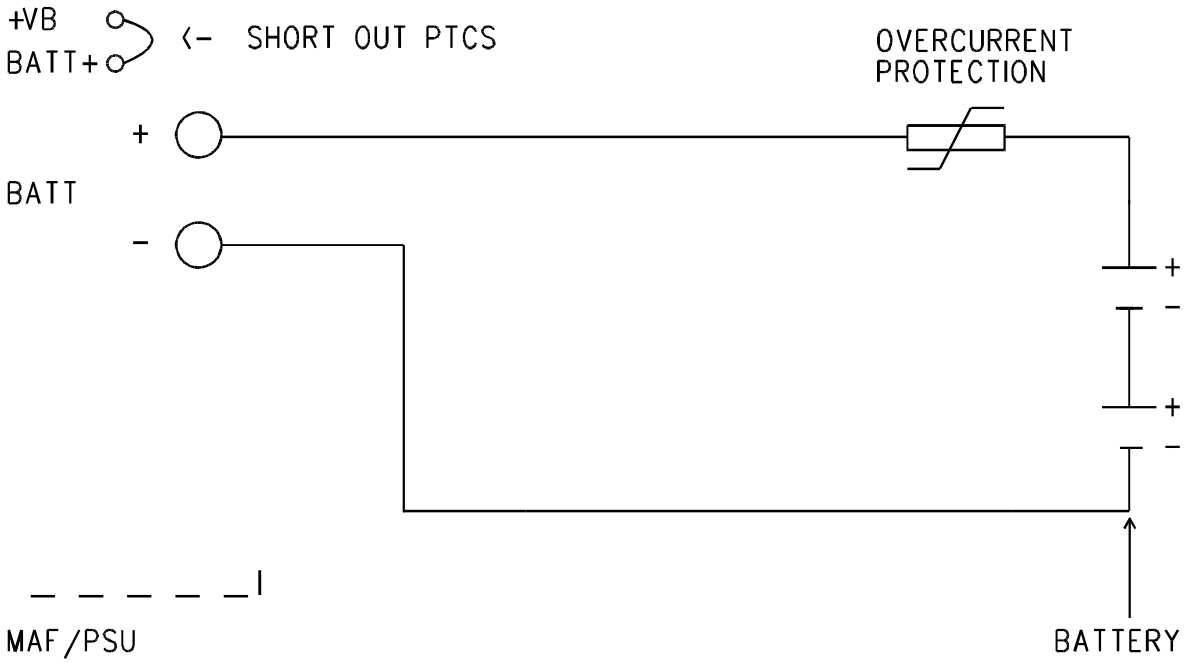


FIG 5.3.2
BATTERY OVERCURRENT PROTECTION FOR LOADS GREATER THAN 3A

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 eg. as a RDU Controller or FIP Controller).

SW1 and Lk7 are described in Section 6.3.1.

5.4.2 16 ZONE LED DISPLAY/RELAY DRIVER BD

The last LED Display or Relay Driver Bd (unless an NZ mode Display Extender Board is fitted) in the chain (ie. the one furthest from the Controller on the FRC) requires the minijump provided to be fitted to Lk1. If a Display Extender Board is fitted then the minijump must NOT be fitted to Lk1.

5.4.3 16 WAY RELAY MODULE

Snip LK1 when supplying relay coil +24V externally. This stops voltage being fed back into the Controller through the display cables.

5.4.4 MAF/PSU LINKS: FP0558 ONLY

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).

LK1 is for factory configuration as follows:

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

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CHAPTER 6
PROGRAMMING

6.1 INTRODUCTION

6.1.1 GENERAL

The RDU 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 RDU. 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 RDU can be programmed from the keypad and the database can be saved to a computer, and restored from a computer, in binary format. Note that the keyswitch has to be operated to enable the keypad.

It is recommended that, for each RDU, configuration sheets specifying Text and all parameters, be filled out before programming commences. Some suggested master sheets are included in Appendix A. 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, configure and program the number of MAF and Display/Relay Driver modules before the other programming, such as text entry, is performed.
3. It is necessary to select either Australian or New Zealand mode of operation before other programming 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 RDU 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 (eg. Configure Zones) is reached. Items (eg. Zone 1, Zone 2, etc) can be stepped through by use of the "NEXT" and "PREV" keys, or by entering the number specifically.

When an item is selected, the attributes (eg. MAF Mapping) are selected by use of the horizontal cursors (× Ø). Options (eg. N for non-mapped, Y for mapped) are selected by use of the vertical cursor (Ù), 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".

GENERAL (CONTINUED)

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.

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

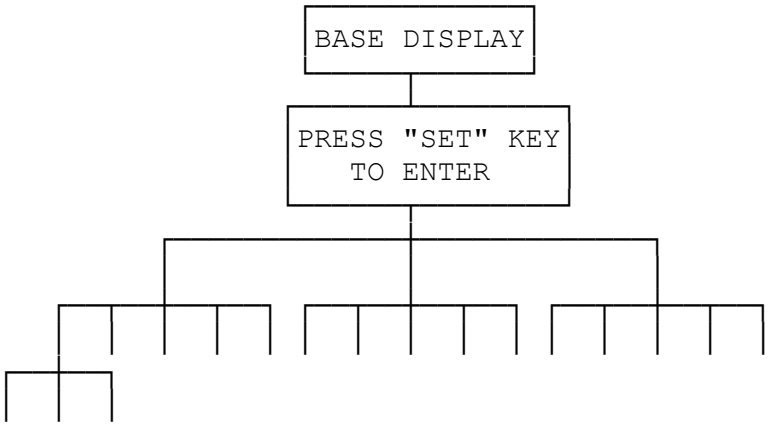

FIG 6.1.1
MENU STRUCTURE

Where menu select options are spread over several lines, 3 dots (...) are shown at the end of the line to indicate that more options are available by pressing either the "AND." or "NEXT" keys.

Detail of the programming menu is shown in Fig 6.1.2 following.

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 eg. "BELLS ISOL/DELETE". In programming mode, these keys operate the bottom functions ie. "DELETE", "INSERT", etc. An exception is "RECALL/(" which will be either "RECALL" or "(" depending on the programming function selected.

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

6.1.4 PROCEDURE FOR CONFIGURATION & PROGRAMMING

1. System Design

Determine all system requirements; decide number of zones, LED Display/Relay Driver boards (if any), and whether or not the system is configured with a MAF board. Allocate zones. Fill out the configuration sheets with programming for LED number, LCD, MAF mapped, Alarm/Relay, BELLS, ANC1 and ANC2 (where appropriate) etc. For New Zealand operation, if a Display Extender Board is used, ensure that it is connected before performing E2 Init (E2 Init will then automatically select New Zealand operation.) If New Zealand operation is required without an extender board, then New Zealand mode must be selected with programming (system config level 2), after E2 Init.

PROCEDURE FOR CONFIGURATION & PROGRAMMING (CONTINUED)

2. E2 Init

Fit links Lk7 and SW1 and turn the power on to perform Database Initialisation as per Section 6.3.1. Check that the modules determined by the Controller match the modules installed.

Set the time and date.

3. Access Database

As per Section 6.3.2, using the default programming code.

4. Assign Access Codes

As per Section 6.5.8. Note that the Programming code is the master code, and should be known by the System Designer or Service Supervisor as appropriate.

The second Access code is the view password. It will allow configuration data to be inspected but will not allow configuration data to be programmed.

5. Enter System Configuration Parameters

Select New Zealand mode of operation if required.
Enter MAF installed status, Manual Call Point (MCP) and number of Display/Relay Driver boards from the configuration sheets for those items that differ from the defaults. Note that these parameters should already be correct following E2 Initialisation. Start at the left side of Figure 6.1.2. to program the system configuration and work left to right through each branch.

The default "mode" setting is Type 3, any other mode such as Type 2, Type 2 Mimic, Type 3 Mimic, etc, will require programming. Similarly the RDU address will need to be set (default 1). Next enter the site name text for this RDU.

Specialised applications will also require programming under the custom menu option. Programming under this option will require "mode" to be set to custom. It is anticipated that most applications will not require custom settings to be changed.

6. Zone Configuration Parameters

First program the zone names from the configuration sheets. Zone names may be downloaded from the FIP through the RDU comms link. Refer Section 6.6.2.

Next program the configuration data for each zone. The default configuration is that zone 1 maps to LED 1, etc, for as many LEDs as there are present. All zones map to the LCD to generate FFCIF events, are MAF configured and alarm type zones. Systems with the MAF board installed also have the option of mapping zones to ancillary relays 1, 2 and the bells relay.

7 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 the database and correct any mistakes.

PROCEDURE FOR CONFIGURATION & PROGRAMMING (CONTINUED)

8. Testing

As part of commissioning check the operation of detectors (including LED brightness and remote LEDs). Check the validity of zone status as received from the FIP. Also check that the FIP can receive commands issued from the RDU, provided that the RDU is not mimic only. Check the RDU operates as appropriate based on the RDU input status conditions. Ensure that the panel is operating in the correct "country" mode - Australian or New Zealand. The brigade alarm relay is normally de-energised in Australian mode and normally energised in New Zealand mode.

9. 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 RDU has similar configuration and could be copied from this one and edited.
Record the database CRC and the time and date the database was last changed by pressing the RECALL key from the base display and selecting option 9:CRC (or 8). The CRC value should then be checked during the regular weekly or monthly testing to ensure that the database has not been changed by an unauthorised person.

MAF CONFIGURED SYSTEMS ONLY

10. Battery & PSU

Calculate the battery and PSU requirements as per Section 5. Decide on the battery capacity. Check that the physical size of the battery fits in with the proposed mechanical arrangement.

11. Configure Hardware

With mains power off and the battery disconnected, fit any battery test resistor and relay supervision links required.

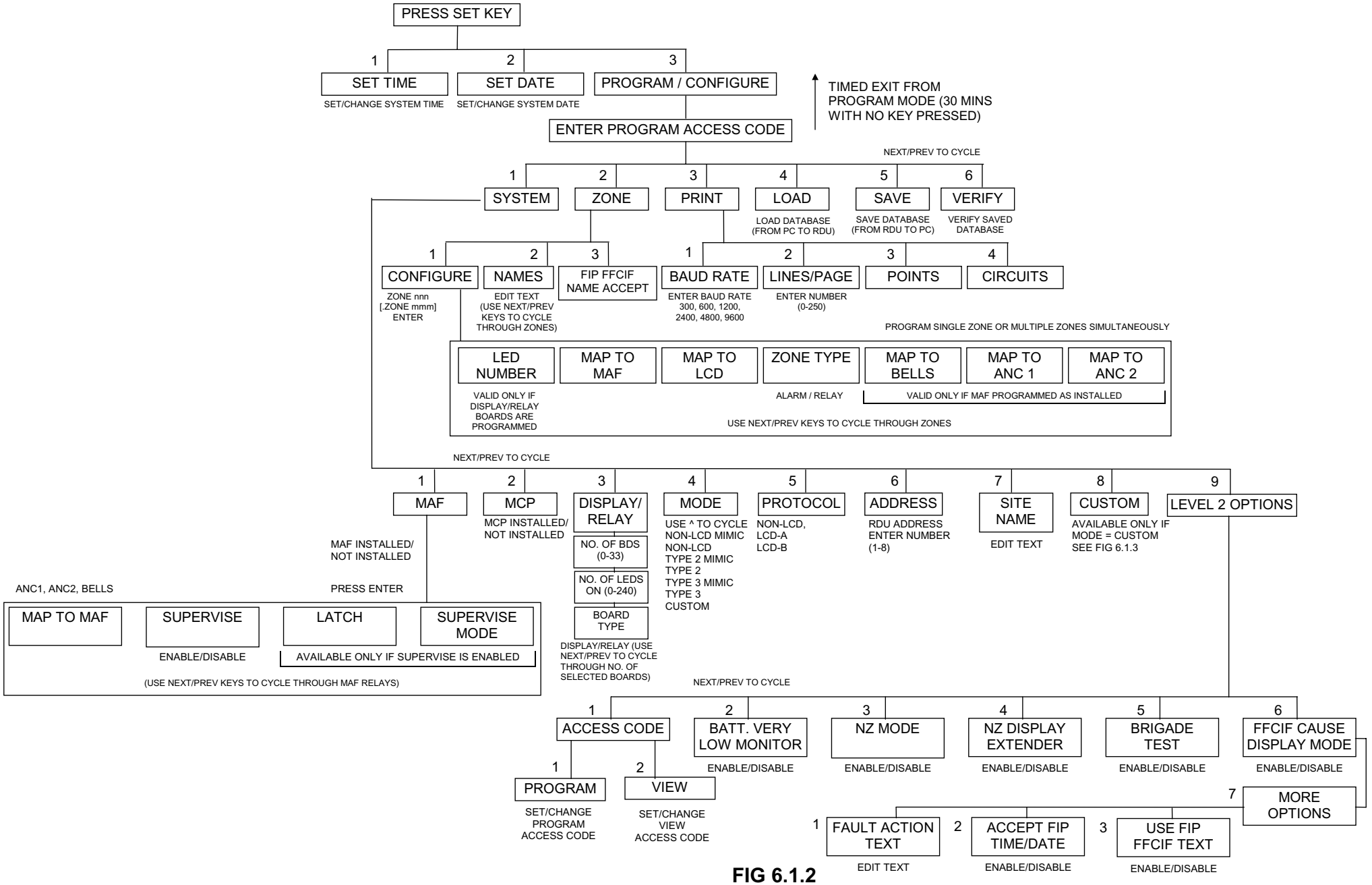

FIG 6.1.2
RDU PROGRAMMING MENU STRUCTURE FOR V2.11 SOFTWARE

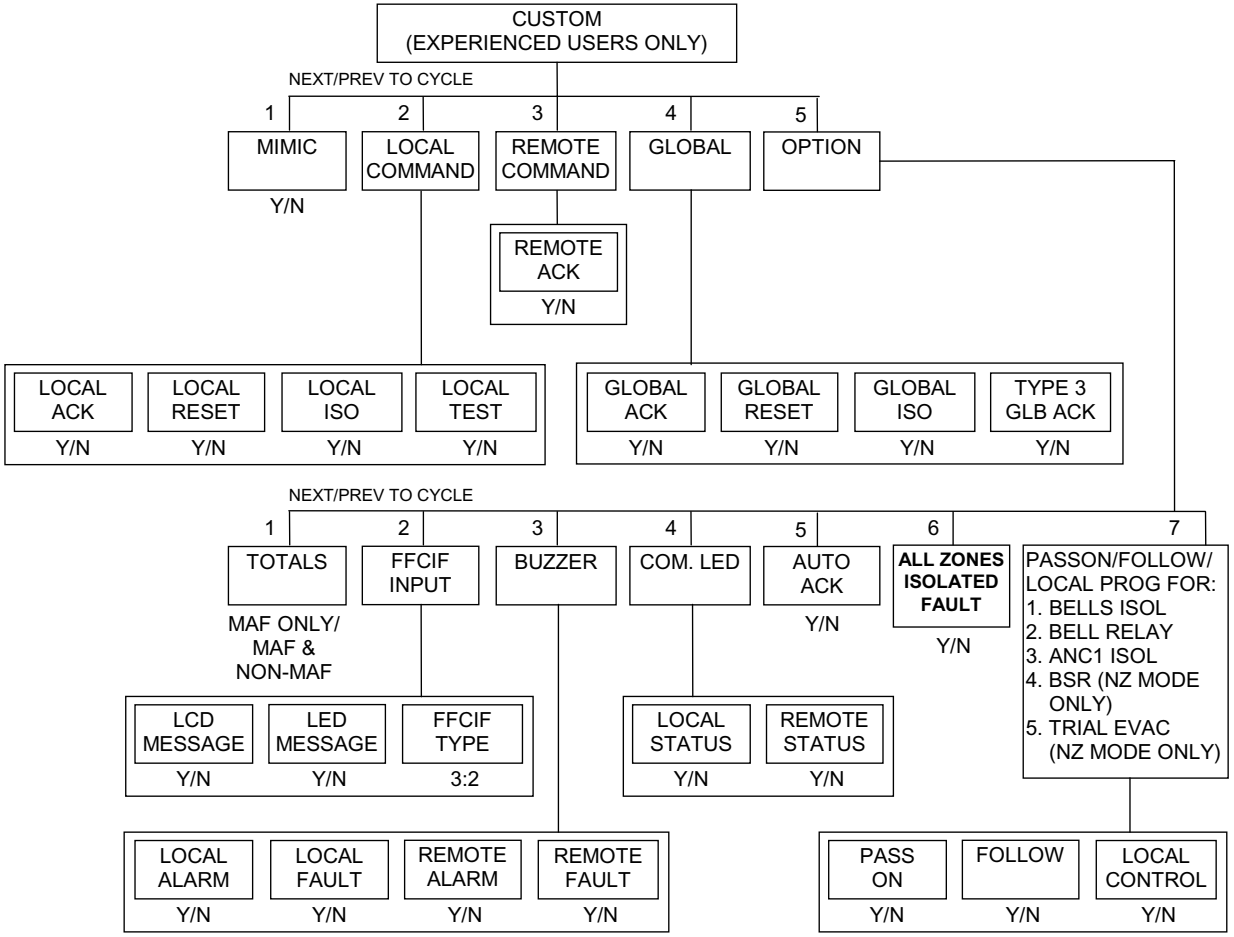

FIG 6.1.3
RDU CUSTOM PROGRAMMING MENU STRUCTURE FOR V2.11 SOFTWARE

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:Time 2:Date 3:Config 4:View EEPsp

Operator Accessible Options

Of these options 1, 2 and 4 are Operator accessible and do not affect the database.

Set Time and Set Date are self-explanatory. Option 4: View EEPsp will display whether software write protection has been enabled for the database EEPROM. If enabled, then the database write protect link Lk7 may be left in the write enabled position to allow the downloading of zone names from the FIP through the RDU comms link. (Refer Section 6.6.2).

Database Options

The Config option requires the program access code to be entered. This gives the following sub-options.

Prog Config
1:System 2:Zone 3:Print 4:Load 5:Save 6:Verify

Zone and System allow zone and system configuration data and text names to be programmed. Option 3:Print is described in Section 6.8 Event Printer Setup.

Load and Save allow the database to be restored or saved from/to a computer file, respectively. Verify allows a database on disk to be compared against that programmed in the RDU.

6.2.2 VIEWING PROGRAMMED DATA

Programmed data can be viewed by pressing the "RECALL" key followed by:

- "ZONE" followed by option "7 Config" to view zone data;
- "SYSTEM" followed by option "2 Config" to view the system data; and
- "RELAY" followed by option "5 Config" (MAF installed systems only) to view ancillary relay data.

Each of these functions issue a prompt for an access code. Either the "Program" or "View" access codes gain entry to these menu options. The menu structure is similar to the program data menu structure and allows the user to view the RDU database without accidentally changing it.

6.3 INITIALISING, ACCESSING, DE-ACCESSING, PRINTING, SAVING & RESTORING THE DATABASE

6.3.1 INITIALISING THE DATABASE

The E2 INIT (initialisation) sequence causes the RDU 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 eg. zone names. It should, therefore, only be done on an unprogrammed system. If a New Zealand mode Display Extender Board is connected then the E2 INIT process will automatically configure the database for New Zealand mode.

Steps

1. Fit the minijump on the DATABASE link, Lk7 (top, right of Controller/Display) in the WRITE position.

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

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

4. When the start up sequence is completed and the LCD prompts you to, remove link SW1 and fit on one pin only and press "ACK". If the initialise is successful then the message “EEPROM init OK. EEPROM software write protection enabled/disabled” will appear. Refer Section 6.6.2.

6.3.2 ACCESSING THE DATABASE

When programming the database the **DATABASE** link (Lk7 on Controller/ Display) must be in the WRITE position. **At all other times it must be in the WRITE PROTECT position, unless automatic zone name download from the FIP is required. Refer Section 6.6.2.**

With Lk7 on the Controller in the WRITE position, selecting 3:Config from the SET menu prompts for entry of the 6 digit program access code. The default access code is 0 0 0 0 0 0.

When access has been granted, the Program Config menu is displayed and a new access code can be entered (option 1, Program Config System Level 2 Menu, refer to Section 6.5.8).

The access codes for the RDU should be recorded in the RDU contract file to enable future reconfiguration.

WARNING

When the database is accessed the Controller de-energises the Standby relay for MAF installed systems (ie. transmits Standby) and stops processing. This is not normally a problem as it is unlikely that a Brigade connection would be made from an RDU MAF board. If this signals "Alarm" to the Brigade then appropriate arrangements should be made.

6.3.3 DE-ACCESSING THE DATABASE

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

Record the database CRC and the time and date the database was last changed by pressing the RECALL key from the base display and selecting option 9:CRC (option 8 for non-MAF RDU). The CRC value should then be checked during the regular weekly or monthly testing to ensure that the database has not been changed by an unauthorised person.

NOTES

1. Lk7 must be fitted to the WRITE PROTECT position after the database has been de-accessed, unless automatic zone name download from the FIP is required. Refer Section 6.6.2.

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. Note that the RDU will execute a "timed exit" from program mode if no key is pressed for 30 minutes. This is a safeguard to ensure that the RDU cannot be left in program mode with input processing disabled.

4. Following timed exit from Program Mode the RDU will begin processing inputs on the database configured at that time.

6.3.4 PRINTING & SAVING THE DATABASE

Once an RDU is programmed and commissioned, it is recommended that both a disk file containing 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 Output Specifications Section 3.5.

When programming the RDU, 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.

To print the database, from the Base Display press the Print key and select option 3 "Print Database". Note that either the program or view access codes must be entered.

Saving the Database on a Computer

The RDU database may be saved (in binary format) on an external computer (eg. a laptop PC). The saved database can then be reloaded into the RDU (or another RDU) at some future time and this is much faster than reprogramming the entire database from the RDU 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 "Programming Config" menu (on the RDU) select option 5 : Save. Then press the "ENTER" key to initiate the save.

The RDU display will show:

"Save in Progress. Press RESET to Cancel"

while the database save is in progress.

After saving the database, a verify operation should be done to check that the save operation worked correctly. See section 6.3.6.

NOTE

The RDU 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:

Access the "Program Config" menu and select the "Load" option (option 4).

The message:

"Press ENTER to Load Database"

will appear.

Connect the computer to the RDU as described in Section 6.3.4. Press the "ENTER" key on the RDU keypad. The message “preparing EEPROM for load” will briefly appear, followed by the message “EEPROM software write protect enabled/disabled”, “uploading”. You should then initiate the transmission of the database file from the computer.

The RDU must receive a complete database with the correct number of records or it will display an error message. The database has some version information contained in it and the RDU will not accept an incompatible version of the database. If the RDU receives the database with no checksum or transmission errors but finds the version of the database is incompatible then it will indicate an error and the RDU will be inoperational. There is no way that the data from an incompatible database can be recovered but it can be printed with a database print command. The printout of an invalid database should be treated with suspicion but it is possible that some of the information printed is valid.

If an incompatible database is loaded then either a valid database must be reloaded or an "eeprom reinitialise" performed and the entire database reprogrammed.

Note: The RDU 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.

After loading a new database into the RDU and making any changes necessary, record the database CRC and the time and date the database was last changed by pressing the RECALL key from the base display and selecting option 9:CRC (option 8 for non_MAF). The CRC value should then be checked during the regular weekly or monthly testing to ensure that the database has not been changed by an unauthorised person.

6.3.6 VERIFYING A SAVED DATABASE

A database saved in a disk file on a computer may be verified without actually reloading it into the RDU memory. The database from the disk file is transmitted to the RDU where it is compared against the database in the memory of the RDU. If the database is able to be loaded completely and matches the database already in the RDU then the verify is successful - if not, an error message will be shown.

To verify the database, connect the computer to the RDU as described in section 6.3.4. Enter program mode and select option 6 (Verify) from the Programming Config menu. Initiate the transmission of the database file from the computer. The RDU must receive a complete database with the correct number of records or it will display an error message. The existing database in the RDU will not be modified.

If desired, before and after doing the verify operation use the RECALL key from the base display and select option 9 (CRC) (or option 8 for non MAF), to check that the RDU database has not been altered by the verify operation.

Note: The RDU 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.

6.4 CONFIGURATION PROGRAMMING MENU

6.4.1 GENERAL

The Config program menu (refer Figure 6.1.2) allows the user to program the following options.

1:System 2:Zone 3:Print 4:Load 5:Save 6:Verify

The Load, Save and Verify options have been described in Section 6.3. Both Zone and System programming allow for text entry. This is described in the next Section. Sections 6.5 and 6.6 detail system and zone programming respectively.

The Print option is described in Section 6.8 Event Printer Setup.

Section 6.7 details programming of Custom mode.

Table 6.4.1 shows all of the programmable parameters along with their default values.

Database EEPROM Software Write Protection

Some types of EEPROM support software write protection. If the EEPROM supports it then it will be enabled during one of the following three situations:

1. When an EEPROM initialisation is done.
2. When a database download is done.
3. On entry to program mode if there is currently a database checksum error and an attempt to write to the EEPROM fails.

To enable EEPROM software write protection, one of the above situations must occur with an EEPROM installed that supports software write protection. During each of these the RDU will indicate on the LCD whether EEPROM software write protection has been enabled or not. The “SET” menu may also be used to check whether EEPROM software write protection has been enabled. (Refer Section 6.2.1).

If EEPROM software write protection is enabled then the database write protect link Lk7 may be left permanently in the write enable position which will allow the RDU to accept zone names sent from the FIP at any time without the need to go to the RDU and move link Lk7.

6.4.2 TEXT ENTRY

Site name text (40 characters), fault action text (40 characters), and zone name text (30 characters), may be programmed. Fault action text is available only with RDU V2.02 software or later. Zone names may also be downloaded from the FIP through the RDU comms link (refer Section 6.6.2). Text may be programmed either from the keypad or from a PC.

6.4.2.1 Programming Text with the Keypad

The Config program menu Zone and System options allow for entry of a 30 character name for each zone and 40 character name for the site, respectively.

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

The text entry display has two lines. The top line contains the text which has been entered and the bottom line contains an array of characters which may be entered.

Each line has one of two cursors. The active cursor ▉ may be moved through the line 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 line.

Holding the ◅ ➢ keys down causes rapid movement.

There is a choice of 3 lines of characters in the bottom line (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 lines.

"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 (eg. zones).

"RECALL" allows copying of the text from any zone to any other zone. Select the zone to be copied into. Press "RECALL" and enter the number of the zone to be copied from. Pressing "ENTER" transfers the text. This can then be edited.

Example of Entry of Site Name

Enter the site name "Penrose No 1 Store".
From the Program System Config menu select option 7, Site Name.

Assuming the site name is blank, the LCD will have the inactive cursor in the first position of the top line and the active cursor on A in the bottom line.

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

TEXT ENTRY (CONTINUED)

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". The letter “e” should appear in the top line.

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 line press "ACK".

6.4.2.2 Programming Text with a PC

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

When the LCD is showing the menu:

Prog Zone
1:Config 2:Names 3:FIP Zone Name Accept

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 RDU front panel keypad will terminate the entry of text from the PC. To initiate the entry of text, the RETURN key must first be pressed on the PC.

This will give a prompt of:

Enter Znnn, S, F:

Zone text may be entered with Z, the site name with S and fault action text with F.

Lower case may be used if desired. Any other characters entered will be ignored.

To enter a zone name type:

Znnn RETURN

where nnn is the zone number (1-528).

To enter the site name type:

S RETURN

To enter fault action text type:

F RETURN

If a valid selection is entered the message:

"Enter Text :"

will appear. The desired text should now be entered, followed by RETURN.

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.

Programming Text with a PC (Continued)

After the RETURN 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 RDU, 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.

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 Z or S characters 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)
F
40 character fault action text
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
Q                                                   (Illegal characters are ignored)
.
.
Z23
This name will be cut at 30 characters as it is too long
Z24
Name for zone 24
```

To initiate the loading of the file into the RDU, enable remote text entry as described above. Run a terminal emulation program, such as PROCOMM, on the PC and press RETURN on the PC.

When the message:

Enter Znnn, S, F:

appears, send the file containing the text names to the RDU 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 the RDU, do a database printout to check that all names have been assigned correctly.

If each line containing the zone name is followed by a line with Q, then the same file on the PC can be used to program the text names into F4000/F3200 and the RDU.

6.4.2.3 "Fault Action Text"

Fault action text is programmed by selecting the System Config option from the program menu, then Option 9:Level 2, then Option 7:More, then Option 1:Fault action text.

When a fault occurs at the RDU, 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.

Item	Parameters	Default
Access Codes	6 Digits	000000
MAF Board	Installed/Not Installed	Set at E2 Init if present
ANC1 Supervision	Enabled/Disabled Door Holder/Load Latching/Non-Latching Mapped/Not Mapped to MAF	Disabled (MAF RDU only) Door Holder Non-Latching Mapped
ANC2 Supervision	Enabled/Disabled Door Holder/Load Latching/Non-Latching Mapped/Not Mapped to MAF	Disabled (MAF RDU only) Load Non-Latching Mapped
Bells Supervision	Enabled/Disabled Latching/Non-Latching Mapped/Not Mapped to MAF	Disabled (MAF RDU only) Non-Latching Mapped
MCP	Installed/Not Installed	Installed (MAF RDU AUSTRALIAN) Not installed (Non-MAF or NZ)
Number of Display/Relay boards	0 -> 33	Set at E2 Init for bds present
Max LEDs on	0-240	240
Display/Relay Board Type	Display/Relay	Display
Mode	Non-LCD Mimic, Non-LCD Type 2 Mimic, Type 2 Type 3 Mimic, Type 3 Custom	Type 3
RDU Protocol	LCD-A, LCD-B, Non-LCD	LCD-A (AUST), LCD-B (NZ)
FFCIF mode when custom	Type 2 or 3	Type 3
FFCIF Display Cause by Default Enabled/Disabled	Disabled	
FFCIF accept FIP alarm zone names	Enabled/Disabled	Disabled
Use FIP FFCIF text	Enabled/Disabled	Disabled
Accept FIP time/date	Enabled/Disabled	Enabled
Brigade Test	Enabled/Disabled	Disabled
Local ACK	Enabled/Disabled	Enabled
Local Reset	Enabled/Disabled	Enabled
Local Isolate	Enabled/Disabled	Enabled
Local Zone Test	Enabled/Disabled	Enabled
Remote ACK	Enabled/Disabled	Enabled
Global ACK	Enabled/Disabled	Enabled
Global Reset	Enabled/Disabled	Enabled
Global Isolate	Enabled/Disabled	Enabled
Type 3 Global Ack	Enabled/Disabled	Disabled
Auto ACK	Enabled/Disabled	Disabled
FFCIF Input Source	LCD Data : Yes/No LED data : Yes/No	Yes No

Item	Parameters	Default
Buzzer Operate	Local Alarm : Yes/No Local Fault : Yes/No Remote Alarm : Yes/No Remote Fault : Yes/No	Yes Yes No No
Common LEDs	Local status : Yes/No Remote status: Yes/No	Yes No
All Zones Iso = Fault	Enable/Disable	Enable
Totals Display	MAF/MAF & Non-MAF	MAF
Print Lines/Page	0 -> 250	60
Printer Baud Rate	300,600,1200,2400,4800,9600	9600
Print Point Alarm Events	Enable/Disable	Enable
Print Circuit Alarm Events	Enable/Disable	Disable
Battery very low monitor	Enable/Disable	Enable
Zone Map LED	Zone n maps to LED n Zone n maps to no LED(0)	Set at E2 Init based on number of Display boards found
Zone Map LCD	Yes/No	Yes
Zone Map MAF	Yes/No	Yes
Zone Type	Alarm/Relay	Alarm
Zone Map Bells	Yes/No	Yes if MAF installed
Zone Map ANC1	Yes/No	No if MAF installed
Zone Map ANC2	Yes/No	No if MAF installed
Bells isolate operation (Australian mode)	Passon, follow, local	MAF RDU = local Non MAF = passon, follow
Ancillary 1 isolate (Australian mode)	Passon, follow, local	MAF RDU = local Non MAF = passon, follow
Bell test,bell relay	Passon, follow, local	MAF RDU=local, Non MAF=passon
New Zealand mode	Enable/Disable	Set at E2 Init if display ext board present
NZ MODE ONLY PARAMETERS		
NZ Display extender board	Installed/not installed	Set at E2 Init if present
Building services restore keyswitch	Passon, follow, local	All enabled
Trial evac keyswitch	Passon, follow, local	All enabled
NZ Mode Bells isolate/ Silence alarms	Passon, follow, local	Passon, follow
NZ Mode Ancill 1 isolate	Passon, follow, local	Passon, follow

TABLE 6.4.1
PROGRAMMABLE PARAMETERS

6.5 SYSTEM CONFIGURATION MENU

The System Configuration menu is option 1 in the Config program menu structure as shown in Fig 6.1.2. It allows programming of the parameters which determine the way the RDU operates. The menu includes the following:

1:MAF 2:MCP 3:Display/Relay 4:Mode 5:Protocol 6:Address
7:Site Name 8:Custom 9:Level 2

Custom mode programming is described separately in Section 6.7. The remainder of the System Configuration Menu options are described in the sub-sections below. Option 9 (Level 2), selects another menu as follows:

1:Access Codes 2:Batt Vlow 3:NZ Mode
4:Display extender 5:Brig Test 6:FFCIF Cause Display
7:More

Option 7:more selects another menu with:

1:Fault action text 3:Use FIP FFCIF text
2:Accept FIP time/date

Fig 6.1.2 shows the System Configuration menu and its hierarchial structure. The figure may be used in two ways as follows:

1. When a user needs to change one particular parameter in an existing RDU, Fig 6.1.2 acts as a "road map" to show the path required to access that parameter.

2. When initially programming a new RDU, the figure may be used as a flowchart. Working from top to bottom, left to right, the entire database can be programmed. This shows that the system configuration should be programmed before zones.

6.5.1 PROGRAMMING MAF & MAF RELAY SUPERVISION

The MAF can be programmed to be Installed or Not Installed by using the ⅄ or ^ keys. This parameter is set at E2 Initialisation based on the presence or absence of a MAF board, but is user programmable in the event that the configuration changes at some later date.

WARNING
Changing the MAF installed status to be different from the physical presence or absence of a MAF board will result in a RDU system fault.

If the MAF board is programmed as Installed then Ancillary 1 and 2 plus Bells relay operation are programmed next. Refer to Section 3.4.2 for the electrical characteristics of Bells and Anc1, Anc2 relay supervision.

The 4 options which can be entered for Anc1 and Anc2 are:
MAF Mapped (Y) or Not MAF mapped (N) for supervision faults.
Supervised (Y) or Not Supervised (N) for supervision faults.
Latching (Y) non-latching (N) supervision faults.
Supervision mode is load (load) or door holder mode (door).

PROGRAMMING MAF & MAF RELAY SUPERVISION (CONTINUED)

Of the 4 options for Ancillary relays 1 & 2, only the first 3 are available for the Bells Relay. (Bells supervision always looks for the presence of an end of line resistor, refer Sections 3.4.2 and 7.2.7).

The default set-up is:

Anc1 = MAF mapped, not supervised, non-latching, door holder mode
Anc2 = MAF mapped, not supervised, non-latching, load mode
Bells = MAF mapped, not supervised, non-latching

6.5.2 PROGRAMMING MANUAL CALL POINT (MCP)

The MCP can be programmed as Installed or Not Installed by using the ⩚ or ^ keys. The default following E2 Initialisation is MCP Installed if the MAF module is found, or "Not Installed" if a MAF is not found. Note that the Master FIP assigns the RDU MCP input to the required zone, not the RDU. **THE MCP INPUT CANNOT BE USED IN NEW ZEALAND MODE.**

WARNING

Programming MCP as "Not Installed" will mean that the MCP input is not processed even though the MCP may be physically present.

6.5.3 CONFIGURING DISPLAY/RELAY BOARDS

The user can program the number of Display/Relay Driver boards installed, together with their type (display or relay). The default number of boards is set to the number of physical boards found at E2 Initialisation. Thereafter the user can re-program this parameter within the range 0 to 33, should boards be added or removed at some future date.
The maximum number of display board leds which may be on simultaneously is set by a user programmable parameter with a default of 240. If the programmed limit is exceeded then the RDU will start "phasing" the led display boards and allow only six display boards to show their true state at any one time. Each display board will show its true state for 12 seconds and then be off for several seconds depending on the total number of display boards. Relay boards are not affected by the phasing.

WARNING

Changing the number of display/relay driver boards present to be different from the physical boards installed will result in a RDU system fault. This fault will also be sent to the master FIP. Changing the number to be less than the actual number present will result in random LEDs being on for those boards greater than the number programmed.

If any Display/Relay Driver boards are programmed as present, then the board type (Display/Relay) can be programmed for each board. The cursor prompts for board number, either a single board type can be programmed or a range of boards can be programmed by pressing the "AND" key instead of "Enter" after the first board number has been entered.

Select "Display" for LED Display boards otherwise select "Relay" for Relay Driver boards. Display boards will flash the alarm LED on receipt of an un-acknowledged zone alarm, while those configured for Relay will not since it is assumed that relays are being driven. Note also that Relay boards will not be tested during a test of the LEDs & display. This is for the same reason.

6.5.4 MODE

There are 7 operating modes available. Namely: Non-LCD Mimic, Non-LCD, Type 2 Mimic, Type 2, Type 3 Mimic, Type 3 and Custom.

The Type, 2 or 3, refers to the FFCIF alarm queue operation and display. The default mode is Type 3, whereby an alarm is automatically displayed on the LCD and must be individually acknowledged. The "Reset" and "Isolate" keys will only be actioned for alarms that have been acknowledged. Where LED displays are fitted for each zone and automatic display with individual acknowledgement is not required, then Type 2 may be selected. In this mode, pressing "Reset" or "Isolate" will cause the command to be activated on all zones in alarm.

Mimic options are the same as their respective Non-mimic modes except that when mimic the RDU does not reply (ie. cannot issue commands) to the FIP. Hence if the user tries to reset or isolate a zone an error message "Local RESET/ISO not enabled" or "Global RESET/ISO not enabled" will be produced as appropriate. In such cases all reset and isolate actions must be performed at the FIP. The RDU is there only to mimic the FIP status remotely.

"Local-Ack" is an exception to this rule. Mimics have "Local-Ack" enabled to allow alarms to be acknowledged at each RDU, the difference being that the acknowledge command is not sent to the FIP.

MODE (CONTINUED)

Non-LCD mode configures the RDU to operate with the "old style" LED only protocol available from Non-LCD based FIPs. In this mode the RDU generates FFCIF LCD event messages itself from zone LED status information received from the master with the local RDU time inserted. The LCD queue effectively operates as Type 2 FFCIF under this mode. Global Reset and ISO commands can also be sent to the FIP providing the mode is not Non-LCD mimic.

Custom Mode allows the user to program the RDU for a specific application not covered by each of the standard modes described so far. Custom mode provides, amongst other things, individual control for enabling and disabling Local ACK/RESET/ISO/ZONE TEST, Global ACK/RESET/ISO and Remote ACK. Custom mode parameters are programmed under menu option "8:Custom". Note that custom mode parameters can only be programmed if "mode" is set to custom. Please refer to Section 6.7 for a detailed description of custom mode programming and use.

Table 6.5.4 details the effect each mode has on the operating parameters such as Protocol, FFCIF event source and "Ack", "Reset" and "Isolate" key operation.

WARNING

Custom mode gives complete control over critical RDU operating parameters. Custom mode programming should thus only be attempted by experienced users. It is intended for applications that require custom settings to achieve a specific mode of operation not possible under one of the standard modes.

MODE	COMMAND									PROTOCOL	FFCIF LCD	INPUT LED
	LclAck	LclRst	LclIso	LclTest	RemAck	GlbAck	GlbRst	GlbIso	Type 3 GlbAck			
Non-LCDM	enable	disab	disab	disab	enable	disab	disab	disab	disab	Non-LCD	N	Y
Non-LCD	enable	disab	disab	disab	enable	enable	enable	enable	disab	Non-LCD	N	Y
Type 2 M	enable	disab	disab	disab	enable	disab	disab	disab	disab	LCD	Y	N
Type 2	enable	enable	enable	enable	enable	enable	enable	enable	disab	LCD	Y	N
Type 3 M	enable	disab	disab	disab	enable	disab	disab	disab	disab	LCD	Y	N
Type 3	enable	enable	enable	enable	enable	enable	enable	enable	disab	LCD	Y	N
Custom	prog	prog	prog	prog	prog	prog	prog	prog	prog	prog	prog	prog
Key	M = mimic only Lcl = Local, Rem = Remote, Glb = Global											

TABLE 6.5.4
STANDARD "MODE" PARAMETER SETTINGS

6.5.5 PROTOCOL

The RDU can be programmed with the protocol type to be used in communicating with the FIP. There are three protocol types which can be selected - non-LCD, LCD-A, LCD-B. The default is LCD-A for Australian mode, and LCD-B for New Zealand mode, and the RDU can also operate with the "old style" LED only protocol (non-LCD). With Non-LCD protocol the RDU has less capability than with LCD-A or LCD-B protocol - it does not receive "FFCIF alarm list" LCD type events from the FIP, and zone reset, isolate and test commands cannot be done at the RDU. LCD-B protocol is a slight improvement from LCD-A protocol and allows some more specific fault information to be sent to the FIP, and for New Zealand operation it allows the state of the Building Services Restore input to be sent to the FIP.

PROTOCOL (CONTINUED)

Not all types and versions of FIP and RDU currently in use allow all three types of protocol. The selection of which protocol type to use depends on what choice of protocol is available at the FIP and ALL of the RDUs connected to it since they must all use the same protocol type, unless the FIP has the capability of programming the protocol type specifically per each RDU connected. For some FIPs, the choice of protocol type is given as Non-LCD or LCD (e.g. F4000 and F3200) - for these FIPs, "LCD" is the same as LCD-A protocol at the RDU.

F4000 V2.00 onwards allow LCD or Non-LCD protocol. F4000 versions before V2.00 allow only non-LCD protocol. F3200 V2.00 onwards allow non-LCD, LCD-A or LCD-B. F3200 versions before V2.00 allow non-LCD or LCD (LCD-A).

When the mode is selected (see section 6.5.4) the protocol type will be selected automatically - e.g. if the mode is set to Non-LCD mimic then the protocol type is set to Non-LCD. If the mode is set to "custom" then the protocol type may need to be set specifically , with option 5 from the system config menu level 1.

When the protocol type is Non-LCD, the RDU will still generate LCD FFCIF alarm list type events when a zone goes into alarm but the event description on the LCD will not have quite the same information as the event at the FIP. When the mode is set to "custom" a choice can be made of the source of FFCIF alarm list type events - refer section 6.7.2.2.

WARNING

If the RDU protocol is set different to the master FIP protocol, this can be detected since an incorrect RDU reply format will cause the master FIP to generate scan fail for the RDU. A problem arises when the RDU is programmed as mimic only. In this case the Master FIP is not expecting a reply from the RDU so will not generate scan fail even though the RDU protocol is incorrect. Similarly the RDU rejects all messages received from the master FIP because it cannot interpret them, but does not show FIP Comms Failure as the messages are valid (just the wrong protocol). In this situation the RDU will not show the true zone status present at the FIP.

Every zone at the RDU will show normal regardless of the master FIP zone status and neither the FIP nor the RDU will give any indication that anything is wrong.

6.5.6 ADDRESS

The RDU address is programmable within the range 1 to 8. This effectively sets the RDU reply time slot. The default address is 1. Where more than 1 RDU is connected and replying to a FIP they must be assigned different addresses to avoid conflict and they should be assigned consecutive/"contiguous" addresses starting with address 1.

6.5.7 SITE NAME

A 40 character site name can be programmed for the RDU. This is described in more detail in Section 6.4.2.

6.5.8 ACCESS CODES

Access codes are programmed by selecting "SYSTEM" then "9:Level 2" and then option 1 (Access code).

Two programmable access codes are available. The "Program Code" allows the database to be programmed or viewed as required, and should only be known by the System Designer or Service Supervisor. The second code is the "view code", its menu structure is similar to the program menu structure but allows the user to view the RDU database without possibly changing it.

The default for both the Program and View Access codes is 000000. Both codes should be changed from the default. Similarly 000000 should not be used for either code as it will be known by all service people familiar with the F3200 series of products.

To enter an access code, select "1:Program Code" or "2:View Code" as appropriate. To enter a new access code, enter the 6 new digits, and then re-enter them to confirm the code.

6.5.9 BATT VLOW

This parameter is programmed by selecting option 9:Level 2 from the system configuration menu and then selecting option 2:Batt Vlow.
This option allows the monitoring of the battery low and battery very low inputs at the RDU to be disabled (default = enabled). This may be necessary if the RDU is to operate from 12 volts instead of 24 volts. For normal operation at 24 volts the parameter should be set to enabled.

6.5.10 NZ MODE

This parameter is programmed by selecting option 9:Level 2 from the system configuration menu and then selecting option 3.
For operation in New Zealand mode, this parameter should be set to enabled. For Australian operation it should be set to disabled. At database eeprom reinitialise time it will be set to enabled if a New Zealand Display Extender Board is found connected. There are a number of differences in the operation of the RDU between the two modes and these are listed in section 2.4.

6.5.11 NZ DISPLAY EXTENDER BOARD

This parameter can be programmed to specify whether the NZ Display Extender Board is present or not. This parameter is programmed by selecting option 9:Level 2 from the system configuration menu and then selecting option 4. The Display Extender Board is not used for Australian operation. For New Zealand operation the Display Extender is optional but is normally installed and this parameter should be set to enabled if present. The inputs and outputs on the Display Extender are listed in section 2.4. and section 7.4.

6.5.12 BRIGADE TEST ENABLE/DISABLE

If enabled, a Brigade Test can be initiated at the RDU by pressing and holding the Brigade Test key for several seconds. The RDU will then send a Brigade Test command to the FIP. To enable or disable the Brigade Test at the RDU, select option 9:Level 2 from the system configuration menu and then select option 5 from the subsequent menu.

6.5.13 FFCIF DISPLAY CAUSE BY DEFAULT

By default the first line of the RDU FFCIF Alarm display shows:
Alarm Time, Alarm Type, Acknowledge State, Number of Alarms

and when the “AND” key is pressed the first line changes to:
Full Cause, Number of Alarms

If the Display cause by default option is enabled, the time on the first line is replaced by a Cause preview shown as:
Cause Preview, Alarm Type, Acknowledge State, Number of Alarms

and when the “AND” key is pressed:
Full Cause, Alarm Time, Number of Alarms

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

To enable or disable display cause by default at the RDU, select option 9:Level 2 from the system configuration menu and then select option 6 from the subsequent menu.

6.5.14 ACCEPT FIP TIME/DATE

Some versions of FIP software are able to send the time and date to an RDU. F4000 V2.31 onwards and F3200 V2.04 onwards do this. The RDU may be programmed to accept the time and date sent to it from the FIP and use it to update its own time and date. This allows the RDU to have a more accurate time and also to receive any changes in time and date that occur at the FIP, e.g. when daylight saving changes occur. The time and date are sent automatically to the RDU every 24 hours and also whenever the time and date are changed due to daylight saving or operator commands, etc.

To enable the acceptance of FIP time/date, select the System Config option from the program menu, then Option 9:Level 2, then Option 7:More, then Option 2:Accept FIP time/date.

6.5.15 USE FIP FFCIF TEXT

When an FFCIF alarm is sent to an RDU the text name of the zone that is in alarm is also sent to the RDU. The RDU may be programmed to show in the FFCIF alarm display either the zone name sent from the FIP or the zone name that has been programmed into its own database. One reason for using the FIP text name is that the FIP may initially send the name of the zone that has gone into alarm but several seconds later the FIP may send the name of the actual point that has gone into alarm (F4000 V2.33 onwards can do this). To enable this feature, select the System Config option from the program menu, then Option 9: Level 2, then Option 7: More, then Option 3: Use FIP FFCIF Text.

NOTE: Enabling this option does not cause the RDU to save the zone name received from the FIP into its own database. There is a separate option for that described in Section 6.6.3.

6.6 ZONE CONFIGURATION MENU

The zone configuration menu is option 2 in the Config program menu structure as shown in Figure 6.1.2. It allows programming of zone configuration data, zone names, and enabling/disabling acceptance of FIP zone names from FFCIF alarm events.

6.6.1 ZONE CONFIGURATION PROGRAMMING

Programmable options for each zone shown in Figure 6.1.2 are:
LED map number, map/non map to LCD, map/non map to MAF, alarm/relay type, map/non map to bells, map/non map to ANC1 and map/non map to ANC2.

Note that the last 3 options are valid only if the MAF board is programmed to be installed, otherwise these options will not be shown.

The default configuration after E2 Init is as follows:

Zone N maps to LED N	for as many LEDs as there are available else Zone N maps to 0 (no LED)
LCD = Y	all zones produce FFCIF alarm events
MAF = Y	all zones map to the MAF
ALM = Y	all zones are of type alarm
Following 3 fields valid for MAF Installed systems only	
BELLS = Y	Bells relay operates on alarm event
ANC1 = N	Ancil. 1 relay not operated on alarm event
ANC2 = N	Ancil. 2 relay not operated on alarm event

At this menu when the cursor prompts for zone number, either a single zone or a range of zones can be programmed by pressing the "AND" key instead of "ENTER" after the first zone number has been entered.

Sections 6.6.1.1 to 6.6.1.5 below detail the zone configuration fields further.

6.6.1.1 MAPPING ZONE TO LEDs

Where 16 Zone LED Display or Relay Driver boards are fitted, the zones have a default mapping to the LEDs as described in Section 6.6.1 above. Other mappings are programmable, with multiple zone to LED mapping also possible.

A zone can only be mapped to an LED or Relay Driver output physically present in terms of the installed Relay/Driver board configuration (or not shown on LEDs at all, ie LED = 0). Similarly for zone range programming the first zone will be mapped to the LED number entered and each consecutive zone will be mapped to the next LED over the range. Again all LEDs must be physically present.

A further check is made during zone LED map number entry. Zones of a different type (refer to Section 6.6.1.4) cannot map to the same LED. This is because alarm zones flash the alarm for an unacknowledged alarm, etc. but relay zones require the alarm LED to remain steady. An error message "Zone ZZZ of different type maps to the same LED" will be produced under these circumstances.

6.6.1.2 MAPPING ZONES TO THE LCD

FFCIF LCD events are only produced for those zones of type alarm and mapped to the LCD. (Refer to Section 6.6.1.4).

6.6.1.3 MAPPING TO MAF

A zone mapped to the MAF causes the Alarm, Fault or Isolate relays on the MAF module to turn on for systems programmed with MAF board installed only for the corresponding condition on the zone. Alarm, Fault and Isolate conditions are also included in the base display totals. The totals include MAF zones only by default, but can be programmed to show the total of both MAF & Non-MAF conditions. (Refer to Section 6.7.2.1).

6.6.1.4 ZONE TYPE

Zones can be programmed as type Alarm or Relay. Alarm type zones will produce an FFCIF alarm type event providing that the zone maps to the LCD (see Section 6.6.1.2).

Relay type zones will not produce FFCIF alarm events and the alarm LED will be on steady for relay operated.

The programming of the zone type must match the zone type at the FIP.

Refer to the Programming & Installation Manual of the FIP being connected to for information on the range of zones and type of zones for which it sends status data to the RDU.

Where Display boards are fitted an alarm type zone will flash its alarm LED for an unacknowledged alarm, relay type zones will not. It is possible that a relay configured zone will have outputs driven off either the open collector output of the LED Display board or alternatively if Relay Driver boards are installed, those outputs would be driven off relays. In either case it would be undesirable to have relay type zone outputs flash.

WARNING

A Test of the LED & Display will not test Display/Relay Driver boards configured for Relay. Display/Relay Driver boards configured for Display will however be tested, meaning that relay type zones mapped to Display Driver boards will flash their open collector outputs following "TEST" "2:LEDs & Display" operator keypress actions.

Two zones of different type cannot map to the same LED (see Section 6.6.1.1). If the user tries to re-program the zone type and another zone of different type already maps to the same LED then an error message "Zone ZZZ of different type maps to the same LED" will be produced.

6.6.1.5 MAP TO BELLS, ANC1 & ANC2

Where a MAF board is installed and programmed to be installed zones can be individually programmed to map or not map to the bells/ancillary 1 /ancillary 2 relays as required. BELLS/ANC1/ANC2 mapped zones operate the bells/ancillary 1/ancillary 2 relay when in alarm providing the zone or the relay itself are not isolated. Note that operation is independent of the MAF mapped configuration for that zone.

6.6.2 ZONE NAME PROGRAMMING

A 30 character zone name can be programmed for each RDU zone. Note that each zone must be configured for this RDU before a name can be programmed. That is to say the zone must be mapped to either an LED and/or it must be mapped to the LCD. Otherwise the RDU has no interest in information received for that zone and thus no need to assign a name.

Zone text entry is described in more detail in Section 6.4.2 under text entry.

With an appropriate version of FIP software zone names may be downloaded from the FIP through the RDU comms link. The RDU will accept zone names from the FIP only when the database write protect link Lk7 is in the write enable position. The RDU does NOT have to be in program mode to accept zone names from the FIP, it will accept them during normal operation. If the type of EEPROM installed supports software write protection (refer Section 6.4.1), then the database write protect link Lk7 may be left in the write enabled position permanently, otherwise link Lk7 must be left in write protect position except when downloading zone names. If link Lk7 is left in the write protected position then any zone names which are received from the FIP will be ignored and not saved to the EEPROM database (for example, if the RDU is using its own set of zone names).

Zone names may be sent from the FIP in two situations:

1. When a specific command is initiated at the FIP it will transmit some or all of the zone names (as selected by the operator).
2. When the FIP sends an FFCIF zone alarm to the RDU it will also send the zone name. If programmed to, the RDU will save the zone name from the FFCIF event into its database. Option 3 from the zone config menu allows the enabling or disabling of whether the RDU saves zone names that come with an FFCIF event. (Refer Section 6.6.3).

6.6.3 FIP FFCIF NAME ACCEPT

If the FIP FFCIF Name Accept is enabled and the database is Write Enabled, then the RDU will “capture” and store into its own database in EEPROM any zone name text sent by the FIP with an FFCIF alarm event. This field should be left disabled if the RDU has its own zone names, or if the FIP is sending both zone names and point names (F4000 V2.33 onwards can send point names if programmed to). Refer also Section 6.5.15. To enable this option select Option 2: Zone from the program menu then Option 3: FIP zone name accept.

6.7 CUSTOM MODE PROGRAMMING

6.7.1 GENERAL

The "mode" must be set to custom to allow programming of custom parameters. The CUSTOM menu option provides for unrestricted programming of critical RDU parameters to satisfy a specific requirement not covered by the pre-defined modes of operation as described in Section 6.5.4. As such custom mode programming should only be attempted by experienced users.

The sub-menu options available under CUSTOM are as follows.

1:Mimic 2:Local Cmd 3:Remote Cmd 4:Global 5:Option

The "Mimic" option configures the RDU for mimic type operation.

Mimic: If Y, then Local Reset, Local Iso, Local Test, Global Ack, Global Reset, Global Iso parameters (see Table 6.7) are all set to N to implement a mimic type operation.

If N, then the above parameters are left unchanged.

The default value for Mimic is Y for all mimic type operating modes (defined in Section 6.5.4) and N for non-mimic types. Mimic must be set to N before any of the Local or Global Commands, menu options 2 & 4 respectively, can be changed.

The Local Cmd, Remote Cmd and Global menu options allow enabling or disabling of the parameters detailed in Table 6.7.1 below. The Option menu provides further customisation to program such things as the Buzzer & LED operation, FFCIF inputs etc. The custom option menu is described in the next section.

The default Local, Remote and Global command settings for each of the mode settings are detailed in Table 6.5.4. This shows that all mimic operating modes have Local and Global command settings disabled since commands cannot be actioned (ie. sent to the FIP). Similarly, Non-LCD modes have Local Reset, Isolate and Test disabled because the Non-LCD protocol does not support commands for a particular zone or range of zones. All commands for non-lcd modes are thus done on a global basis.

"Local-Ack" is an exception to this rule. Mimics have "Local-Ack" enabled to allow alarms to be acknowledged at this RDU, the difference being that the acknowledge command is not sent back to the FIP.

The fourth of the global parameters, “Type 3 Global Ack”, may be enabled only when the mode is custom and the “FFCIF mode” is set to type 3. If the “Type 3 Global Ack” option is enabled then when the FFCIF alarm list is being viewed on the LCD, pressing the ACK key will result in a global ACK being sent to the FIP, which may result in all unacknowledged zones in the FFCIF being acknowledged. If Type 3 Global Ack is disabled then only the zone currently being displayed is acknowledged when the ACK key is pressed.

Having “Type 3 Global Ack” enabled provides a fast way of acknowledging alarms on zones of interest to the RDU and may allow the alarm bells to be silenced with a single press of the ACK key at the RDU. Most installations will require zone alarms to be individually acknowledged and will not have this feature enabled.

GENERAL (CONTINUED)

Zone Alarm and Fault Tests.

Local Test enabled allows zone alarm or fault tests to be initiated at the RDU. The RDU will send a command to the FIP which will initiate the zone test as if the test had been initiated using the FIP keypad. The zone test may result in MAF outputs being turned on at the FIP so it should be initiated with care. There is no indication at the RDU that a test is active on a zone but if the test is successful, then a fault or alarm should occur on the zones being tested. The RDU allows a fault or alarm test to be initiated on multiple zones but not all FIPs allow more than one zone to be tested at the same time. An F4000 FIP (Version 2.21 onwards) will allow only one zone to be tested at a time, while F3200 (Version 2.00 onwards) allows multiple zones to be tested simul-taneously.

Prior versions of FIP software do not support zone tests.

The Protocol must be LCD (A or B) to allow zone tests to be used.

The RDU will not test any zones which are not programmed as being of interest to the RDU i.e. which are not mapped to either the LCD or an LED. There are also situations in which the FIP will not initiate a zone test requested by an RDU e.g. if a system or auto test is in progress. There is no indication at the RDU that a test is in progress or has passed or failed other than an alarm or fault occurring on a zone. Care must be taken not to leave a zone test running at the FIP forever. Ideally after completion of all testing at an RDU, the operator should go to the FIP and check that there are no active zone tests. A zone reset command initiated at either the RDU or the FIP will terminate any active test on that zone.

COMMAND	SCOPE
	OPERATES ON INDIVIDUAL ZONES OR RANGE OF ZONES
Local Ack	Enabled = selective acknowledge of zone alarm events possible at the RDU
Local Reset	Enabled = selective zone reset possible locally from the RDU
Local Iso	Enabled = selective zone isolation possible locally from the RDU
Local Test	Enabled = allows fault or alarm test on a zone or range of zones
	OPERATES ON SPECIFIC ZONE FOR WHICH ACK'D STATUS RECEIVED
Remote Ack	Enabled = RDU acts on acknowledged zone status received from master FIP.
	OPERATES ON ALL ZONES AT MASTER (only if FIP programmed to accept)
Global Ack	Enabled = global acknowledge of zone alarm events possible from this RDU
Global Rset	Enabled = global zone reset possible from this RDU
Global Iso	Enabled = global zone isolate possible from this RDU
Type 3 Global Ack	Enabled = when in custom mode and FFCIF mode is type 3 this means that pressing ACK in the FFCIF alarm list display will send a global ACK to the FIP.

TABLE 6.7 - COMMAND PARAMETERS AND MEANING

GENERAL (CONTINUED)

Where a particular mode of operation cannot be achieved by one of the standard modes then custom mode can be selected to allow individual setting of the parameters detailed in Table 6.5.4.

Consider for example a building management system where each alarm event has to be acknowledged at the RDU before it can be cleared. In such a system Remote ACK would be disabled to prevent the RDU FFCIF event from being acknowledged due to acknowledgment at the Master FIP or at another RDU. Also Local & Global ACK/RESET/ISO would all be enabled to allow the RDU to issue commands as before.

Another example of an RDU configuration allows events to be acknowledged at the RDU, but not Reset or Isolated. All reset and isolate functions would have to be performed at the master FIP. In such a system Local & Global ACK would be enabled but all other commands would be disabled.

6.7.2 CUSTOM OPTIONS

The CUSTOM OPTIONS menu prompt is as follows:

1:Totals 2:FFCIF Input 3:Buzzer 4:Com LED 5:Auto Ack
6:All Zones Iso Fault. 7:Passon/follow/local list

Each of these options is described in detail as follows.

6.7.2.1 Totals

The base display shows "Alarm", "Isolate" and "Fault" status totals. The totals include only MAF mapped zones by default, but can include all zones - both MAF mapped and Non MAF. Select Totals = MAF or MAF & non-MAF as required. Note that the "Alarm" total does not include relay type zone activated states, they are included in the "Other" total instead.

The "Other" total shows a count of both system faults and non-MAF mapped alarm, isolate and fault states if Totals = MAF, otherwise the "Other" total is a count of system faults only. The "Other" total also includes relay type zones in the activated state.

6.7.2.2 FFCIF Input and Type

When the mode is set to "custom" the operation of the FFCIF alarm list can selected to be either type 2 or type 3.
There are two possible sources of data that can be used to generate FFCIF alarm events for LCD mapped zones.

If "LCD Message" is Y then FFCIF zone alarm events will be generated with alarm type and time/date information as received from the master FIP. IF N then FFCIF events will not be generated for LCD event messages received from the FIP.

If "LED Message" is Y then LED status data received from the FIP can be used by the RDU to generate an FFCIF zone alarm event using the local RDU time and event text of "ALARM". This method is also used when the RDU is connected to a non-lcd master.

Warning: If both "LCD Message" and "LED Message" are set to N, then no FFCIF events will be generated for zone alarms.

FFCIF Input and Type (Continued)

Setting the "mode" as non-lcd or non-lcd mimic automatically sets "LCD Message" to N and "LED Message" to Y, as shown in Table 6.5.4. The user would not normally need to alter these parameters except via the standard modes.

6.7.2.3 Buzzer

Buzzer operation is achieved via a logical "OR" of each of 4 input generators detailed below. The user can individually enable (Y) or disable (N) each of these generators as required.

Local Alarm : If Y then the alarm buzzer will sound if an alarm condition is received for a zone mapped to the LCD or LEDs of this RDU.

Local Fault: If Y then the fault buzzer will sound if a fault condition is received for a zone mapped to the LCD or LEDs of this RDU.

Remote Alarm: If Y then the alarm buzzer will sound if the Master FIP alarm buzzer is on.

Remote Fault: If Y then the fault buzzer will sound if the Master FIP fault buzzer is on.

The default settings are Local Alarm and Local Fault enabled, with Remote Alarm and Remote Fault disabled. Under these settings the RDU buzzer will only operate for alarm and fault conditions on zones configured for this RDU.

Another application could require all RDU buzzers to be silenced when the Master FIP buzzer is silenced. This would save personnel going to all RDUs to silence each buzzer. This would require the RDU Local Alarm and Local Fault buzzer generators to be disabled and the Remote Alarm and Remote Fault generators to be enabled.

WARNING

If both the Local Alarm & Remote Alarm generators are disabled then the RDU alarm buzzer will not sound for a zone alarm.

Note that disabling the local fault buzzer will prevent zone faults from operating the buzzer, but it will not prevent local RDU system faults from operating the buzzer. The RDU fault buzzer still needs to operate on loss of received messages from the FIP.

6.7.2.4 Common LEDS

Each of the Common Alarm, Isolated and Fault LEDs plus Charger/Batt Fault, and System Fault LEDs operate via a logical "OR" of 2 input generators detailed below. The user can individually enable or disable each of these generators as required. The operation of bells isolate and ancillary isolate LEDs is described in section 6.7.2.7.

Local Status: If Y then the LEDs operate from local RDU status.
Remote Status: If Y then the LEDs will follow the corresponding FIP LED status.

The default settings are that the LEDs operate on Local Status but not Remote FIP status.

Another application could require the common Alarm LED to "follow" the master FIP status. In so, then Local Status is disabled and Remote Status is enabled.

Common LEDS (Continued)

WARNING

If both Local and Remote Status generators are disabled (N) then the common alarm LED will not operate for a zone alarm. In fact if Local Status is set to N then the Isolated, Fault, Chargr/Batt LEDs etc will not operate if their status conditions are present.

Note: that Master FIP LED status is only received for the following LEDs; FIP alarm, FIP system fault, FIP bells isolate and FIP ancillary isolate. No status information is received from the FIP for the common isolate, fault and Chrgr/Batt Fault LEDs. Thus for these LEDs setting the remote status generator to enabled has no effect.

6.7.2.5 Auto Ack

Zone alarm events can be automatically acknowledged as they are received at the RDU but not at the master if "auto-acknowledge" is enabled. The default setting is disabled so that the user is required to individually "ACK" each zone alarm as it is received.

An application could require a mimic type RDU operation such that alarm events are placed in the FFCIF queue to allow the user to view each event. The user does not want to be concerned with acknowledging zone alarm events, all they want is a "data logging" type operation to allow each event to be viewed via the "NEXT" and "PREV" keys. Each event could thus be "automatically acknowledged" as it is received to appear as "ACKD" in the RDU FFCIF alarm event queue. This application would require the following programmed parameters:

local ack disabled global ack disabled
local iso disabled global iso disabled
local reset disabled global reset disabled
local test disabled remote ack enabled
auto ack enabled
local alarm buzzer disabled to prevent buzzer sounding
on receipt of new zone alarm

Note: enabling "auto ack" will acknowledge alarm events at this RDU but not at the FIP.

6.7.2.6 All Zones Isolated Fault Status

The user can program whether or not a system fault occurs if all zones are isolated.

Setting "all zones isolated fault" = enabled implements this.
The default is enabled. This is useful as a safeguard because isolating all zones effectively means that all inputs are disabled. Considering that the action to "isolate all zones" could have occurred at this RDU, the FIP or at some other RDU.

6.7.2.7 Passon/follow/local programming

Passon/follow/local programming allows the setting of parameters which determine the operation of several different functions at the RDU in relation to the FIP. These are : bells isolate, ancillary isolate, bells test and bells relay operation, building services restore (NZ only), trial evacuation (NZ only) and silence alarms (NZ only).
Select the passon/follow/local list programming item from the Custom/Option menu and then select the individual item to be programmed - bells isolate or ancillary isolate functions, bells test and bells relay operation, and for New Zealand operation, Buildings Services Restore (BSR) and Trial Evacuation also.

6.7.2.7.1 Bells Isolate

For bells isolate operation there are three parameters which may be enabled/disabled at the RDU - passon, follow, and local. These determine the bells isolate operation at the RDU. The operation for Australian mode is slightly different to New Zealand mode because NZ mode may have a Silence Alarms keyswitch.

Australian bells isolate operation.

1. Passon.

If "passon" is enabled then the RDU can control the FIP bells isolate status and if passon is disabled the RDU cannot control the FIP bells isolate status. With passon enabled the RDU is forced to have "follow" enabled and "local" disabled and the RDU bells isolate status copies (follows) the FIP bells isolate status. With passon enabled, pressing the BELLS ISOL key at the RDU will cause the RDU to toggle the current bells isolate status by sending a command to the FIP to isolate or de-isolate the bells. After the FIP receives the command it will then transmit the new bells isolate state to the RDU which will then be shown on the RDU bells isolate led and will cause the RDU bells relay (if any) to be isolated or de-isolated.

The bells isolate status can still be controlled from the FIP with the BELLS ISOL key at the FIP.

If the FIP and RDU bells are isolated then the RDU bells isolate LED is flashing 1HZ, otherwise it is off.

NOTE: not all types and versions of FIP are able to respond to the bells isolate command sent from an RDU.
Currently FIPs which support the bells isolate command are:
F4000 - version 2.14 onwards
F3200 - version 2.00 onwards

2. Follow and local.

With passon disabled, any combination of "follow" and "local" may be programmed except that a non_maf RDU (FP0559) may not have local enabled. The RDU receives the FIP bells isolate status from the FIP and also stores its own local bells isolate status which it may control if it is programmed with "local" enabled. With follow enabled the RDU copies the FIP bells isolate status, i.e. if the FIP bells are isolated then the RDU bells are isolated.

Follow and local both enabled.
With both follow and local enabled the RDU bells relay and LED are isolated if either the FIP is isolated or if the bells are locally isolated at the RDU. The BELLS ISOL key at the RDU may be used to toggle the local bells isolate status.

Bells Isolate (Continued)

Follow enabled and local disabled.
With follow enabled and local disabled the BELLS ISOL key at the RDU does nothing and can't be used to alter the bells isolate status.

Follow disabled and local enabled.
With follow disabled and local enabled the RDU ignores the FIP bells isolate status and may toggle its local bells isolate status with the BELLS ISOL key.

With passon, follow and local all disabled the RDU bells cannot be isolated.

Local control may not be enabled with an FP0559 non maf RDU since if the RDU does not have a bells relay there is no point in having a bells isolate function at the RDU. A non maf RDU may have passon and/or follow enabled so that it may either control or mimic the FIP bells isolate status.

New Zealand bells isolate operation.

New Zealand operation is very similar to Australian operation except that NZ mode may have a Silence Alarms keyswitch. The parameters passon, follow and local work exactly as described above for Australian mode but in addition, they determine the operation of the Silence Alarms keyswitch, if any, as follows. As with Australian mode, if passon is enabled, follow is forced to be enabled and local is disabled.

1. Passon.
If passon is enabled, the true state of the Silence Alarms keyswitch is transmitted to the FIP. If Silence Alarms is activated at the RDU it will cause the FIP bells to be isolated which will in turn cause the RDU bells to be isolated (because follow is enabled at the RDU). If the FIP bells are isolated then the RDU bells isolate LED will either flash at 2HZ if the RDU Silence Alarms keyswitch is on or flash at 1HZ if Silence Alarms is off.

If the Silence Alarms keyswitch at the RDU is on then the BELLS ISOL key at the RDU is ignored, but if Silence Alarms is off then the BELLS ISOL key at the RDU can be used to isolate / de-isolate the bells at the FIP and RDU.

If passon is disabled then the state of the Silence Alarms keyswitch is not sent to the FIP and can't be used to isolate the bells at the FIP, but if "local" is enabled the Silence Alarms keyswitch may be used to isolate the bells relay (if any) at the RDU.

2. Passon disabled, follow enabled and local enabled.

With "local" enabled the silence alarms keyswitch at the RDU may be used to isolate the bells relay at the RDU. Hence with this setup, there are three things which can cause the bells relay at the RDU to be isolated - the FIP bells isolate state, the RDU Silence Alarms keyswitch or the local bells isolate state controlled by the BELLS ISOL key at the RDU. If the RDU Silence Alarms keyswitch is on or the local bells isolate state is set to isolate then the bells isolate LED will flash at 2 HZ, otherwise, if the FIP bells isolate state is "isolate" then the RDU LED will flash at 1HZ, and if none of the three are isolated then the LED will be off.

A non-maf RDU (FP0559) may not have local enabled.

Bells Isolate (Continued)

3. Passon disabled, follow enabled and local disabled.

The RDU follows the FIP bells isolate state and the RDU Silence Alarms keyswitch and RDU "BELLS ISOL" key are ignored.

4. Passon disabled, follow disabled and local enabled.

The FIP bells isolate state is ignored but the Silence Alarms keyswitch or BELLS ISOL key at the RDU may be used to isolate the bells at the RDU. If the Silence Alarms keyswitch is on then the BELLS ISOL key is ignored.

5. Passon, follow and local all disabled.

The RDU bells isolate LED and relay can never be isolated.

6.7.2.7.2 Ancillary Isolate

A MAF-RDU (FP0558) has two ancillary relays (ANC1 and ANC2). The ancillary 2 relay at the RDU can always be isolated or deisolated locally at the RDU and is not affected by the FIP ancillary isolate status. Associated with the ancillary 1 relay at the RDU is a set of programmable parameters (passon, follow and local) which determine how the ancillary 1 relay at the RDU is isolated or deisolated.

If "passon" is enabled, the RDU may send an ancillary isolate/deisolate command to the FIP which will cause an ancillary isolate or deisolate operation to occur at the FIP (depending on the type and version of FIP).

If "follow" is enabled then the ancillary 1 relay at the RDU is isolated if the "received FIP ancillary isolate state" is isolated. For an F4000 FIP, the "received FIP ancillary isolate state" is the isolate state of ancillary zone zero. For an F3200 FIP version 1.10 or earlier, it is the state of the ancillary isolate led at the F3200 front panel. For F3200 FIP V2.00 or later it is the "Plant Isolate" status.

If "local" is enabled then the ancillary 1 relay at the RDU can be isolated or deisolated locally at the RDU.

The operation for New Zealand mode is slightly different to Australian mode because NZ mode may have a building services restore (BSR) key-switch at either the RDU or FIP which can be used to isolate all the ancillary outputs at the RDU if programmed to. New Zealand mode also has ancillary fire and ancillary defect outputs on the Display Extender Board which can also be isolated. For New Zealand mode, as well as the ancillary isolate passon, follow, local parameters, there is a separate set of passon, follow, local parameters associated with the building services restore keyswitch and all six parameters determine how the ancillary relays and outputs at the RDU and FIP are isolated.

Ancillary Isolate (Continued)

Ancillary isolate LED

On steady	-	if either anc 1 or anc 2 relays are locally isolated.
Flash at 1HZ	-	if the FIP is sending an ancillary isolate state, which means the RDU ANC 1 relay (if any), is isolated.
Flash at 2HZ	-	For New Zealand operation, if the local BSR input is asserted.

Australian operation of ancillary isolate passon, follow, local.

For a non-MAF RDU these parameters determine whether the RDU can send an ancillary isolate/deisolate command to the FIP and what is shown on the ancillary isolate LED at the RDU.

For a MAF RDU (FP0558) only the ancillary 1 relay is affected by these parameters, not the ancillary 2 relay.

The ancillary isolate led at the RDU indicates the isolate status of both the ancillary 1 and ancillary 2 relays as described above.

1. Passon.

If "passon" is enabled then the RDU can control the FIP ancillary isolate status. For an F4000 FIP this means that the RDU can cause an ancillary (zone zero) isolate or deisolate to occur at the FIP. For an F3200 type FIP the command is ignored by all versions up to V1.10 of F3200 FIP but version 2.00 onwards of F3200 software will perform a Plant Isolate/Deisolate. With passon enabled, "follow" is forced to be enabled and "local" is forced to be disabled.

If passon is disabled then the RDU cannot send ancillary isolate/deisolate commands to the FIP. With follow enabled the RDU ancillary relay 1 isolate status copies (follows) the ancillary isolate status received from the FIP. With passon enabled, executing an ancillary relay 1 isolate/deisolate command at the RDU will cause the RDU to send the command to the FIP. After the FIP receives the command it will then transmit the new ancillary isolate state to the RDU which will cause the RDU ancillary relay 1 (if any) to be isolated or de-isolated. Hence there may be a delay of about 4 to 8 seconds after the command is executed at the RDU before the anc relay 1 at the RDU is isolated or deisolated.

The ancillary isolate status can still be controlled from the FIP with the ANCIL ISOL key at the FIP.

For a non-maf RDU, pressing the ANCIL ISOL key at the base display, (with passon enabled), will immediately (without prompting the operator on the LCD), cause an ancillary isolate or deisolate command to be sent to the FIP.

NOTE: Not all types and versions of FIP are able to respond to the ancillary isolate command sent from an RDU.

Currently -	F4000 -	version 2.20 onwards, versions 2.10 to 2.19 and V2.03 to V2.09.
	F3200 -	versions 2.00 onwards.

Ancillary Isolate (Continued)

2. Follow and local.

With passon disabled, any combination of "follow" and "local" may be programmed except that a non-maf RDU may not have local enabled. The RDU receives the ancillary isolate status from the FIP and also stores its own local ancillary 1 isolate status which it may control if it is programmed with "local" enabled.

With follow enabled the RDU anc 1 relay copies the "FIP ancillary isolate status", i.e. if the FIP state is isolated then the RDU anc 1 relay is isolated. For an F4000 FIP the FIP ancillary isolate status received by the RDU is the isolate status of FIP ancillary zone zero. NOTE :- during a system test (but not daily auto test) the F4000 FIP sets ancillary zone zero to isolated. For an F3200 type FIP V1.10 or earlier, the ancillary isolate status sent to the RDU is the state of the ancillary isolate led on the F3200 front panel (and the led is on/isolated when any module relay, maf relay or plant is isolated). For F3200 V2.00 onwards, it is the state of Plant Isolate.

Follow and local both enabled.
With both follow and local enabled the RDU anc 1 relay is isolated if either the FIP state is isolated or if the relay is locally isolated at the RDU. With local enabled, the ISOLATE key at the RDU may be used to toggle the local anc 1 relay isolate status.

Follow enabled and local disabled.
With follow enabled and local disabled the anc 1 relay cannot be isolated locally at the RDU and always follows the FIP ancillary isolate status.

Follow disabled and local enabled.
With follow disabled and local enabled the RDU ignores the FIP ancillary isolate status and may toggle its local anc 1 relay isolate status with the ISOLATE key.

With passon, follow and local all disabled the RDU bells isolate LED and relay are never isolated.

Local control may not be enabled with an non-maf RDU since if the RDU does not have an ancillary 1 relay there is no point in having a local isolate function at the RDU. A non maf RDU may have passon and/or follow enabled so that it may either control or mimic the FIP ancillary isolate status.

New Zealand ancillary isolate operation.

New Zealand operation has all of the Australian described above and, in addition, may have a building services restore (BSR) keyswitch at the RDU and also a BSR keyswitch at the FIP, and may also have ancillary fire and ancillary defect outputs on the Display Extender Board at the RDU. For a maf RDU, the ancillary fire and defect outputs are isolated if the ancillary 1 relay is isolated. For a non maf RDU, the ancillary fire and defect outputs are isolated if either the RDU BSR (with BSR "local" enabled) is asserted or the FIP BSR is asserted (with BSR "follow" enabled).

In addition to the ancillary isolate functions described for Australian operation, the RDU has three parameters associated with BSR - passon, follow and local. The ancillary relays at the RDU can be isolated with keypad operations at the FIP or RDU as described for Australian operation, and, in addition, can be isolated by asserting the BSR keyswitch (if any) at either the FIP or RDU depending on how the BSR passon, follow, local parameters are programmed at the RDU as described below.

Ancillary Isolate (Continued)

1. BSR passon.
With BSR passon enabled the RDU transmits the current state of its BSR keyswitch (if any) to the FIP. It is necessary to have LCD-B type protocol selected to get the RDU BSR state sent to the FIP. LCD-A or NON-LCD protocol do not allow the RDU BSR state to be sent to the FIP. With passon disabled, the RDU BSR state is not sent to the FIP. If BSR follow is enabled, then when the BSR state received from the FIP is asserted, all of the ancillary outputs at the RDU are isolated. Currently there is no version of FIP which is able to receive the BSR state from an RDU, but there may be in future.

2. BSR follow.
With follow enabled (with or without passon enabled), the RDU monitors the BSR state received from the FIP (if any), and if BSR is asserted at the FIP then all of the ancillary outputs at the RDU are isolated i.e. the ancillary 1 and 2 relays and the ancillary fire and defect outputs are all isolated (turned off or deenergised).

3. BSR local.
With local enabled, asserting the BSR keyswitch at the RDU will cause all of the ancillary outputs at the RDU to be isolated.

If the ancillary 1 or 2 relays at the RDU are isolated due to either FIP BSR or RDU BSR being asserted, then the keypad at the RDU cannot be used to perform ancillary isolate functions.

Ancillary isolate LED

On steady	-	if either anc 1 or anc 2 relays are locally isolated
Flash at 1HZ	-	if the FIP is sending an ancillary isolate state, which means the RDU ANC 1 relay (if any), is isolated.
Flash at 2HZ	-	For New Zealand operation, if the local BSR input is asserted.

6.7.2.7.3 Bells Relay Operation

For both Australian and New Zealand operation, there are 3 parameters at the RDU, passon, follow and local which are associated with the operation of the bells relay at the RDU or FIP. Passon and local parameters are specifically to do with bells test. The follow parameter determines how the bells relay state received from the FIP is used at the RDU. Any combination of enable/disable for these 3 parameters may be set. e.g. all disabled or all enabled etc. For a non-maf RDU, setting follow or local true is meaningless because there is no bells relay at the RDU, but setting passon true allows the non-maf RDU to send a bells test command to the FIP.

Follow.
Setting follow true (for a MAF_RDU FP0558) means that if the bells relay state received from the FIP is asserted, then the bells relay at the RDU will be energised if not isolated. The bells relay at the RDU can still turn on for other reasons e.g. alarm on non isolated zone mapped to the bells, or bells test, or trial evac (NZ mode). Not all versions of FIP software transmit the state of the bells relay to an RDU but F3200 FIP V2.00 onwards does and F4000 V2.15 to V2.19, V2.21 to V2.29 and V2.30 onwards do.

Bells Relay Operation (Continued)

Passon.
Setting passon true means that when a bells test is done at the RDU, a bells test command will be sent to the FIP (if LCD-B protocol is used). F3200 FIP V2.00 onwards allows a remote bells test command. It is necessary to select LCD-B protocol to get a bells test command sent to the FIP.

Local.
This parameter applies to the bells test command accessed using the TEST key from the base display. It does NOT apply to the test command which can be done from the relay status display which is accessed using the RELAY key from the base display. Setting local true allows the bells relay at the RDU to be energised for 5 seconds when a bells test initiated from the "test menu" is done at the RDU. Setting local disabled means that a bells test initiated from the test menu at the RDU does not turn the bells relay on at the RDU. A relay test initiated from the relay status display will always operate the RDU bells relay (if not isolated) regardless of the setting of the local parameter.

If the follow parameter is set enabled, then it may be desirable to set passon also enabled and local disabled so that a bells test done from the test menu will send a bells test command to the FIP which will ring the FIP bells for 5 seconds and will also transmit a "bells energised" state to the RDU for 5 seconds which will ring the RDU bells, and do a complete test.

6.7.2.7.4 Trial Evacuation

This applies to New Zealand mode only. Depending on programming, the trial evacuation keyswitch at either an RDU or at the FIP, may be used to energise the bells relay at either the FIP or any connected RDU. There are 3 parameters, passon, follow and local, associated with trial evac, which can be programmed at the RDU. Any combination of enable/disable for these 3 parameters may be set. e.g. all disabled or all enabled etc. Activation of the trial evac keyswitch overrides any isolation of the bells relay i.e. the bells relay will be energised even if the bells are isolated or if the silence alarms keyswitch is on.

Passon
Setting passon enabled means that the RDU continually transmits the current state of its trial evac keyswitch (if any) to the FIP. Setting passon disabled means that the RDU always transmits a "deactivated" state to the FIP. If the RDU sends an "activated" state to the FIP the FIP may then energise the FIP bells relay and may also transmit a "trial evac asserted" indication to all RDUs which will cause any connected RDU to energise its own bells relay (if programmed to - see "follow" below).

Local
Setting local enabled means that when the trial evac keyswitch is operated at the RDU, the bells relay (if any) at the RDU will be energised (regardless of isolation). During scan fail, the trial evac keyswitch will always work locally even if local is disabled.

Follow
In future, some versions of FIP may transmit a “trial evac” state to an RDU. Setting follow enabled at the RDU means that when the trial evac state received from the FIP is asserted, the RDU bells relay will be energised, regardless of isolation. There is no current version of FIP software which transmits the trial evac state to an RDU but future releases may do so. During scan fail, the last known FIP trial evac state can be overridden by bells isolate at the RDU.

Trial Evacuation (Continued)

For a non-maf RDU, setting follow or local true is meaningless because there is no bells relay at the RDU, but setting passon true allows the non-maf RDU to send the state of its trial evac input to the FIP.

6.8 EVENT PRINTER SETUP

The Print option of the main programming menu displays the following menu which allows programming of options for event printing.

1:Baud 2:Lines/Page 3:Points 4:Circuits

Option 1:Baud allows setting of the baud rate to the printer to 300, 600, 1200, 2400, 4800, or 9600 using the up arrow and down arrow keys.

Option 2:Lines/Page allows setting of the number of lines per page as a numerical value from 1 to 250.

Option 3:Points allows enabling/disabling (using the up arrow, down arrow keys) of whether point alarm events are printed at the RDU. When an FFCIF alarm event is sent from the FIP to an RDU, some versions of FIP software also send the number and text name of the point which caused the alarm. This can be printed as a point alarm event at the RDU.

Option 4:Circuits allows the enabling/disabling (using the up arrow, down arrow keys) of whether circuit alarm events are printed at the RDU. When an FFCIF alarm event is sent from the FIP to an RDU, some versions of FIP software also send the number of the circuit that caused the alarm. This can be printed as a circuit alarm.

Note: Zone alarm events are always printed if the zone is mapped to the LCD or LEDs at the RDU.

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CHAPTER 7
INSTALLATION & WIRING

7.1 INSTALLATION : MAF & NON-MAF CONFIGURED RDU

7.1.1 CABINET INSTALLATION

The location of the RDU is chosen by the Fire Authority and building owner (or owner's representative) in accordance with the appropriate installation standard.

The cabinet is normally fixed to a wall with four 6 mm screws or bolts. The drilling details are shown in Figure 7.1.1 for the full size cabinet version FP0558 RDU and 7.1.2 for the slim line FP0559 RDU. Mounting details are shown in Figure 7.1.3 for the flush mounting version FP0772.

The following conditions are required:

1. Dry Area.

2. Moderate ambient temperature, 45°C absolute maximum.

3. Not exposed to direct sunlight.

4. Not subject to outdoor conditions without suitable protection.

5. The LCD should be at average eye level and must not be higher than 1850 mm or lower than 750 mm above finished floor level. Refer Figures 7.1.1 & 7.1.2.

6. Clear access and viewing for Fire-Fighters and operators.

7. At least 1 metre free space should be provided in front of and on sides of the RDU for installation and maintenance.

8. Must not be installed in hazardous areas as defined in AS3000.

9. 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.

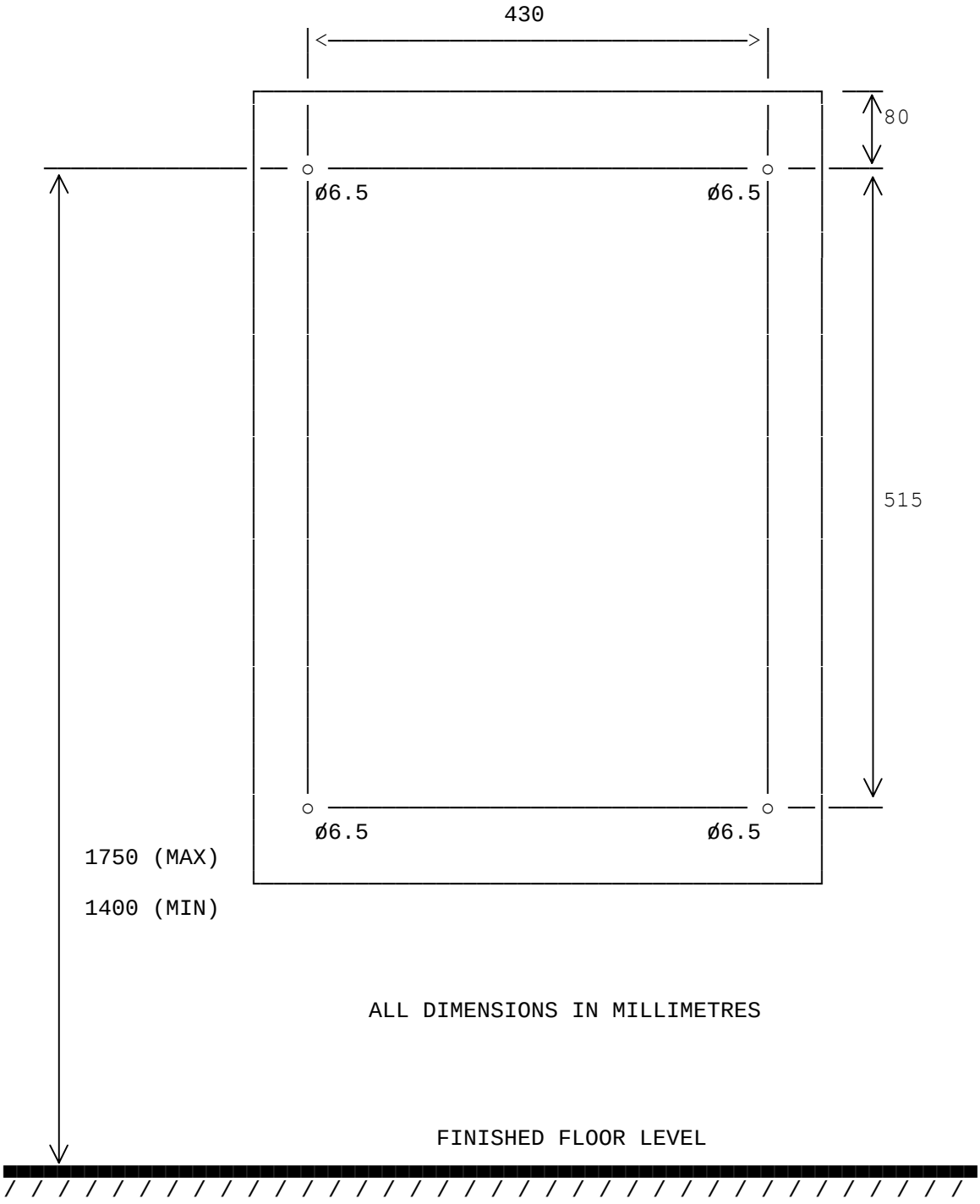


FIGURE 7.1.1
RDU CABINET MOUNTING DETAILS: FP0558 RDU

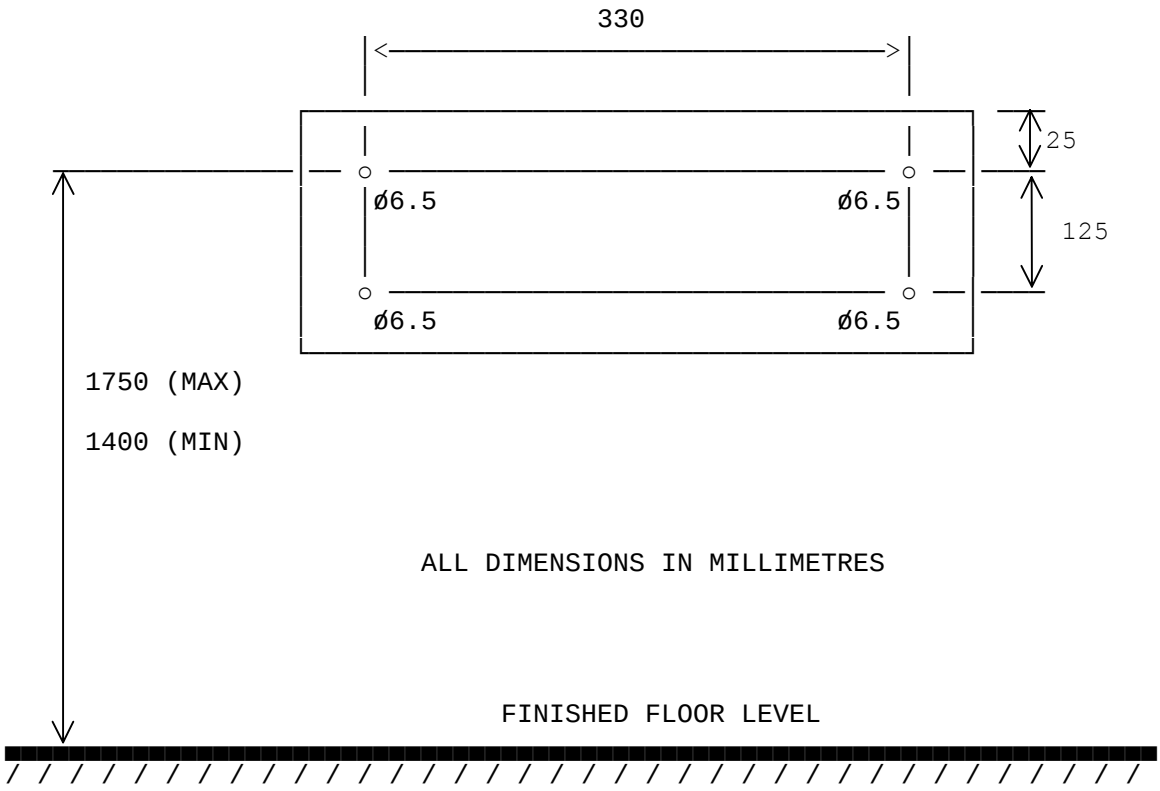


FIGURE 7.1.2
RDU CABINET MOUNTING DETAILS: FP0559 RDU

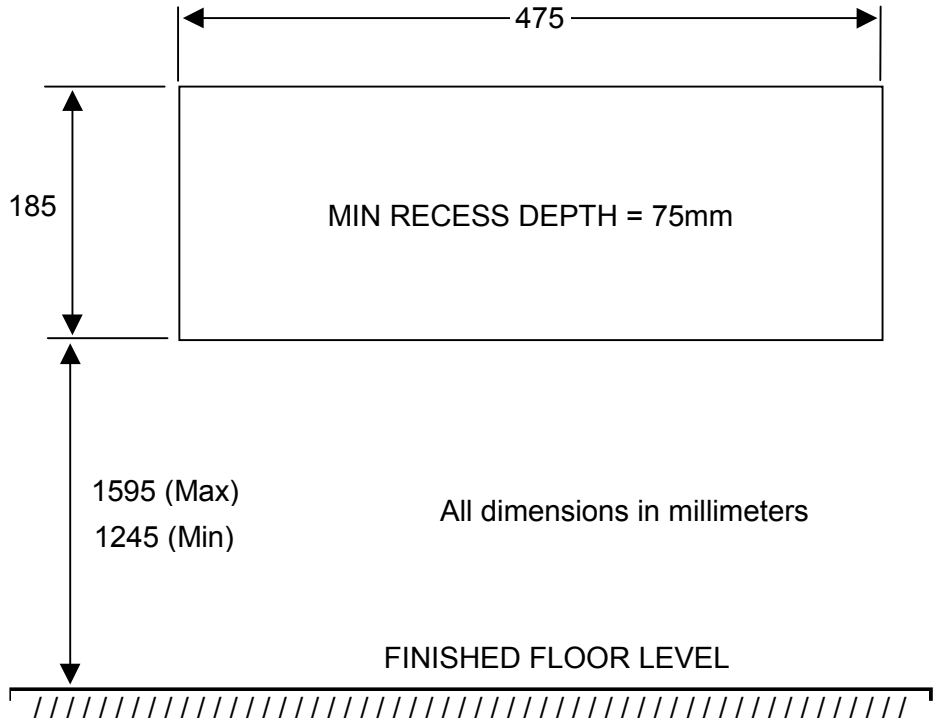


FIGURE 7.1.3
RDU CABINET MOUNTING DETAILS: FP0772 RDU

7.1.2 FIELD WIRING

Cabling should comply with all the points in AS1670, Section 2.7. Note the requirements for segregation and identification.

The cabling should, in general, be 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. Ie.

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.

WARNING

Apart from the Mains supply to the RDU, only ELV cabling should enter the cabinet.

7.1.3 COMMUNICATIONS WIRING

Each FIP can drive up to 8 replying RDUs. The RDUs are all connected in parallel on common Tx and Rx circuits. Note that both Star and Bus wiring connections are permitted as shown in Fig 7.1.3.

NOTE: TX from the FIP goes to RX on ALL RDUs.

RX from the FIP goes to TX on ALL RDUs - not required for mimic RDUs.

Figure 7.1.3 shows an example of interconnection between both MAF and Non-MAF configured RDU(s) and the FIP.

NOTES: To maintain electrical isolation:

(1) One end of Lk1 on the MAF/PSU Board should be cut for RDUs with their own PSU (e.g. FP0558 or FP0585).

(2) Non-MAF configured RDUs (e.g. FP0559, FP0577 or FP0772) 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.

COMMUNICATIONS WIRING (CONTINUED)

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 should 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).

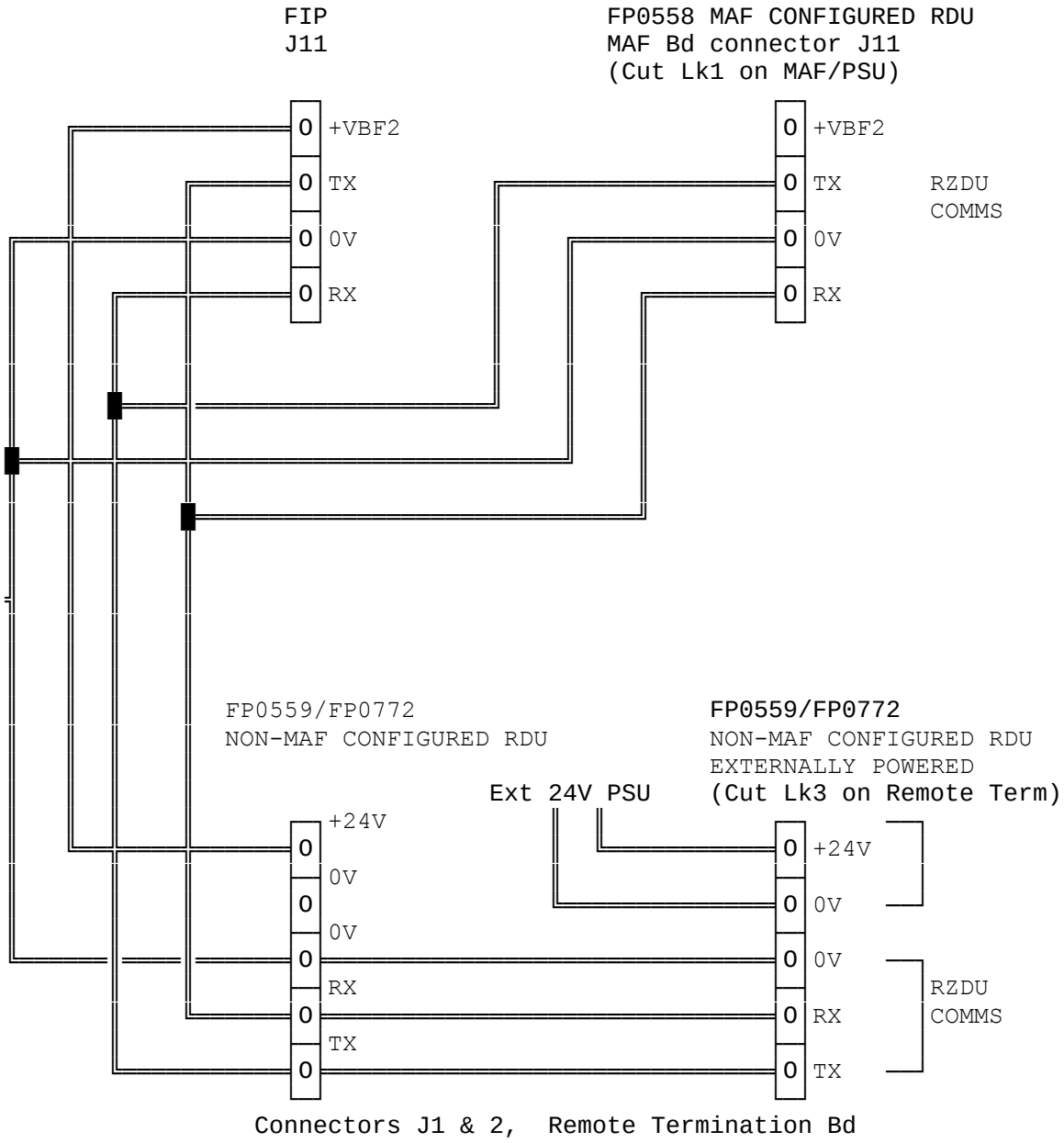


FIG 7.1.3
EXAMPLE OF RDU COMMS WIRING TO FIP

7.2 INSTALLATION : FP0558 RDU

7.2.1 MAINS WIRING :FP0558

The mains (240Vac) supply must be connected in accordance with AS1670 and AS3000 regulations.

> Ensure the mains cables to the RDU are isolated at the Distribution board before connecting to the RDU.

The mains cable connects to the 3 way terminal block mounted on the cabinet rear behind the mains cover.

(a) Remove the mains cover with an M4 nut driver.

(b) Shape the mains cable to clear 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 (green/yellow) to E

Take care when stripping not to "nick" wires.

(d) Cable tie the cable to the cabinet.

(e) Refit the mains cover with the M4 nuts and shakeproof washers (note that these earth the cover).

7.2.2 LED DISPLAY INSTALLATION: FP0558

When internal LED Displays are required, the 7U inner door is fitted to the 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.

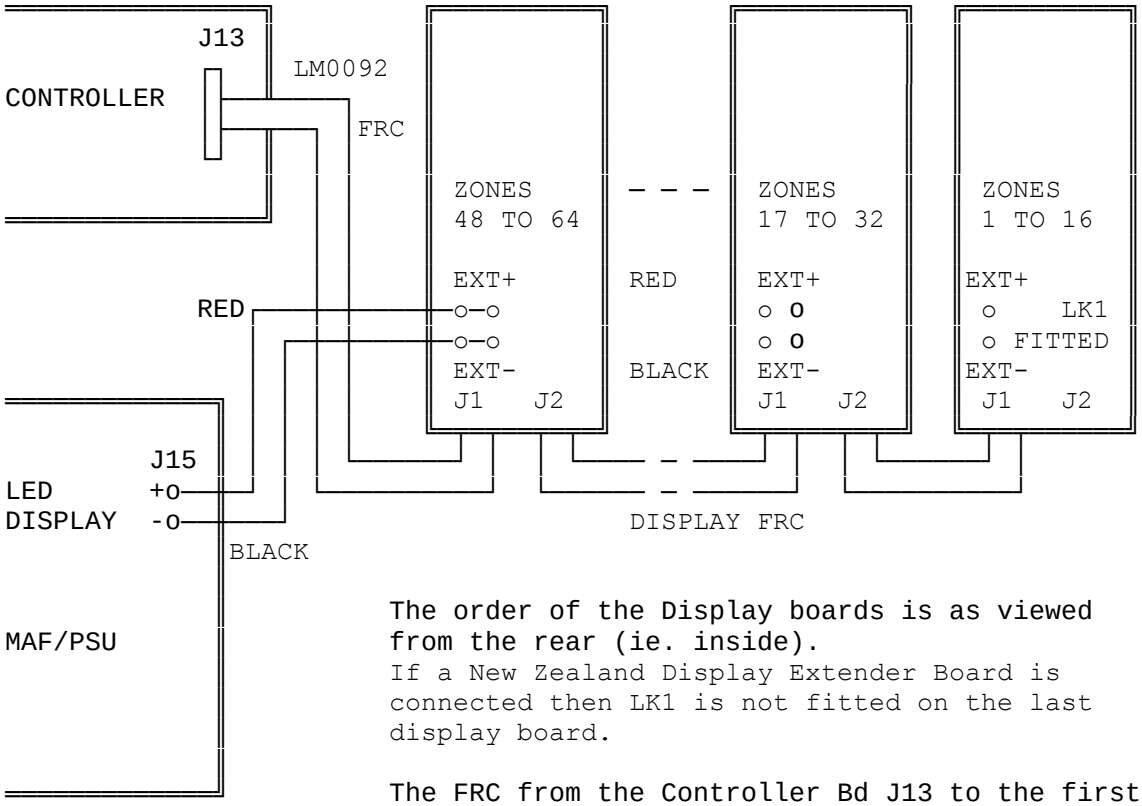
The flat M6 washers have a sharp edge and a rounded edge. Fit washers to the screws with the rounded edge facing the metalwork (to avoid damaging the paint).

The Display Bds mount to the inner door on the standoffs supplied.

Fit the FRCs and minijump link as shown in Fig 7.2.1.

The 2-wire LED Display power leads from the MAF/PSU should be fitted to one board in every four, eg. 1 per 7U inner door.

For New Zealand operation, the Display Extender Board connects to the last 16 zone display board (if any) or directly to connector J13 on the controller if there are no display boards. Refer to section 7.4.



The order of the Display boards is as viewed from the rear (ie. inside).
If a New Zealand Display Extender Board is connected then LK1 is not fitted on the last display board.

The FRC from the Controller Bd J13 to the first Display Board is a 34 way to 26 way cable, LM0092.

FIG 7.2.1
DISPLAY BOARD CONNECTION: FP0558

LED DISPLAY INSTALLATION: FP0558 (CONTINUED)

Note that the RDU can be configured to have a lesser number of Display Bds than that required by the default 1 to 1 zone to LED mapping depicted in Fig 7.2.1. Selective mapping of zones/relays to Display LEDs or multiple zone to LED mapping can achieve this. Consider as an example connection to a FIP configured for all 528 zones, but only four 16 Zone LED Display boards giving a total of 64 LEDs available to show zone status at the RDU. In this example zones 1 to 10 could be mapped to LED 1 at the RDU, zones 10 to 20 to LED 2 etc. Note that in multiple zone to LED mapping all zones mapped to a given LED must be of the same type, ie. either alarm or relay. (Refer Section 6.6.1.4).

7.2.3 RELAY DRIVER BOARD INSTALLATION: FP0558

A PA0470 Relay board can be installed where outputs are to be switched via clean contacts on a per zone basis. The PA0470 Relay board can be driven via the "mimic" output connector on either the 16 Zone LED Display Bd or FP0486 Relay Driver board. Both provide open collector outputs, the difference being that the Display Bds also provide zone status indication.

Installation for the FP0486 is the same as that described in the previous section for the 16 Zone LED Display boards. The Relay Driver boards mount on the inner door and FRC is used to chain from one board to the next.

The 16 Way PA0470 Relay boards are then mounted, for example, using a PCB holder on DIN "C" rail. If just one board is to be mounted then the 5 hole pattern for the PCB may be drilled in the back of the case and the board mounted on plastic standoffs. Alternatively the boards can mount in an extender cabinet.

FRC is used to connect from the mimic header of each Relay Driver board or 16 Zone LED board to connector J17 on each 16 way Relay board. Care must be taken not to route the FRC to the Relay board next to the Display FRCs. This is to avoid noise coupling into the display cables.

A wire MUST be run from the cabinet's earth stud to the "E" terminal of connector J18 on each 16 way Relay board. This wire shall be a short as possible. The "+24V" and "0V" terminals of connector J18 are not available for use in wiring applications.

7.2.4 LED MIMIC DISPLAYS: FP0558

Open collector outputs are available via the mimic connectors of both the 16 Zone LED Display board or the FP0486 Relay Driver board. 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. Refer to Figures 7.2.4 and 7.2.5.1.

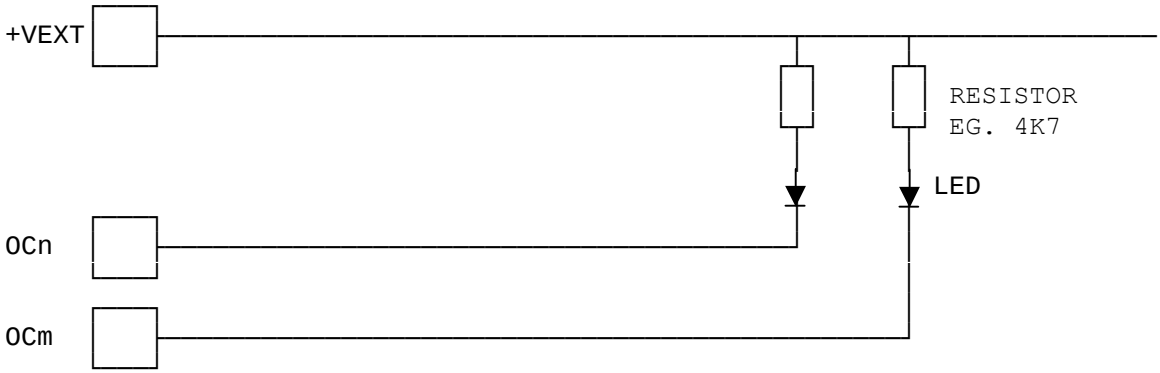


FIG 7.2.4
EXAMPLE OF LED MIMIC WIRING

7.2.5 INTERFACING TO OTHER EQUIPMENT: FP0558

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). Eg. it may be used to switch a 5V CMOS input, or monitored 5V, 12V or 20V input. Refer to Fig 7.2.5.1.

Note that for this to work, the 0V supply of the equipment must be connected to the 0V supply of the RDU. 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 RDU positive and negative supplies and should not connect to inputs that could be "pulled" to a voltage above or below this voltage, even with mains failed and battery voltage low.

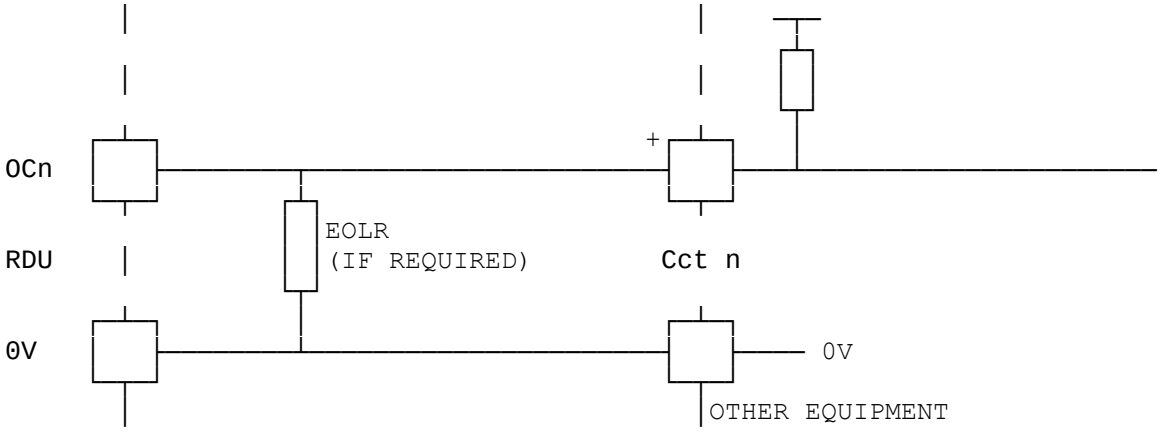


FIG 7.2.5.1
EXAMPLE OF INTERFACING TO OTHER EQUIPMENT, DIRECT COUPLING

INTERFACING TO OTHER EQUIPMENT: FP0558 (CONTINUED)

2. Isolated Coupling

The open collector output can be used to switch a relay, or an optocoupler as shown in Fig 7.2.5.2. When the open collector is "on", the optocoupler transistor is also "on".

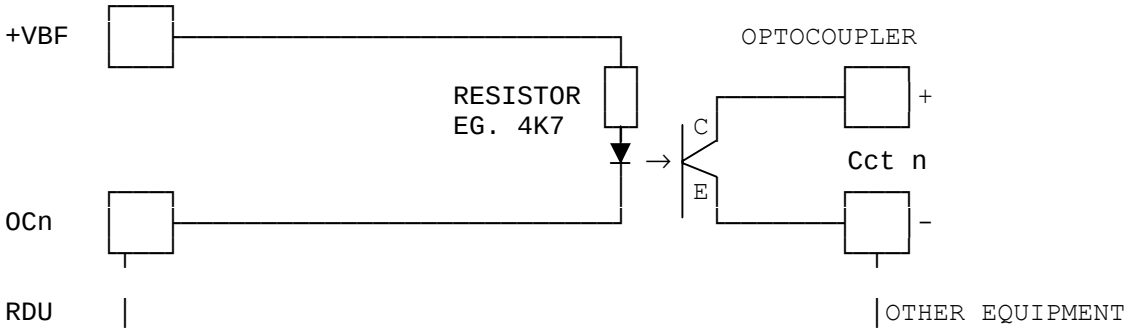


FIG 7.2.5.2
EXAMPLE OF INTERFACING TO OTHER EQUIPMENT, OPTICAL ISOLATION

7.2.6 MAF ANCILLARY RELAY WIRING: FP0558

Ancillary Relays 1 and 2 each have 1 set of voltage free contacts available for switching plant equipment such as Door Holders, Air Conditioning Shutdown, etc. 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 7.2.6 (a or b with a return from the furthest door holder. The alternative shown in Fig 7.2.6 a does not supervise the loop.

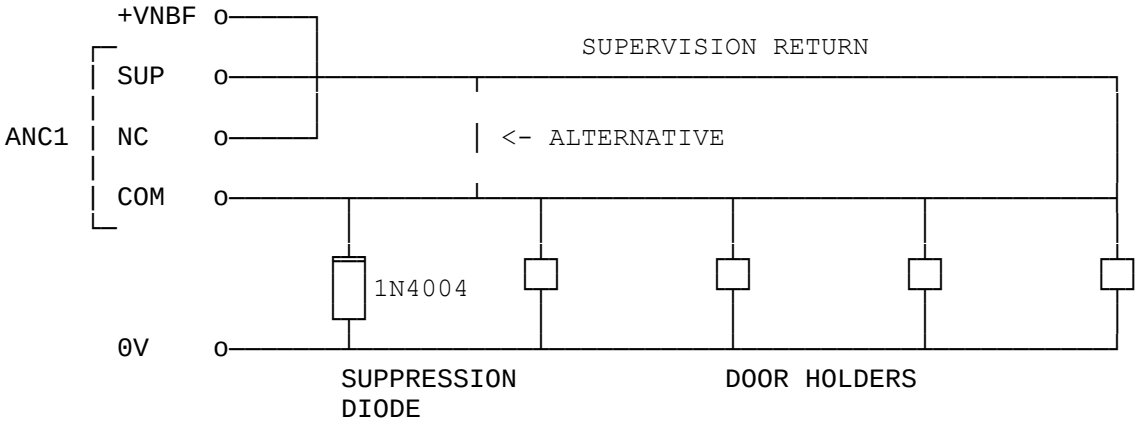
The 24V relay used at the end of the loop in Fig 7.2.6 b only needs to switch low current.

"Door Holder" mode supervision "looks for" the presence of voltage when the ancillary relay is de-energised.

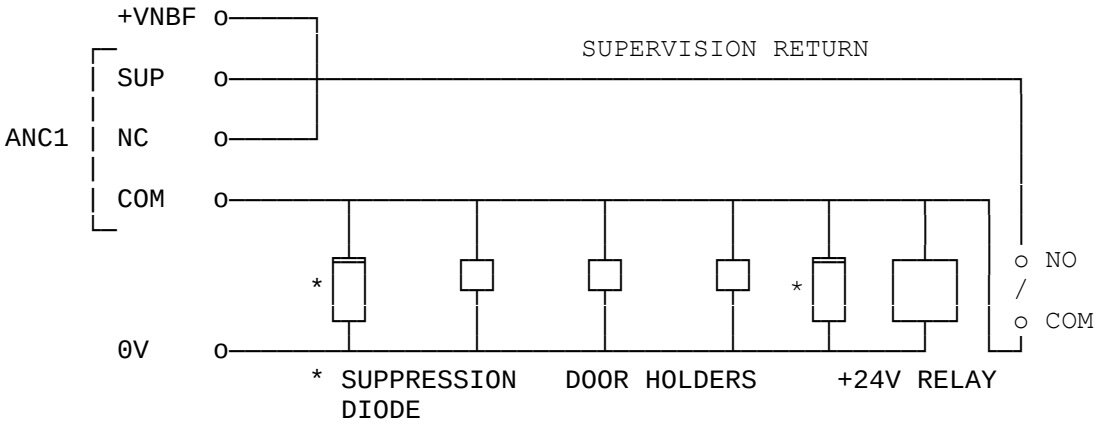
Plant Relay/Solenoid Wiring

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 7.2.6 c. "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 3.4.1.1) a series diode must be fitted as shown.

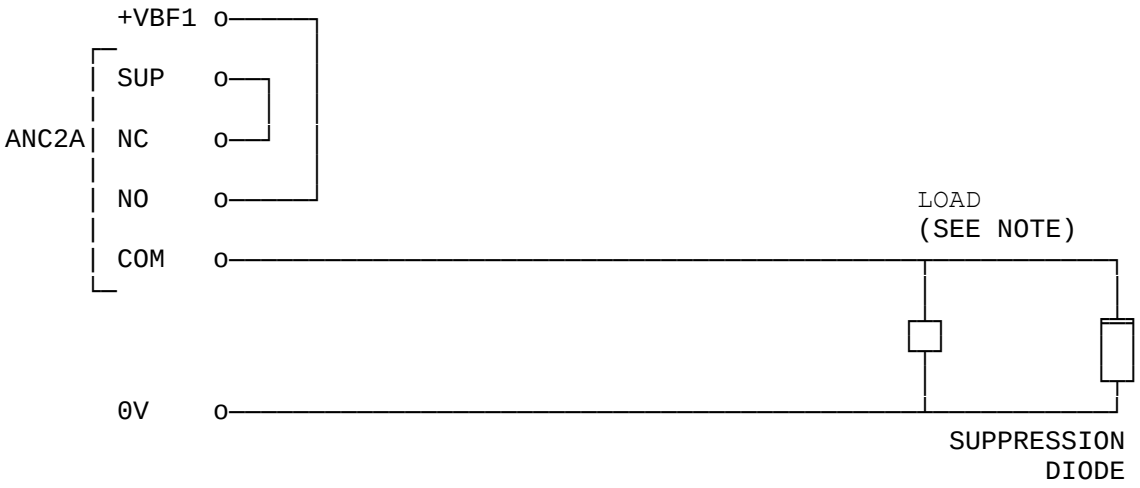


A. WITH SUPERVISION OF LOOP POSITIVE WIRING ONLY



B. WITH SUPERVISION OF LOOP POSITIVE AND NEGATIVE WIRING

FIG 7.2.6a & b
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.

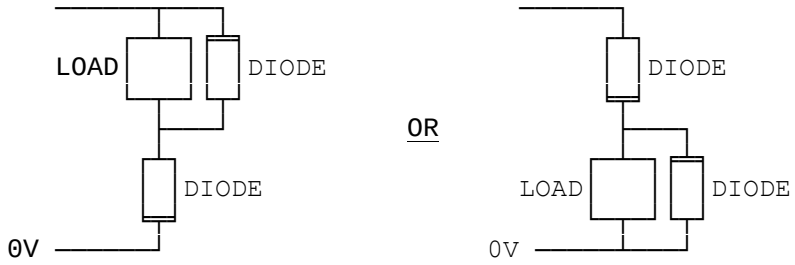


FIG 7.2.6(c)
EXAMPLE OF PLANT RELAY WIRING WITH SUPERVISION

WARNING

Apart from the mains supply to the RDU only ELV wiring may enter the cabinet. Relays must not be used to switch medium or high voltage.

7.2.7 BELLS WIRING: FP0558

24V bells or alerting devices can be connected to the BELLS+/- terminals on J14 of the MAF/PSU. This output has it's own fused supply.

As bells are inductive and produce large amounts of electrical noise, suppression is required at each bell.

For non-supervised wiring suppression diodes can be fitted as shown in Fig 7.2.7a (Observe the polarity, with the diode ‖ end to Bells +).

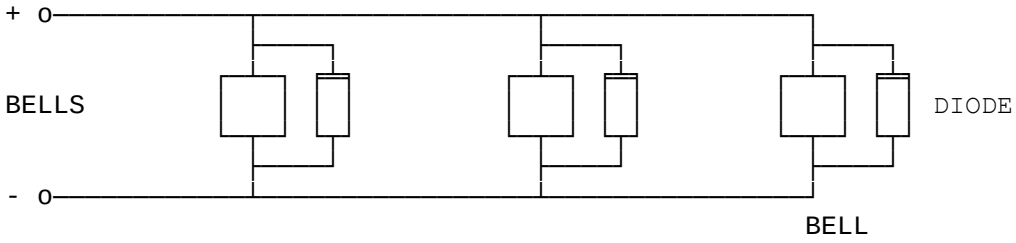


FIG 7.2.7a
EXAMPLE OF BELLS WIRING WITH NO SUPERVISION

Supervision

Bells Supervision allows for up to 3 branches of bells, with each requiring its own end of line resistor. The value of the end of line resistor varies with the number of branches such that the combined total is always 3K3.

Branches	EOLR
1	3k3
2	6k8
3	10k

The EOLR must be fitted at the end of each branch.

For bells supervision, a series diode must be fitted at each bell/sounder, or else a bell/sounder with an internal series diode must be used. In this case, correct polarity of wiring must be ensured.

Where a bell with an internal series diodes is used, non-polarised suppression is required. Eg. a 36V MOV and ceramic capacitor (eg. 10N, 100V), or a transient suppressor BZW04P31B and ceramic capacitors as shown in Figure 7.2.7b.

Where external series diodes are fitted, diode suppression can be used as shown in Fig 7.2.7 c.

The diode need only be rated to carry the current of the bell. A 1N4004 is adequate.

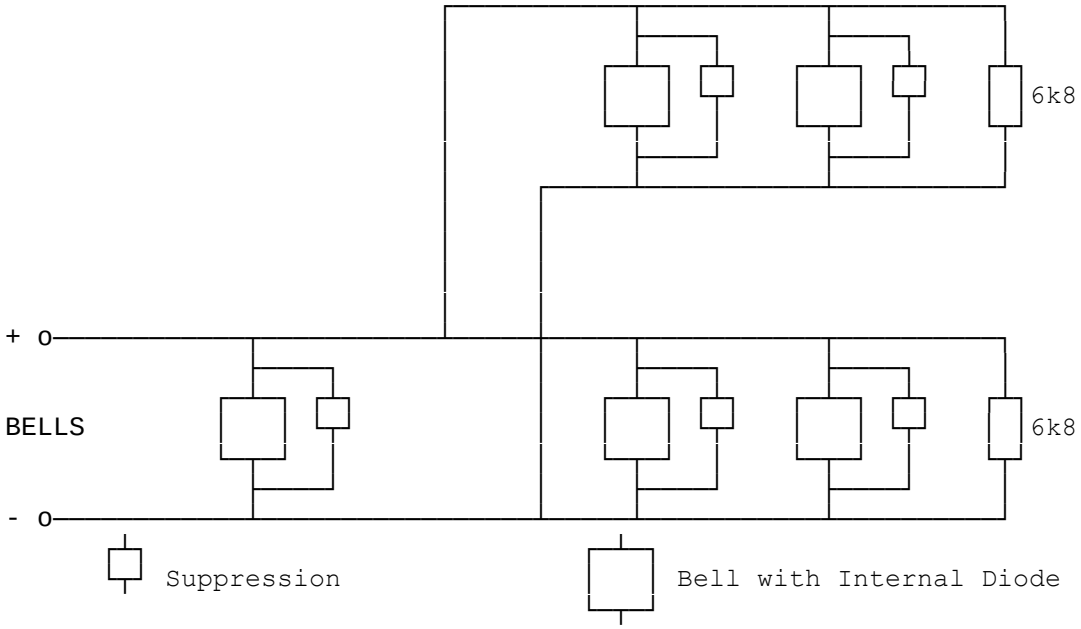


FIG 7.2.7 (b)
EXAMPLE OF BELL WIRING WITH 2 SUPERVISED BRANCHES
FOR BELLS WITH INTERNAL SERIES DIODE

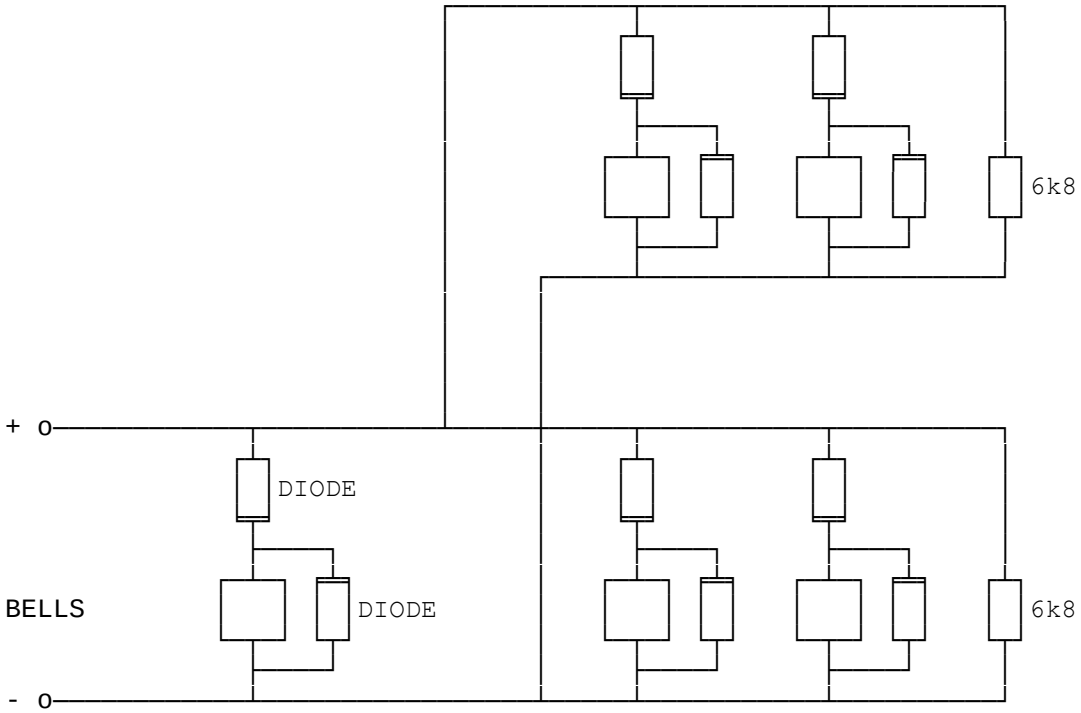


FIG 7.2.7c
EXAMPLE OF BELL WIRING WITH 2 SUPERVISED BRANCHES
FOR BELLS WITH NO INTERNAL SERIES DIODE

7.3 INSTALLATION : FP0559 & FP0772 RDU

MCP Connection

A Non-MAF RDU has the facility for connection of an MCP input, but the MCP has to mount externally, on the wall, immediately adjacent to the RDU.

Input connection is made to pins 3 & 4 of J5, the 4 way 0.1" "Spare Input Connector" on the RDU Controller/Display Bd with the loom supplied. The wiring to the MCP itself is detailed in the figure below.

THE MCP INPUT CANNOT BE USED IN NEW ZEALAND MODE.

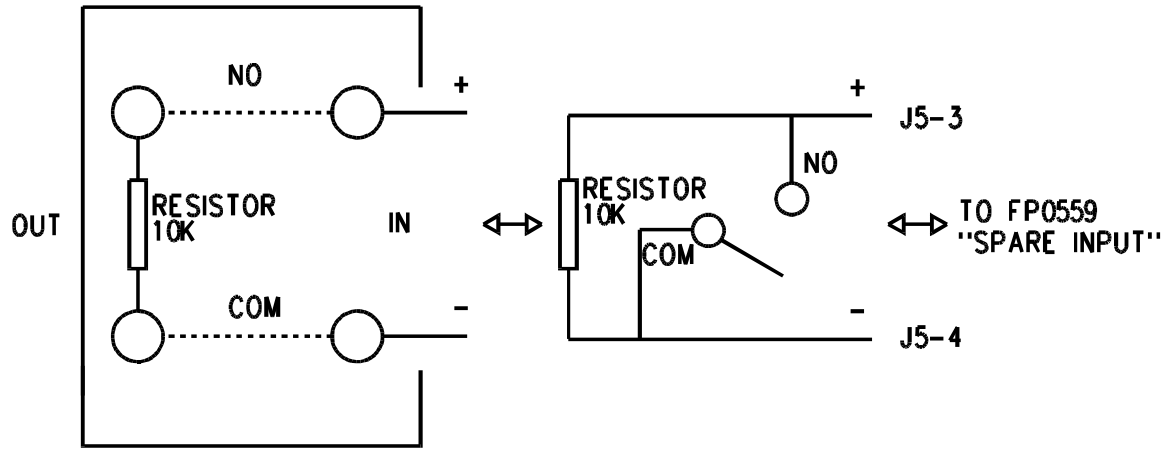


FIG 7.3
MCP CONNECTION TO FP0559 RDU

7.4 INSTALLATION : NZ DISPLAY EXTENDER BOARD & BRIGADE DISPLAYS

7.4.1 GENERAL

For New Zealand operation a Display Extender Board (PA0499 or PA0762) will be required if a brigade mimic is needed or access to/display of any of the common signals is required.

In general, a separate display panel must be provided if there needs to be zone alarm indication to the attending Fire Brigade staff. The zone indicators inside the RDU cabinet or RZDU do not meet the requirements of NZS4512, and viewing access to the cabinet by the brigade members is generally not practical.

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 basic approaches are detailed below.

7.4.2 MIMIC DISPLAY

A mimic display uses the mimic outputs from the RDU'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 RDU 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)
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 RDU are connected to Termination boards (PA0483). Individual LEDs with series resistors are mounted on the display panel and wired to these Termination boards. Figure 7.4.1 shows this arrangement. Alternately, 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 7.4.2 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 RDU cabinet. This is not a standard part, and will need to be made up to suit the application.

7.4.3 ACTIVE DISPLAY

An active display is driven from the RDU 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 RDU (ref. Figures 7.4.3 and 7.4.4). 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.

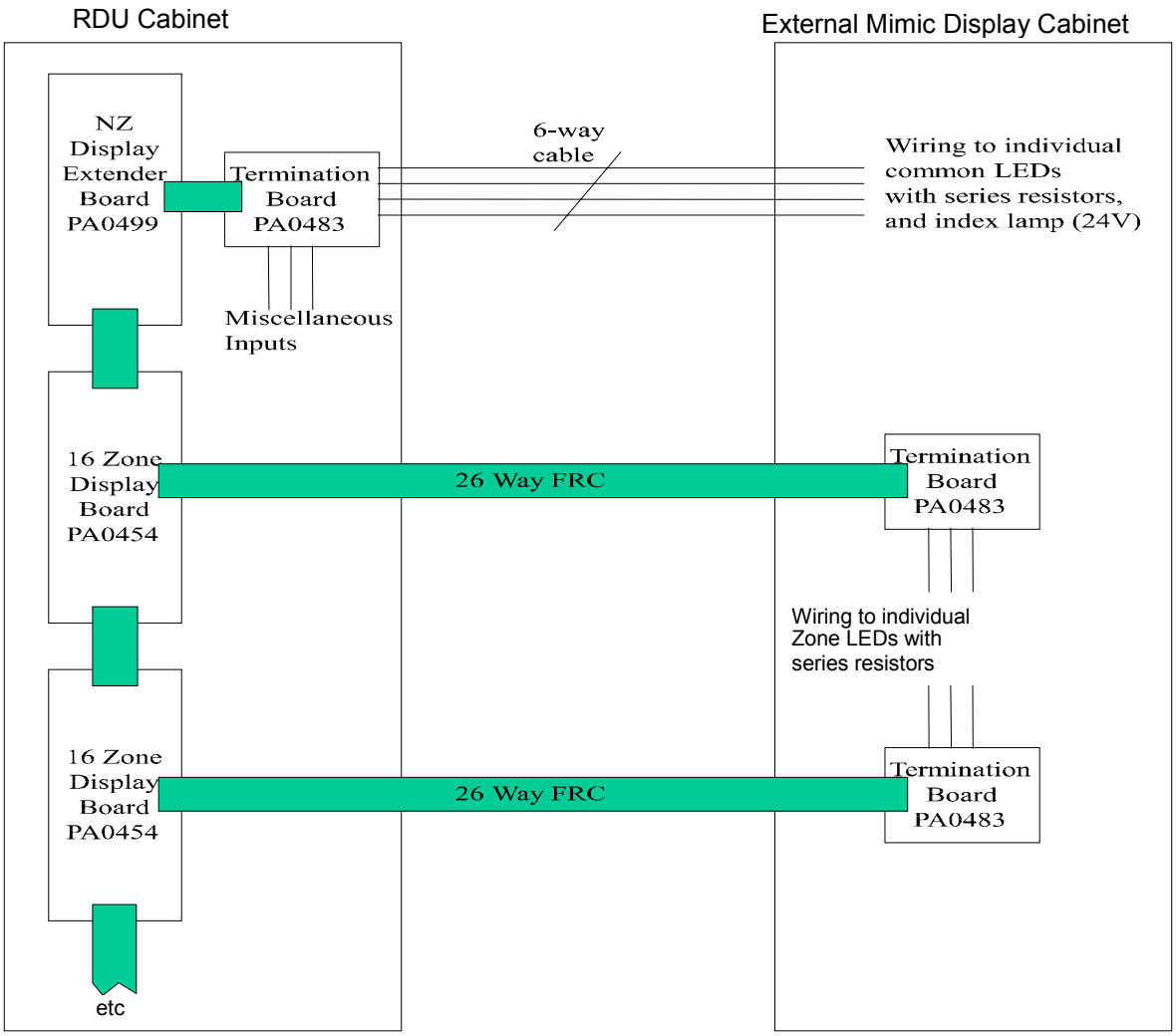
The following parts are available for constructing displays of this type:

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)
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 RDU cabinet and in the PFD.

7.4.4 DISPLAY EXTENDER BOARD MISCELLANEOUS TERMINATION

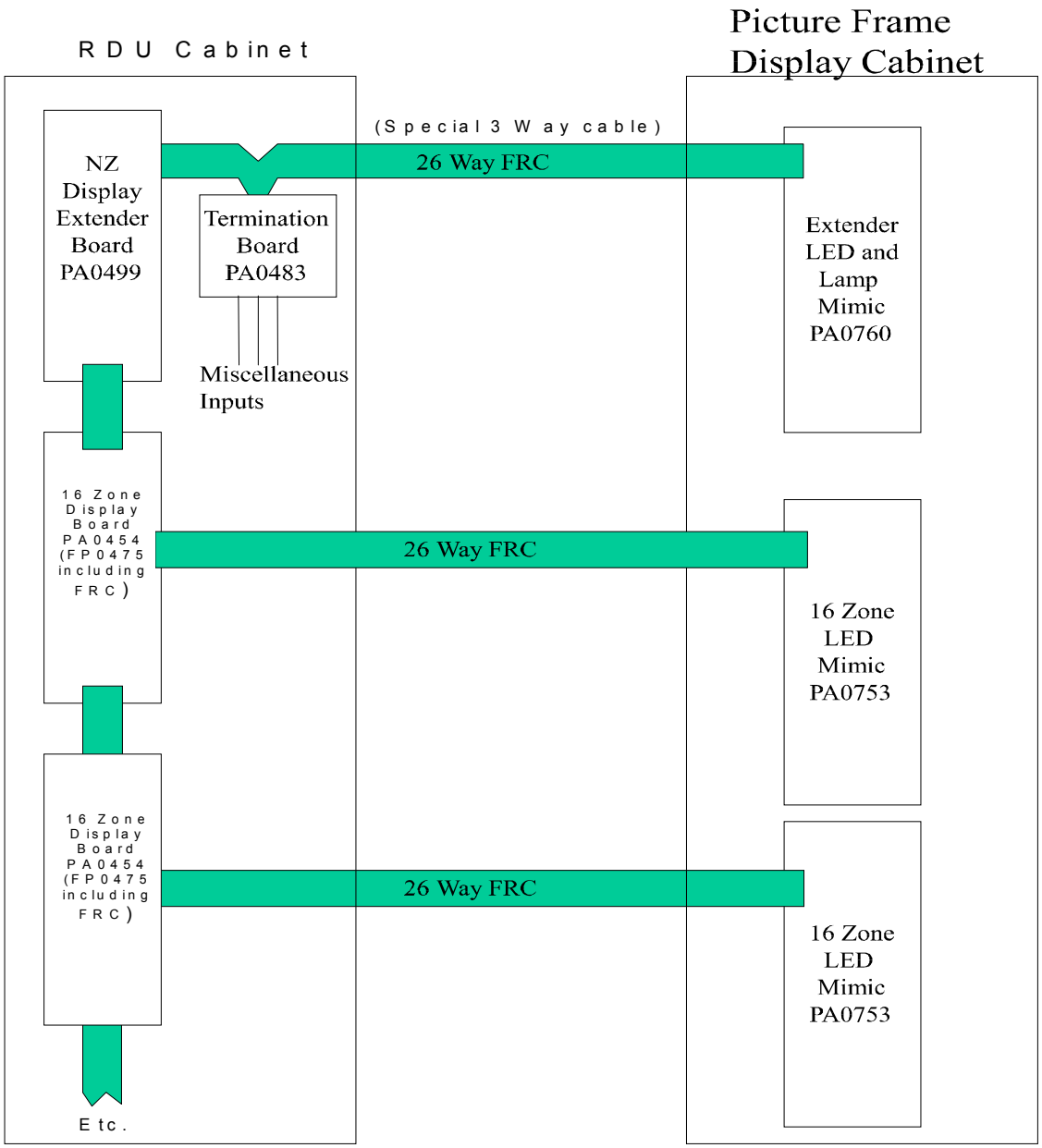
The miscellaneous signals available through a NZ Display Extender Board are accessible via a 26 way FRC and PA0483 unprotected termination board. A termination pin out diagram is given in Fig 7.4.5. Refer to section 3 for electrical specifications of these signals, and to section 2.4 for their logical 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 RDU Controller must be LM0092 (FZ3031 kit)

FIG 7.4.1 - REMOTE PLAN MIMIC DISPLAY



All shaded cables 26 way FRC.
The First cable from the RDU controller must be LM0092 (FZ3031 kit).

FIG 7.4.2 - REMOTE MIMIC USING PICTURE FRAME DISPLAY CABINET

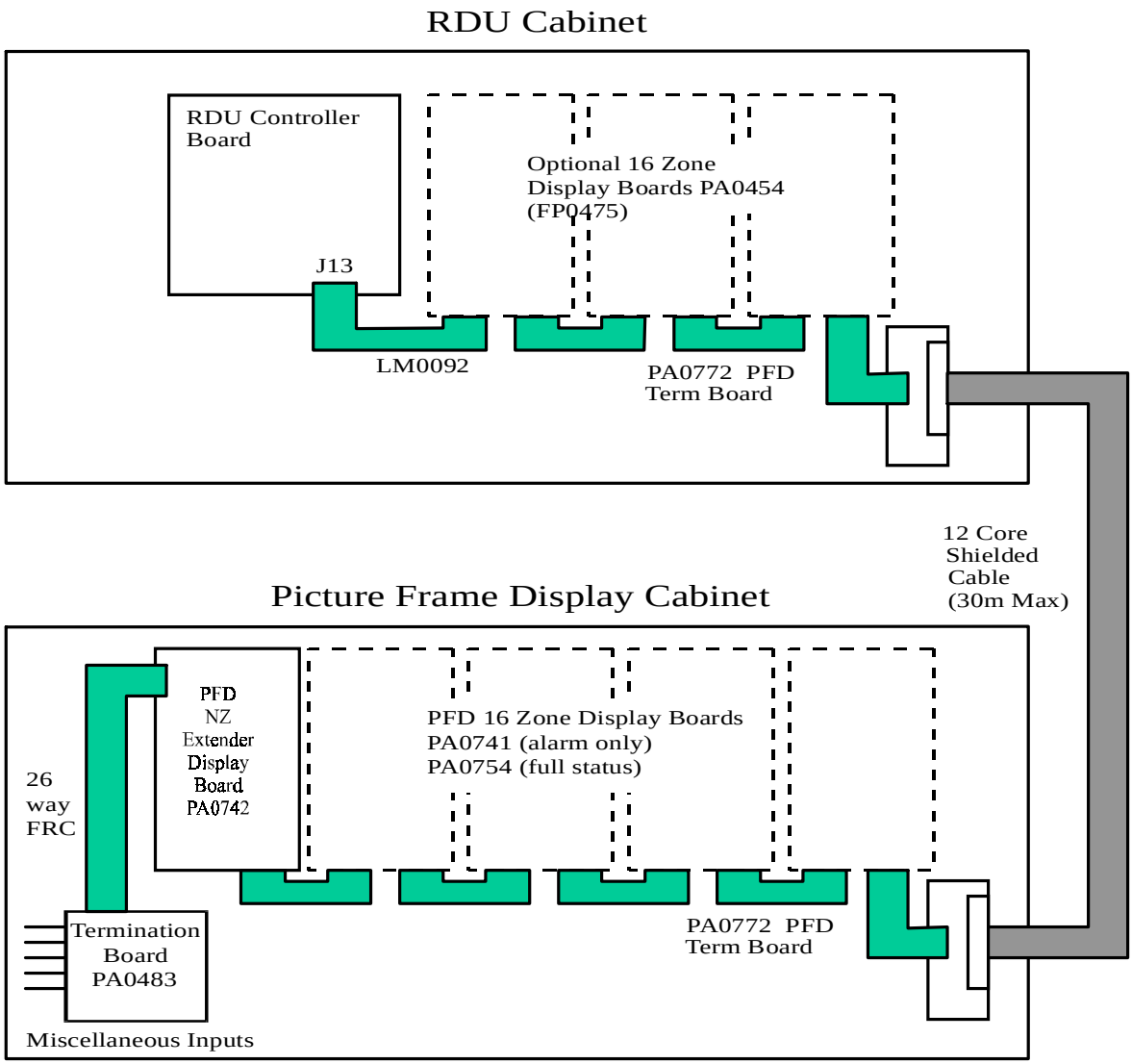


FIG 7.4.3
REMOTE DISPLAY WITH ACTIVE DISPLAY BOARDS
IN PICTURE FRAME DISPLAY CABINET

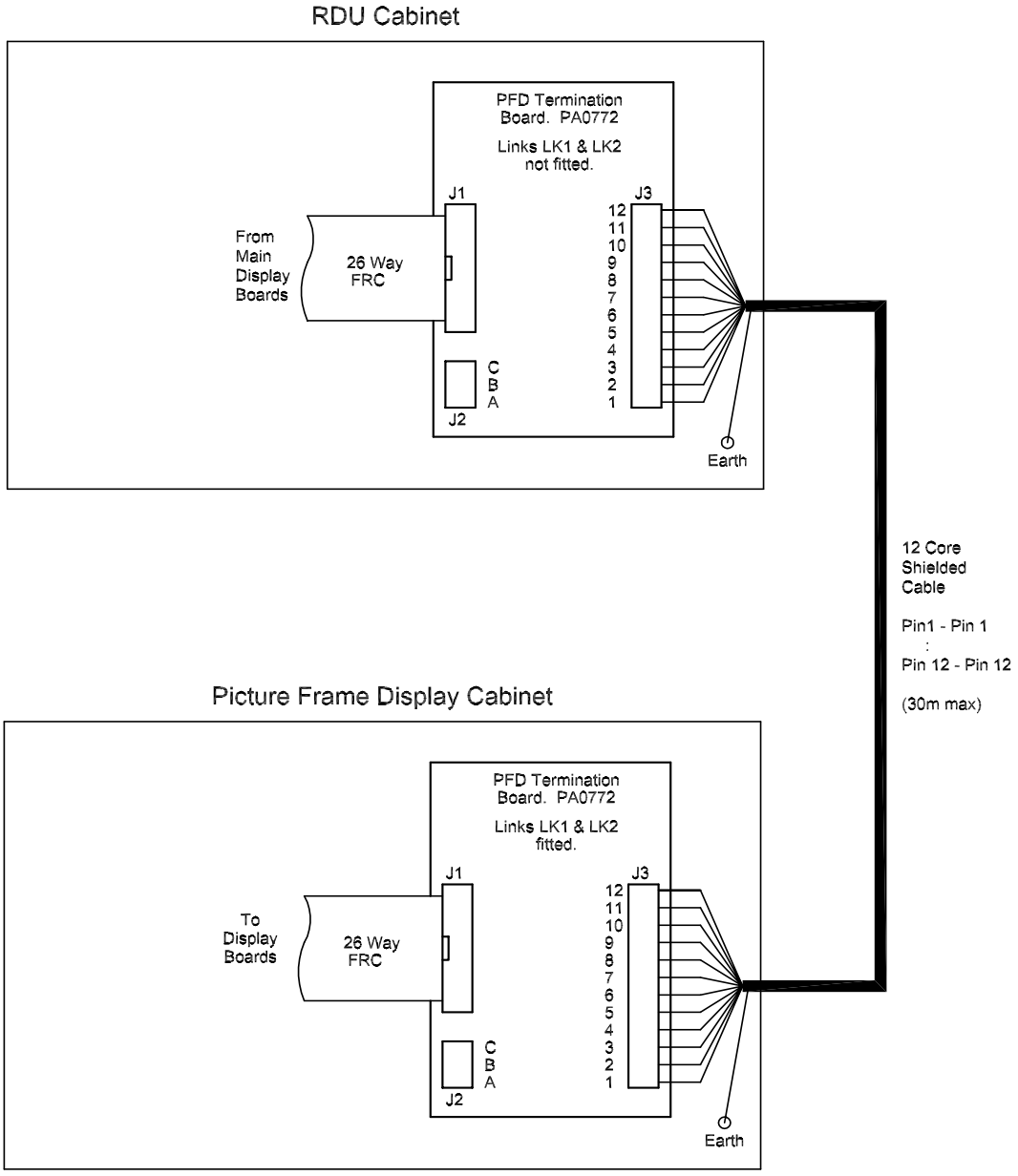


FIG 7.4.4
WIRING OF RDU TO PFD (ACTIVE DISPLAY)

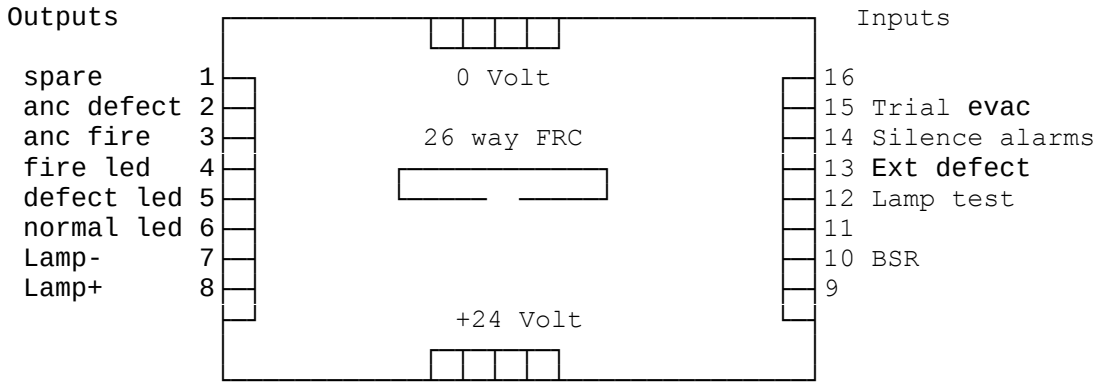


FIG 7.4.5
Terminations from NZ mode Display Extender Board on unprotected termination board (PA0483).

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CHAPTER 8
ALIGNMENT, ADJUSTMENT & PLACING INTO OPERATION

8.1 ALIGNMENT & ADJUSTMENT

All the RDU modules (PCBs) are tested and aligned in the factory before being supplied to the customer or fitted to a RDU. 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 RDU.

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 FP0558: MAF CONFIGURED RDU

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.

8.2 PLACING INTO OPERATION

8.2.1 GENERAL

This chapter describes the procedure to place an RDU 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.

8.2.2 PLACING INTO OPERATION: FP0558

VISUAL INSPECTION

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 the 16 Zone LED Displays if present are fitted and connected correctly. (Refer Section 7.2.2).

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).

5. Check that a 3 wire comms connection has been made to the FIP with Tx & Rx at the FIP routed to Rx & Tx respectively at the RDU. Also check that the FIP has been programmed correctly to send status/ receive commands to/from the RDU.

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 RDU, charger and power supply, and should be left on once the RDU is operational.

NOTE: The Battery is not disconnected by the "MAINS ISOLATE SWITCH".

POWER UP

To place the RDU 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.

PLACING INTO OPERATION: FP0558 (CONTINUED)

STEP 3 If an E2INIT is required before programming, fit Lk7 on the Controller to the DATABASE WRITE ENABLE position and 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 If doing an E2INIT, remove minijump SW1 and press "ACK" to complete the sequence.

STEP 7 Check that the LCD has good visibility. The LCD displays the RDU pcb configuration before showing the Base Display.

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 Chapter 6 and then fit Lk7 on the Controller to the DATABASE PROTECT position.

Link Lk7 may be left in the write enabled position if software write protection is enabled and it is desired that the RDU accept and use zone names as received from the FIP. (Refer Section 6.6.2).

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 at the RDU, then a system test at the FIP (de-isolate all zones first).

STEP 12 Check that zone status conditions at the FIP are received and annunciated correctly at the RDU and that commands issued at the RDU act correctly to acknowledge, reset and isolate zones as required.

A full commissioning test should be carried out as per AS1670.

8.2.3 PLACING INTO OPERATION: FP0559 & FP0772

VISUAL INSPECTION

Before switching on power (ie. do not install RDU remote termination board Fuse F1), 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.

PLACING INTO OPERATION: FP0559 (CONTINUED)

2. Check that a 4 wire comms plus power connection has been made to the FIP with Tx & Rx at the FIP routed to Rx & Tx respectively at the RDU. Also check that the FIP has been programmed correctly to send status/ receive commands to/from the RDU.

3. Double check the FIP MAF/PSU and battery to ensure there is sufficient capacity to cope with the extra loading due to connection of the RDU. Refer Section 5.3.3, **NON-MAF CONFIGURED RDU BATTERY/CHARGER CALCULATION EXAMPLE.**

POWER UP

To place the RDU into operation, perform the following steps:

STEP 1 If an E2INIT is required before programming, fit Lk7 on the Controller to the DATABASE WRITE ENABLE position and fit minijump SW1. (Refer to Section 6.3.1).

Install the 2A Fuse supplied into holder F1 on the Remote Termination board.

STEP 2 Check that the buzzer sounds and all LEDs on the Operator Display panel flash for 2 seconds (except Mains On).

STEP 3 The Controller performs tests on its memory, electronics, and the LCD.

STEP 4 If doing an E2INIT, remove minijump SW1 and press "ACK" to complete the sequence.

STEP 5 Check that the LCD has good visibility. The LCD displays the RDU pcb configuration before showing the Base Display.

STEP 6 If required, complete programming as per Chapter 6 and then fit Lk7 on the Controller to the DATABASE PROTECT position.

Link Lk7 may be left in the write enabled position if software write protection is enabled and it is desired that the RDU accept and use zone names as received from the FIP. (Refer Section 6.6.2).

STEP 7 Perform a System Test at the RDU, then a system test at the FIP (de-isolate all zones first).

STEP 8 Check that zone status conditions at the FIP are received and annunciated correctly at the RDU and that commands issued at the RDU act correctly to acknowledge, reset and isolate zones as required. A full commissioning test should be carried out as per AS1670.

8.2.4 COMMISSIONING CHECKLIST: FP0558

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 RDU against it. (Note that all pcbs are electronically tested and adjusted before being fitted to the RDU).

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)	Standoffs fitted to cabinet rear (none missing)	☐
K)	Operator Manual, battery leads & MCP key included	☐
L)	VIGILANT RDU label completed	☐

2. PCBS & WIRING

A)	MAF/PSU Fitted securely on standoffs	☐
B)	Controller/Display fitted securely	☐
C)	FRC Looms fitted correctly	☐
D)	MCP & door switch wires fitted to J6 of MAF/PSU, secured	☐
E)	Earth wire fitted to display door	☐
F)	All 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)	All 6 fuses fitted to MAF/PSU	☐
E)	Mains Switch neon off/on for switch off/on	☐
F)	MAF/PSU Mains On LED on, Fuse Blown LED off	☐
G)	VRECT at DC IN tab 40-42Vdc	☐
H)	Charger Voltage 27.3-27.4V warm, 27.5-27.6V cold	☐

4. OPERATION

A)	LEDs bright through window, "MAINS ON" LED on	☐
B)	Correct modules are configured and found on E2INIT	☐
C)	Buzzer louder with microswitch operated (Controller Lk2 Fitted)	☐
D)	Controller Lk7 in "Protect" position	☐
E)	LCD contrast correct for front view	☐
F)	System test pass	☐
G)	Recall -> MCP shows "MCP Alarm" for MCP operation	☐
H)	Acknowledge silences buzzer, Zone Resets	☐

SERIAL NUMBER ☐ TEST PASSED ☐

DATE : ……..... SIGNATURE : …….....

8.2.5 COMMISSIONING CHECKLIST: FP0559 & FP0772

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 RDU against it. (Note that all pcbs are electronically tested and adjusted before being fitted to the RDU).

1. CABINET & GENERAL

A) Cabinet colour – Grey Gloss PR12/816C ☐
- Other: _____

B) Cabinet undamaged (Paint OK) ☐

C) Door aligned correctly ☐

D) Cabinet Door locks firmly, operates microswitch ☐

E) Lock - 003 Type & two keys supplied ☐

F) Display, Keypad and Status LEDs fitted & aligned correctly ☐

G) Operator Manual included ☐

H) VIGILANT RDU label completed ☐

2. PCBS & WIRING

A) Controller/Display fitted securely ☐

B) Remote Termination Bd fitted securely, Fuse F1 installed ☐

C) FRC Looms fitted correctly ☐

D) Door switch fitted to J7 of Remote Termination Bd ☐

COMMISSIONING CHECKLIST (CONTINUED)

3. OPERATION

A)	LEDs bright through window	☐
B)	Correct modules are configured and found on E2INIT	☐
C)	KeyPad disabled, Buzzer louder with keyswitch hard clk-wise	☐
D)	Controller Lk7 in "Protect" position	☐
E)	LCD contrast correct for front view	☐
F)	Passes System Test	☐
G)	Acknowledge silences buzzer, Zone Resets	☐
H)	Controller Lk2 (Service Mode) fitted	☐

SERIAL NUMBER ☐ TEST PASSED ☐

DATE : ……..... SIGNATURE : …….....

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APPENDIX A

RDU 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 in for each RDU before programming is started.

When programming is completed, 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.

RDU SYSTEM CONFIGURATION FOR

.....

SITE NAME (40 CHARACTERS MAX)

This set of configuration sheets contains tables for all zone programming, MAF ancillary relay configuration and setting of system parameters.

Fault Action Text (40 characters max).....

TYPE:FP0558 MAF INSTALLED		FP0559		FP0772		RDU ADDRESS (1-8)	
AUSTRALIAN MODE		NEW ZEALAND MODE					
NZ MODE DISPLAY EXTENDER CONNECTED Y/N:							
BATTERY LOW/VERY LOW MONITORING ENABLED Y/N:							
BRIGADE TEST ENABLED Y/N:		FFCIF DISPLAY CAUSE BY DEFAULT Y/N:					
ACCEPT FIP FFCIF ALARM ZONE NAMES Y/N:		USE FIP FFCIF TEXT Y/N:					
ACCEPT FIP TIME/DATE Y/N:							

	ANCILLARY RELAY SUPERVISION (MAF INSTALLED ONLY)			
	MAF MAPPED/ NOT MAPPED	ENABLE/ DISABLE	LATCH/ NON-LATCH	MODE DOOR/LOAD
ANC 1				
ANC 2				
ANC 3 (BELLS)				

MCP INSTALLED? Y/N		PROTOCOL: NON-LCD		LCD-A		LCD-B	

OPERATING MODE	TYPE 3		TYPE 3 MIMIC		CUSTOM		
	TYPE 2		TYPE 2 MIMIC		NON LCD		NON LCD MIMIC	

PRINTER SETUP:	BAUD RATE (9600):		LINES PER PAGE (60):	
	PRINT POINT ALARMS Y/N		PRINT CIRCUIT ALARMS Y/N	

ACCESS CODES:	PROGRAM:	VIEW:

		PROGRAM ZONE							TEXT NAME (30 CHARACTERS MAX)
ZONE NO	FIP Zn TYPE	LED NO	LCD Y/N	MAF Y/N	ALARM TYPE Y/N	BELL Y/N	ANC 1 Y/N	ANC 2 Y/N	
DEFAULTS		Zn	Y	Y	Y	Y	N	N	

NOTES: ALARM TYPE = N (IS RELAY TYPE ZONE); BELLS/ANC1/ANC2 ONLY ON MAF CONFIGURED SYSTEM.

NUMBER OF DISPLAY/RELAY DRIVER BOARDS	
MAXIMUM NUMBER OF LEDS ON AT ONE TIME	

BOARD NUMBER	1	2	3	4	5	6	7	8	9	10
TYPE:DISPLAY/RELAY										

BOARD NUMBER	11	12	13	14	15	16	17	18	19	20
TYPE:DISPLAY/RELAY										

BOARD NUMBER	21	22	23	24	25	26	27	28	29	30
TYPE:DISPLAY/RELAY										

BOARD NUMBER	31	32	33
TYPE:DISPLAY/RELAY			

CUSTOM MODE SETUP			FFCIF ALARM LIST OPERATION TYPE 2 OR 3:	
PROTOCOL: NON LCD		LCD-A	LCD-B	MIMIC: Y/N
LOCAL ACK Y/N	LOCAL RESET Y/N		LOCAL ISO Y/N	LOCAL TEST Y/N
GLOBAL ACK Y/N	GLOBAL RESET Y/N		GLOBAL ISO Y/N	
TYPE 3 GLOBAL ACK Y/N				
REMOTE ACK Y/N	AUTO ACK Y/N		ALL ZONES ISO FLT Y/N	
FFCIF INPUT SOURCE	LCD MESSAGE Y/N		LED MESSAGE Y/N	
BUZZER INPUT SOURCE	LOCAL ALM Y/N		LOCAL FAULT Y/N	
	REMOTE ALM Y/N		REMOTE FAULT Y/N	
COMMON LEDS	LOCAL STATUS Y/N		REMOTE STATUS Y/N	
TOTALS	MAF ONLY		MAF + NON-MAF	

	PASSON	FOLLOW	LOCAL
BELLS ISOLATE			
ANCILLARY ISOLATE			
BELL RELAY/TEST			
BUILDING SERVICES RESTORE			
TRIAL EVACUATION			

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