

F3200/NDU/ADU

AS4428.1

PROGRAMMING MANUAL

F3200 PRODUCT MANUAL

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The F3200 AS4428.1 Programming Manual has a configuration programming facility, which may be accessed from the keypad by using a password.

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

Tyco Safety Products does not accept responsibility for the suitability of the functions programmed by the user.

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AMENDMENTS

ISSUE	DATE	COMMENTS	ECO
1.0	12/02/01	Original. Split from LT0122 and modified for AS4428.1	
1.10	28/04/03	ADU operation added (chapter 6). FF Zone configuration added (section 3.4). New FF parameters (section 2.4.6.3). Corresponds to F3200/NDU V4.00 software.	3362
1.20	16/01/09	Corresponds to F3200/NDU software V5.00 and ADU software version 5.00. Refer to section 1.3.1 for software changes. Many parts of the manual have been updated, including Temporary Password Access, non-latching circuit type, network zone LED mapping, two column zone LED display board support and enhanced Tandem LCD capability. RZDU mode of operation has been added for the ADU.	3997

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1 INTRODUCTION

1.1 INTRODUCTION

This manual describes the programming of the following products:

- F3200 Fire alarm panel, AS4428.1 compliant, version 5.xx software.
- NDU (Network Display Unit), AS4428.1 compliant, version 5.xx software.
- NDU (Network Display Unit), NZS4512:2003 compliant, version 5.xx software
- NSA ADU (Nurse Station Annunciator Alarm Display Unit)
- Compact FF ADU, AS4428.1 compliant

For earlier versions of software, the previous issue (1.10) of this manual should be used. The software revision can be determined using the recall menu on the display. From the base display, press RECALL RECALL 4:CRC 4:FIRMWARE. The software revision should also be indicated on the label of the firmware IC installed in the controller board.

Installation and wiring information for F3200/NDU is provided in a separate manual, LT0255 F3200 Installation and Configuration manual. Installation detail for the ADU is in LT0321.

The programming menus for F3200 and the NDU are the same. Some options don't apply to the NDU because it has no AZC or relay modules. For F3200/NDU, diagrams showing the programming menus are [Figure 2.1.2](#), [Figure 3.1.1](#), [Figure 3.4.2](#) and [Figure 4.1.1](#). Tables listing the full set of configuration parameters are in section 2.5 and section 4.12.

Programming of the ADU is included in this manual because most of its programming menus and options are the same as F3200/NDU. The ADU is covered specifically in Chapter 6. For the ADU, the programming menus change slightly according to whether its connection type parameter (see section 6.5.6) is set to "RZDU connection" or "network connection".

For the NDU, "New Zealand" mode operation can be selected (refer section 2.4.6.13). This is described in detail in Chapter 5.

For F3200/NDU, a set of forms for preparing and recording the configuration data is provided in [Appendix A](#) at the end of this manual. For the ADU, there is a separate set of forms in Appendix B.

1.2 ASSOCIATED DOCUMENTATION

1.2.1 PRODUCT

Additional information on the F3200 FIP can be found in the following product manuals.

F3200 AS4428.1 Operator's Manual	A guide to the operation and maintenance of the F3200 FIP. Part Number LT0251 is a loose A4 version. Part Number LT0250 is a bound A5 version.
F3200 Technical Manual	A technical description of the F3200 system and modules. Part Number LT0121.
F3200 Installation & Configuration Manual	Covers ordering, installation, configuration and wiring of an F3200 panel and NDU. Part Number LT0255.

F3200 Panel-Link Upgrade and Installation Manual	Upgrade instructions on how to make the F3200 panel network capable. Part Number LT0198.
F3200 AS1603 to AS4428 Conversion	Instructions for converting an AS1603.4 compliant F3200 fire panel to an AS4428.1 compliant panel. Part Number LT0254.
F3200 V2.XX to V3.XX AS1603.4 Software Upgrade	Instructions on installing V3.XX F3200 software in a panel that previously had V2.XX software. Part Number LT0264.
ADU Installation Instructions	Instructions on the installation and wiring of an ADU (FP0880, FP0881, FP0865, FP0866). Part Number LT0321.

1.2.2 STANDARDS

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

AS1603.4	Automatic Fire Detection and Alarm Systems Part 4 - Control and Indicating Equipment.
AS4428.1	Fire Detection, Warning, Control and Intercom Systems - Control and Indicating Equipment Part 1 : Fire
NZS4512	Automatic Fire Alarm Systems in Buildings

1.3 PRODUCT HISTORY LOG

1.3.1 SOFTWARE VERSIONS (AS4428.1)

Part No.	Description	Revision	Date
SF0221	F3200 AS4428	V3.00	Feb 2001
SF0222	F3200 AS4428 Net	V3.00	Feb 2001
SF0224	NDU AS4428	V3.00	Feb 2001
SF0276	ADU	V5.00	Jan 2009
SF0286	F3200/NDU AS4428	V4.00	Apr 2003
SF0423	F3200/NDU AS4428	V5.00	Jan 2009

To assist with upgrading from older versions of software, below is a list of the changes made in recent versions.

F3200/NDU version 5.00 software changes

1. Network zone to LED mapping functionality was added (similar to NLDU). Refer section 3.10. A number of new configuration parameters are provided.
2. Non-volatile history. (Requires a flash chip fitted to U3 on the controller board.)
3. Temporary Access Password (TAP).
4. LCD to LCD tandem mode - tandem mode between panels.
5. Non-Latching AZC (circuit) type for use with latching supply air detectors requiring non-latching behaviour. Refer section 3.2.4.
6. Support for 2 column display boards and "relay type" display boards. Refer section 3.1.
7. For NDU operation in New Zealand mode, compliance with NZS4512:2003 where the Brigade alarm relay is now normally de-energised and there is a 2 second delay after activation of the alarm relay before activation of ancillary relays.

New programmable options in F3200/NDU V4.00 software

1. V4.00 software has options for “network operation” enable/disable and “NDU mode” enable/disable. In previous versions of software there were 3 different software products: non-networked F3200, networked F3200 and NDU. V4.00 incorporates these into one software item and allows networking to be enabled or disabled and “NDU mode” to be turned on or off. The default settings for these options are for networking to be disabled and NDU mode selected if there are no alarm zone circuit or relay modules connected.
2. For networked panels and the NDU, there is a new parameter that selects whether “points”, e.g., analogue smoke detectors, on other panels can be accessed at this panel.
3. A new buzzer option was added – “buzzer loud or quiet when door open”. The default setting is “buzzer quiet mode” when the door is open.
4. V4.00 software added the FF zone configuration capability described in section 3.4. The default values for the FF zone global options are “all disabled”.
5. Section 2.4.6.3 describes the global FF options of which the following were added in V4.00 software.

FF Item	F3200/NDU Default (not ADU)
New cause new alarm	Disabled
Multiple cause updates	Enabled
Switch to newest alarm	Disabled
Show zone number on FF display	Enabled
Show isol alarms in FF	Enabled
Show point text in FF for zone	Disabled

6. The number of allowed output logic equations has been increased from 289 to 512.
7. The VR Variable Range operand has been added to output logic. This operand allows checking for a minimum number of variables being true within a specified range of variables. For example, VR12:19(2) returns true when any two or more of the variables V12 to V19 are true.

ADU version 5.00 software changes.

1. Allow connection of the ADU to an RZDU bus.
2. Temporary Access Password

1.4 GLOSSARY OF ABBREVIATIONS

The following abbreviations are used throughout this manual:

ADU	:	Alarm Display Unit
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
CI.E.	:	Control & Indicating Equipment
Char	:	Character
EEPROM	:	Electrically Erasable Programmable Read Only Memory
EOL	:	End Of Line (device)

EOLR	:	End of Line Resistor
Expn	:	Expansion
E2	:	Electrically Erasable Programmable Read Only Memory.....
FF	:	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
MCP	:	Manual Call Point (Break Glass Switch)
NSA	:	Nurse Station Annunciator (small NDU)
PC	:	Personal Computer (small computer)
PCB	:	Printed Circuit Board
PSU	:	Power Supply Unit
R1	:	Module Relay Number 1 (program abbreviation)
RL1	:	Module Relay Number 1 (text abbreviation)
RAD	:	Return Air Duct (Air Conditioning Plant)
Reqd	:	Required
RTC	:	Real Time Clock
RZDU	:	Remote Zone Display Unit
SAD	:	Supply Air Duct (Air Conditioning Plant)
SID	:	System Identification Number (Network device)
T1	:	Programmable Timer Number 1 (program abbreviation)
Tmnl	:	Terminal
V1	:	Programmable Variable Number 1
VA	:	Volts Amperes
VB	:	Battery Backed Voltage
VNB	:	Non Battery Backed Voltage
+VBF	:	Fused Battery-Backed Voltage
+VNBF	:	Fused Non-Battery-Backed Voltage
Z1	:	Zone Number 1 (program abbreviation)
Zn1	:	Zone Number 1 (text abbreviation)
8RM	:	8 Relay Module
8ZM	:	8 Zone Module

1.5 GLOSSARY OF TERMINOLOGY

The following terminology is used in this manual:

Ancillary Equipment	:	Equipment external to Fire Alarm system
Ancillary Relay	:	Relay in FIP which operates Ancillary equipment
Auxiliary Output	:	Output for driving additional LEDs/relays
Baud	:	Bits per second
Control Output	:	Output from FIP to other equipment
Default	:	Pre-programming option or logic equation i.e. one that exists without the user programming it.
Detector	:	Alarm Detection Device (electrical transducer)
Fire Control Station	:	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 FIP, and associated with the AZC of the same number.

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2 PROGRAMMING GLOBAL DATA

2.1

INTRODUCTION

2.1.1 GENERAL

The F3200/NDU have two levels of access for display/keypad operation, "operator access" and "program mode access". Operator access allows commands such as zone isolate/ de-isolate and history recall to be done and does not require a password. Program mode access allows modification of the configuration database and requires a password plus the adjustment of the database write protect link (LK7) on the controller board. When program mode is entered, processing of circuits and alarms is suspended and the standby relay is de-energised. For a networked panel, most network communication is suspended during program mode.

This manual describes the use of program mode to configure the panel. All configuration parameters can be set using the display/ keypad without the use of a laptop/PC. It is recommended that the database be saved to a disk file when programming is complete using a laptop/PC. The database can be loaded/restored from a previously saved disk file.

It is recommended that configuration sheets specifying all text and programmable parameters be filled out before programming commences. Blank master sheets are included in Appendix A. A set of completed sheets should be kept in the contract file.

NOTE

1. When filling out configuration sheets, only non-default parameter settings need to be recorded.
2. It is necessary to install and configure AZC and relay modules before other programming, such as text entry, is done. Refer section 3.1. The recommended order of configuration and programming is described in Section 2.1.4.

2.1.2 MENU STRUCTURE & PARAMETER ENTRY

Program mode provides access to a set of menus. Some menus appear as a list of numbered options where the numeric keypad is used to select an option. Some menus appear as a list of fields where a flashing cursor indicates the active field and the left and right arrow keys are used to cycle through the available fields. The left and right arrow keys are also sometimes used to step backwards and forwards through different menus. When circuit, zone or relay information is being programmed, the NEXT and PREV keys are used to step to the next or previous circuit/zone/relay. The CLEAR/ESC key generally returns to a previous/higher menu level.

To exit program mode, press the CLEAR/ESC key repeatedly until a prompt appears asking if you wish to exit program mode. Changes that have been made to the database can then be saved to non-volatile memory or can be discarded at this point.

With some menus, a setting can sometimes be changed by using the up arrow/ down arrow keys and sometimes by selecting from a list of options using the numeric keypad. Some menus require the ACK key to be used to save the changes associated with that particular menu into the database. If the menu is exited without saving changes, a prompt is given, asking whether the changes should be saved.

Fig 2.1.2 shows the program mode menu structure. The programming menus for the ADU are shown in Chapter 6.

2.1.3 PROGRAMMING KEYS

The front panel keypad includes numeric keys and a number of function and command keys. Some keys have a dual operation. These are the nine keys (RECALL to AIF MODE) on the lower right hand side of the front panel. In general, the "lower" function of the dual operation keys applies when in program mode. For example, the BATT TEST/ DOWN ARROW key is used as a down arrow key when in program mode and as battery test when not in program mode.

The logic functions (OR, AND, XOR, NOT) in the right hand column of the 4 x 4 "numeric" keypad are used for entering output logic equations. During text entry, the "NOT" key is used to enter a space character.

F3200 PROGRAMMING MENU PAGE 1

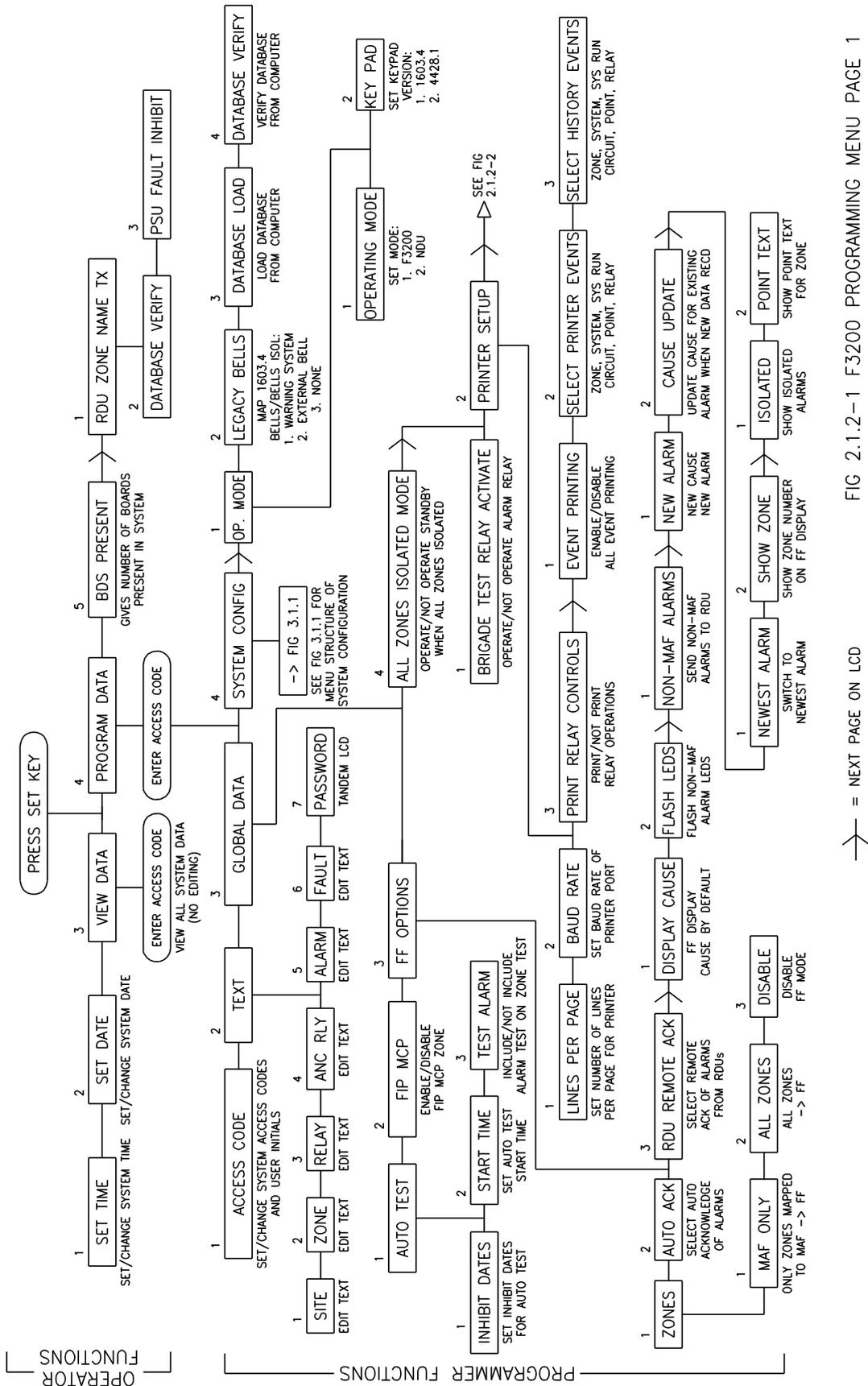


FIG 2.1.2-1 F3200 PROGRAMMING MENU PAGE 1

→ = NEXT PAGE ON LCD

2.1.4 RECOMMENDED PROCEDURE FOR PROGRAMMING

The following steps should be carried out in the order given. For the ADU, refer also to Chapter 6.

1. **System Design**
Determine all system requirements; decide number of 8ZMs, 8RMs, LED Display (if any); allocate zones and relays. Fill out configuration sheets with programming for detector type, relay supervision, output logic, etc.
2. **Configure Hardware**
Install panel, configure and fit modules and connect field wiring.
3. **E2 Init / Database re-initialise**
Fit links Lk7 and SW1 and turn mains power on to perform Database Initialisation as per Section 2.3.1. Check that the modules configured match the modules installed.
4. **Assign Access Codes**
Enter programming mode (Section 2.3.2) using the default password. Assign access codes as per Section 2.4.4. Note that the first code is the master code, and should be known by the System Designer or Service Supervisor as appropriate.
5. **Enter Text**
As per Section 2.4.5. Copy names for FIP, zones and relays from configuration sheets.
6. **Global Parameters**
Enter any global parameters different from the defaults such as auto-test inhibit dates, FIP MCP zone (if other than Zone 1), as per Section 2.4. Fig 2.1.2 can be used as a flow chart. Work from top to bottom, left to right.
7. **Enter System Configuration Parameters**
Refer to Fig 3.1.1. Enter all the circuit, zone, output logic, relay supervision and RZDU parameters from the configuration sheets that differ from the defaults. Start at the left side of Fig 3.1.1 (circuits), and work from left to right through each branch, starting at the lowest numbered item (e.g. zone, relay) and stepping through to the largest number for each item configured.
8. **Checking**
When all parameters are entered, either:
 1. Print the database (as per Section 2.3.4) 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 2.3.3, enter "View Parameter" mode and check each parameter of each item (tick off), noting any mistakes. Re-access database and correct mistakes.
9. **Save Database**
When programming is complete and correct, save the database to a disk if a laptop/PC is available. Refer Section 2.3.4.
10. **Update RDU Programming**
Program (including zone names) any connected RDUs. F3200 allows the sending of zone names to an RDU through the RDU comms link. Refer Section 2.2.1.
11. **Testing**
Thoroughly test the system to verify that the programming is correct.

2.2 PROGRAMMING OR VIEWING THE DATABASE

2.2.1 GENERAL

To program or view the database, from the base display, press the "SET" key and the following menu appears.

1 Set Time 2 Set Date 3 View database 4 Program database 5 Boards Present >

The arrow (>) at the right hand end indicates that a second menu can be accessed using the right arrow key. Options 1, 2 and 5 in the above menu are operator accessible and do not require a password. Option 5, Boards Present, allows temporary removal of one or more AZC or relay modules and is described in the Operator's Manual LT0250.

Options 3:View database and 4:Program database, require an access code to be entered. View database operation is described in the Section 2.2.2. A description of program mode operation begins in Section 2.4 Fig 2.1.2 shows the structure of the menus available in program mode.

Pressing the right arrow key from the above menu produces a second menu as follows.

1:RZDU zone name transmit 2:Verify database 3:PSU fault inhibit

The RZDU zone name transmit option is used to initiate the transmission of all zone and module relay names to any RDUs. This is described in Section 3.7. Option 2 Verify Database can be used to compare the database in the panel with one on a computer disk. It is described in Section 2.3.6. Option 3 PSU fault inhibit is an operator function described in the Operator's manual LT0250.

2.2.2 VIEW DATABASE

To view the configuration database without changing it, from the base display, press the SET key and select option 3 View database. A password must then be entered. When in view database mode, the same menus used in program mode to modify the database, are used to view the database. The database write protect link LK7 should be left in the "protect" position when viewing the database. Processing of circuits and alarms continues while in view database mode.

2.3 DATABASE OPERATIONS, INITIALISING, ACCESSING, SAVING, PRINTING

2.3.1 INITIALISING THE DATABASE

The database can be reinitialised by powering up with the E2INIT link fitted as described below. A default database is assigned and all previously programmed data is lost.

Steps

1. Fit the Mini-jump on the database write protect link, (F3200/NDU - Lk7 - top right of controller board; ADU - LK1 - board centre) in the PROTECT position, (i.e. not write enabled).
2. With the batteries disconnected, turn the FIP mains power off.

3. Fit a mini-jump (i.e. short the two pins) to the E2INIT link (F3200 - SW1 - top centre of controller; ADU – SW2 – bottom left), then turn the power on.
4. When the start up sequence is complete, a message will appear on the display, prompting for the database to be write enabled. Move the database write protect link (F3200/NDU - LK7; ADU - LK1) to the write enable position.
5. When prompted, remove the E2INIT mini-jump and leave it fitted to one pin only. Wait one to two seconds, then press ACK to reinitialise the database or press CLEAR to exit.

2.3.2 ACCESSING THE DATABASE

When programming the database, the database write protect link (F3200/NDU - LK7; ADU - LK1) should be in the write enable position. **At all other times it must be in the WRITE PROTECT position.**

To enter program mode, write enable the database, then press the SET key from the base display and select "Program database". Enter the password/ user code (default 000000). The main programming menu then appears. If the password is unknown, the Temporary Password Access mechanism can be used to access program mode. Refer to section 2.3.7.

Any change to the access codes/ password should be recorded in the FIP contract file.

WARNINGS

1. When program mode is entered, F3200 de-energises the Standby relay (i.e. signals Standby) and stops processing. If this signals "Alarm" to the Brigade then appropriate arrangements should be made first.
2. On a FIP that has been commissioned, before entering program mode, the Brigade connection should be isolated and critical outputs should be isolated or disconnected.

2.3.3 DE-ACCESSING THE DATABASE

It is important to make an orderly exit from program mode by pressing the CLEAR/ESC key repeatedly and following the prompts which appear. If power is lost or the panel restarts before program mode is exited, any changes made will be lost. The FF zone programming menus (Section 3.4) and Network zone to LED mapping menus (Section 3.10) allow saving the database to flash memory without exiting program mode.

When exiting program mode, a choice is given asking whether the database should be saved or not. If the database has been changed, the following appears on the display.

Database has been changed. 1:Save 2:Discard changes and exit without saving.

Option 1 saves any database changes to flash memory and calculates a new checksum for the database. Option 2 reloads the database from flash memory and discards any changes that were made while in program mode.

If the database has not been changed while in program mode, the following appears on the display when program mode is exited.

Database has not been changed. CRC is ok. 1:Exit/no save 2:Save to flash anyway

Option 1 exits without re-writing the database to flash memory. Option 2 re-saves the database to flash memory, even though it hasn't been changed. The "last saved time/date"

stored in the database is not updated when this is done so the CRC of the database should be unchanged from what it was on entry to program mode, however, the database in flash memory is completely re-written.

NOTES

1. The database write protect link must be fitted to the Write Protect position after exiting program mode.
2. If any zones were isolated before programming commenced, they should be checked for off normal conditions before being de-isolated.
3. All zones and relays associated with any new modules configured will be automatically isolated when the database is de-accessed, and need to be checked for off normal conditions before being de-isolated.

2.3.4 SAVING OR "PRINTING" THE DATABASE TO DISK

After making changes to the database, the database should always be saved to disk. F3200/NDU/ADU can output the database in both readable text format and in an encoded "binary" format (Motorola S2/S8). Both of these formats (text and binary), should be saved to disk as separate files. The file containing the database in binary format can be used to reload the database into the F3200/NDU/ADU at a later time – e.g. if the controller board is replaced.

The procedure is the same for both a binary format save and a text format save, except that a different menu option is selected. For the binary format, at the completion of the save, the operator is prompted to perform a verify operation to check that the database was saved correctly.

Refer to section 2.3.8 for information on connecting the panel to a computer. To initiate a database save (text or binary format), the procedure is as follows.

1. Prepare the computer to capture the output of the F3200/NDU/ADU controller. This usually involves using an "upload/download" command or "capture" command in the terminal emulator and entering an appropriate filename. In PanelX, the "Capture to file" option in the File menu is used. For the binary form of the database, the file extension used is normally .S28. For the text form, the extension is normally .TXT.
2. Initiate the operation on the F3200/NDU/ADU using the PRINT key from the base display

Print 1:history 2:system status 3:database 4:op logic 5:save database

Select either option 3: "database" (text format) or option 5: "save database" (binary format). Enter a valid password when prompted and press the ENTER key on the F3200/NDU/ADU when the computer is ready to receive the data.

3. While the database save is in progress, the controller display will show - "Print in Progress. Press RESET to Cancel" (This message does not appear when PanelX/ Tandem LCD mode is being used). The RESET key on the keypad can be used to abort the operation. When the save is complete, the controller display will show "Do you wish to verify the saved database" if a binary format save was done. At this point, the capture operation on the computer should be terminated so that the capture file is closed.

4. To perform the verify operation, select the "yes verify" option on the controller, then press the ACK key when prompted. The database file that has just been saved, should be transmitted back to the F3200 using an upload/download command or send command in the terminal emulator. In PanelX, this is the "Send file" command in the File menu.

NOTE : The F3200/NDU/ADU controller uses XON (Ctrl Q)/XOFF (Ctrl S) handshaking during a database save or load. Very occasionally this can result in a lockup situation if an XON character is lost. If this happens, try typing Ctrl Q (XON) on the PC to try and send an XON character to the controller.

2.3.5 RESTORING THE DATABASE FROM A COMPUTER

A binary format database file that has been saved to disk may be loaded into an F3200/NDU/ADU as follows.

1. Connect the computer to the controller as described in Section 2.3.8.
2. Enter program mode as described in Section 2.3.2, then from the main program mode menu press the right arrow key and select option 3:Database load. The message "Press ACK, then start sending the new database" should appear.
3. Press the "ACK" key on the controller keypad, then initiate the transmission of the database file from the computer. With a terminal emulator, this usually involves using an upload/download command or send command in the terminal emulator. With PanelX, the "send file" command on the File menu is used. The controller display will show an incrementing count as the database is received, plus the message "Loading. Press RESET to abort". When the database has been completely received, the controller will verify its checksum and display the success or failure of the operation. If the load is successful, the database is written to flash memory automatically. When program mode is subsequently exited, if no further changes have been made, the display should indicate that the database has not been changed. In this case, it isn't necessary to save the database when exiting program mode because it was saved automatically after the database load.

The controller must receive a complete database with the correct number of records or it will display an error message. The controller will transmit XON, XOFF characters for handshaking if it needs to slow down the rate of data being sent to it. If XON/XOFF handshaking is not available on the computer, or if errors occur, then a slower rate (e.g., 2400) should be used. The baud rate used by the controller is programmable (see section 2.4.6.6) but if the database that has been loaded contains a baud rate setting different to the prior database, the actual baud rate used by the controller hardware will not be changed until the CLEAR key is pressed to initiate an exit from program mode.

Database conversion

If the loaded database was created with an earlier version of software (e.g. the firmware has just been upgraded, or a database from an earlier version of software is loaded), then the database will be converted if necessary, to allow it to be used with the new software. Note, with version 5.00 software or later, a version 1.10 database cannot be loaded. A V1.10 database can be loaded and upgraded with F3200 version 3.xx software.

2.3.6 VERIFYING A SAVED DATABASE

A binary format database file that has been saved to disk can be verified at any time without entering program mode as follows.

1. Connect the computer to the controller as described in Section 2.3.8.
2. Press the SET key from the base display, then press the right arrow key to select the second menu

1:RZDU zone name transmit 2:Verify database 3:PSU fault inhibit

Choose option 2 Verify database. Enter an access code when prompted. The following message should appear.

Press ACK, then send the database to be verified.

3. Press the "ACK" key on the controller keypad, then initiate the transmission of the database file from the computer. With a terminal emulator, this usually involves using an upload/download command or send command in the terminal emulator. The controller display will show an incrementing count as the database is received, and the following message will appear.

Verifying. Press RESET to abort

The success or failure of the verify will be indicated on the controller display. The RESET key can be pressed to terminate the verify operation at any time.

2.3.7 TEMPORARY PASSWORD ACCESS

If the password for accessing program mode has been lost, the Temporary Access Password (TAP) mechanism can be used. When an invalid password is entered on the LCD or programming terminal, F3200 generates an error code (Recovery Code). The Recovery Code can be forwarded to a Tyco staff member authorised to provide a TAP. The temporary password can be used to access program mode on the panel. The Recovery Code and TAP are valid until either the panel is restarted or the TAP is used to access the panel. The mechanism for generating the Recovery Code and using the TAP is slightly different according to whether the F3200 LCD/keypad is being used or the programming terminal is being used as described below. A TAP consists of 16 hex digits.

NOTE : For an ADU, PanelX is used to provide a full keypad that is used to enter the password. Refer to section 6.5.1.

TAP operation using the F3200 LCD/keypad

When an invalid access code is entered on the LCD, F3200 displays the following message on the LCD.

Invalid code. Press any key

If the SET key is now pressed, F3200 will display the Recovery Code. For example:

Error Code: 03DF6B17

After a TAP has been generated from the Recovery Code, the TAP is used on the LCD as follows.

1. From the base display, press the SET key and select option 4 Program database. The message "Enter access code" should appear.

2. Press the SET key once.
3. Enter the 16 hex digits using the F3200 keypad. The numeric keypad is used to enter digits in the range 0 to 9. To enter hex digits 'A' to 'F' the row of six keys below the numeric keypad are used where the leftmost key (TEST) corresponds to 'A' and the rightmost key (AIF MODE) corresponds to 'F'. Hence "ALARM TEST" is 'B', "FAULT TEST" is 'C', "BATTTEST" is 'D' and "ANCIL ISOL" is 'E'.

TAP operation using the F3200 programming terminal

Connect the panel to a computer as described in section 2.3.8. To generate a Recovery Code, press the ENTER key on the programming terminal. A prompt "ENTER PASSWORD>" will appear. Enter an invalid password and press the ENTER key. An error code (Recovery Code) will be output, for example :

Error Code: 03DF6B17

After a TAP has been generated from the Recovery Code, the TAP can be entered using the LCD/keypad as described above.

2.3.8 CONNECTING THE CONTROLLER TO A COMPUTER

A "terminal emulator" (e.g. HyperTerminal) running on a PC is needed. The PC must be connected to the printer/programmer port (J1 or J27) on the controller using a suitable serial cable (e.g. standard loom LM0041 (DB9) for connection to J1 (3 wire) or LM0076 for connection to the DB9 J27 connector) and the PC baud rate must be set to match the baud rate programmed for the F3200 controller (default 9600 baud - refer section 2.4.6.6 printer setup). The controller serial port uses 8 data bits, no parity, 1 stop bit, XON/XOFF flow control. The terminal emulator should be set up to match these settings.

For the ADU, the serial port connection is a DB9 connector J26.

2.4 PROGRAM BASE MENU, TEXT & GLOBAL PARAMETERS

2.4.1 GENERAL

The following menu appears when program mode is entered.

1:Access code 2:Text 3:Global data 4:System config >

Option 4: System Configuration is described in Chapter 3. The other options are described in this chapter. Pressing the right arrow key from this display shows a second menu.

1:Operating mode 2:Legacy bells 3:Database load 4:Database verify <>

Database load and database verify have been described in preceding sections. Operating mode, keypad type and legacy bells options are described in the following sections.

For the ADU, the operating mode parameter is described in section 6.5.3. The legacy bells option may need setting for an ADU if the ADU is operated with the PanelX utility which presents a full AS4428.1 keypad and allows access to the Warning System and External Bells on other network panels.

2.4.2 OPERATING MODE AND KEYPAD TYPE

Selecting the Operating mode option shown in the previous section produces the following menu.

1:Operating mode 2:Keypad

Option 1 allows the operating mode to be set to either F3200 or NDU. The mode is set automatically during a database re-initialise operation. If the panel has no 8-way AZC or relay modules connected then the mode is set to NDU, otherwise F3200.

The keypad type can be selected as 4428.1 or 1603.4 to match the physical keypad. On initialisation, the keypad type will be set as 4428.1. The 4428.1 keypad has Warning System Isolate, External Bell Isolate and AIF mode keys that the 1603.4 keypad does not. The 1603.4 keypad has Bells Isol and Brigade Test keys that the 4428.1 keypad does not.

Changing the operating mode

The operating mode is displayed on the LCD as either "F3200" or "NDU". When the mode is changed, some other items are changed automatically as follows. "Network operation" (refer section 4.3.1 item 1) will be enabled for NDU mode and disabled for F3200. When the mode is changed to NDU, the AZC settings (refer section 3.2) are changed to default settings suitable for an NDU.

Refer to section 4.11 for detail of NDU operation.

2.4.3 LEGACY BELLS

Section 2.4.1 shows how to access the menu that provides the legacy bells option. The Legacy Bells option can be set to one of:

1:Warning System 2:External Bell 3:None

Section 3.8 provides a description of the Warning System and External Bell operation, and how Legacy Bells interacts with this.

If the keypad type is 1603.4, the Legacy Bells option selects whether the Bells Isol key and LED are associated with the Warning System, the External Bell, or neither. For example, if selected as the Warning System then the Bells Isol LED will actually display Warning System isolate and the Bells Isol key will operate on the Warning System isolate state.

If the keypad type is 4428.1 and the panel is connected to a network that has some AS1603.4 panels, then the Legacy Bells option should be set at all AS4428.1 panels on the network according to whether Bells/Bells Isolate on the AS1603.4 panels corresponds to the Warning System, External Bell, or neither.

2.4.4 ACCESS CODES

Ten 6 digit access codes are available (numbered 0-9), and each one has provision for the user's initials (3 characters). The initials of the last user to change the database are stored in the database. When program mode is entered, an event is logged indicating the number and initials of the user who accessed the database.

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

To enter or edit an access code, enter the user number (0-9) from the keypad. This gives the following options.

"EDIT"	swaps the cursors between the top and bottom line
"INSERT"	toggles entry between "insert" and "type-over" modes.
"DELETE"	acts as backspace for a character just entered, or deletes any character in the text selected by the cursor (active or inactive).
"ACK"	saves the text and returns the cursor to the item number.
"NEXT" & "PREV"	step through items (e.g. zones).
"RECALL"	allows copying of the text from any zone or relay to any other zone or relay. (Select zone/relay to be copied into. Press "RECALL" and select zone/relay and number of zone/relay to be copied from. "ENTER" transfers the text. This can then be edited).

Example of Entry of Site Name

To entire a site name of "Penrose No 1 Store" proceed as follows.

From the Text Entry menu select option 1, Site.

The LCD has the inactive cursor in the first text 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.

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

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

Press "ENTER".

Repeat for the other letters in Penrose.

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

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

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

When the correct name has been entered, press "ACK".

Alarm Text

There are nine alarm texts with defaults of Smoke, Heat, ESW, MCP, VMD, PSW, SPR, SIP, flame. Any of the nine alarm texts can be modified, with up to six characters per text name.

Fault Action Text

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

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

Tandem LCD Password

A 12 character password can be programmed. The password is used to access Tandem LCD mode on the programming port, e.g., with PanelX.

2.4.5.2 TEXT PROGRAMMING WITH A PC

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

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

When the LCD is showing the following text entry menu:

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

the programming terminal/PC connected to the printer/programmer serial port can be used to enter text. The LCD must remain showing the above menu. Pressing any key on the F3200 front panel keypad will terminate the entry of text from the PC. To initiate the entry of text, the ENTER key must first be pressed on the programming terminal/PC. A prompt will then appear as follows.

Enter Znn, Rnn, An, S, Tn, In, F, P, Q :

The type of text being entered must first be selected by entering one of the options listed, followed by the ENTER key. Either upper case or lower case z, r, a, s, t, i, f, p or q may be used. A text name can then be entered followed by the ENTER key.

If PanelX/ Tandem LCD mode is being used (via the local printer/programming port), the SET/EDIT key can be used (with the text entry menu showing on the display) to enable text entry mode on the programming terminal. To terminate text entry mode and return to Tandem LCD mode, type Q ENTER.

1. To enter a zone text name, type: Znnn ENTER where nn is the zone number (1-64). For an ADU in RZDU mode, zone numbers are in the range 1 to 528.
2. To enter a module relay name type: Rnn ENTER where nn is the module relay number (1-64).
3. To enter an ancillary relay name type: An ENTER where n = 1, 2 or 3.
4. To enter the site name type: S ENTER
5. To enter an alarm text type: Tn ENTER where n is the alarm text number (1 to 9).
6. To enter an access code user initials type: In ENTER where n is the access code (user number 0 to 9).
7. To enter Fault action text type: F ENTER
8. To enter the Tandem LCD password type: P ENTER

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

To exit from text entry mode type: Q ENTER or press the CLEAR key on the F3200 keypad.

The DELETE or BACKSPACE keys may be used to delete the last character typed, and the ESCAPE key may be used to abort the text entry for the selected item. After the ENTER key is pressed the message "Saved OK" will appear if the text has been saved correctly into memory.

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

Ensure that the last name in the file is followed by a carriage return before the end of the file, i.e. put a blank line at the end of the file. The characters S, Z, R, etc, must always be in column 1 and the text names must also start in column 1 (unless leading spaces are required, but this is unlikely).

```

S
40 character site name
                                                    (blank lines are allowed)
Z1
Example text name for zone 1
Z2
Name for zone 2
Z3
    This name has leading spaces
Z4
This name does not have leading spaces
.
.
.
Z23
This name will be cut at 30 characters as it is too long
Z24
Name for zone 24
R1
Name for module relay 1
.
.
.
R64
Name for module relay 64
A1
Name for ancillary 1 relay
A2
Name for ancillary 2 relay
A3
Name for ancillary 3 relay
T1
Smoke
T4
Manual
T9
Therml
I0
JEH
I1
MJS
.
.
I9

```

(limited to six characters)

(three characters)

BAC
F
Phone TYCO FIRE SYSTEMS 7903600 (40 characters max)
<blank line>

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

When the message:

Enter Znn, Rnn, An, S, Tn, In, F, P, Q :
appears, send the file containing the text names to the F3200 panel using the "send file" command of the terminal emulator. If possible set the terminal emulator to use XON/XOFF flow control or else set the line transmit delay to 100 milliseconds.

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

2.4.6 GLOBAL DATA

Option 3: Global data from the main program mode menu provides access to a series of menus that allow a number of different options to be set. The following set of menus shows the options that are found in these menus. The right arrow key is used to step to the next menu. The left arrow key or clear key are used to go back to a previous menu. Sections 2.4.6.1 to 2.4.6.13 describe all of the parameters that appear in the following menus.

1:AutoTest 2:Fip mcp 3:FF options 4:All zones isolated mode >

Pressing the right arrow key produces the following menu

1:Brigade test relay activate 2:Printer setup >

Pressing right arrow again shows

1:Daylight saving start 2:Daylight saving end 3:Mains/battery 4:Doorswitch <>

Pressing right arrow again shows

1:Keys enable 2:Remote sounder silence 3:Buzzer options 4:New Zealand options

Some items in the above menus produce additional sub-menus as follows.

FF options sub-menu

Section 2.4.6.3 describes all of the FF options sub-menu.

Mains/battery sub-menu

1:Mains frequency 2:Mains fail action 3:Battery options 4:Charger options

Battery options are

1:Batt low mon 2:Batt connect test 3:Batt hourly test 4:Batt daily test

Buzzer sub-menu

Buzzer enable 1:Alarms 2:Zone faults 3:System faults >

Pressing right arrow shows more buzzer options

1:Buzzer sound for non-maf zone faults 2:Fault sounder after 8 hours fault >

Pressing right arrow again shows

1:Fault sounder after 8 hours isolate 2:Set 8 hour period in 6 minute units

Pressing right arrow again shows

1:Buzzer operates in loud mode when door/keyswitch is open/enabled

New Zealand mode sub-menus

1:NZ mode enabled 2:Display bd >

Pressing right arrow shows

1:Evac defect is fault 2:External defect is fault

2.4.6.1 Auto-Test

The menu for auto test options is as follows

1:inhibit dates 2:start time 3:test alarm

Option 1 allows entering dates for which an auto-test should not be done. Option 2 allows entering the start time for an auto test. Option 3 allows selecting whether auto-test should do alarm test on circuits or not.

The automatic test of memory, AZCs, etc, occurs at a programmed time every day except on weekends or programmed inhibit dates. This is to reduce the cost of callouts should the auto-test fail. Only the basic statutory holidays, 25/12, 26/12, 01/01, 02/01 & weekends are inhibited by default. Other state/company specific inhibit dates should be added.

Auto-test will always do a fault test of all circuits/AZC modules. By default, alarm test of all circuits/AZC modules is disabled but can be enabled if desired. A manually initiated system test always does both fault and alarm test.

Auto-Test also tests memory and database checksums and initiates an RZDU system test. The auto-test can be inhibited/turned off completely by setting the start time to 24:00:00.

The daily 40 minute battery test will be initiated (if enabled) at the auto-test start time unless the start time is set to 24:00:00 (or any invalid time), in which case the daily battery test starts at 09:00.

2.4.6.2 FIP MCP

This option allows a zone number to be entered to which the local MCP will be mapped. Zone one is the default value but any configured zone may be used. In FIPs which do not have an MCP fitted, it should be disabled by entering zero as the zone number.

For Australian operation, a condition of short circuit produces alarm and open circuit is fault.

For New Zealand mode on an NDU or ADU, open circuit is alarm, however it is not expected that an MCP will be used on these devices in New Zealand mode because the MCP does not meet the requirements of NZS4512:2003.

For an ADU that is connected to the RZDU bus (rather than a Panel-Link network), this parameter is not used and does not appear in the programming menu. Instead, there is a programming option that selects whether the MCP is enabled or disabled (i.e. there is no mapping to a zone number).

2.4.6.3 FF Options

FF options are used to configure the behaviour when the FF alarm list is being shown on the display. The following table shows the options available in the FF options sub-menus. Items that are not applicable to an ADU are indicated with (*).

Option	Values
FF Zones	MAF zones; All zones
FF Auto ack	Enable/ disable
RDU remote ack	Enable/ disable (*)
Display cause by default	Enable/ disable
Flash non-MAF alarm LEDs	Enable/ disable (*)
Send RDU non-MAF FF alarms	Enable/ disable (*)
New cause new alarm	Enable/ disable
Multiple cause updates	Enable/ disable
Switch to newest alarm	Enable/ disable
Show zone number on FF display	Enable/ disable
Show isol alarms in FF	Enable/ disable
Show point text in FF for zone	Enable/ disable

These options are described below.

FF option 1 : FF zones

This parameter may be set to one of three options.

1: MAF zones only 2: MAF & non-MAF zones 3: FF disabled.

In F3200 (and F4000/ MX4428), a zone may be programmed as MAF or non-MAF type. If the FF zones parameter is set to "MAF zones only", then alarms on MAF zones are entered into the local FF alarm list and alarms on non MAF zones are not (subject to explicit FF zone config programming – see below). If set to "MAF & non-MAF" then both MAF and non-MAF zone alarms are entered into the alarm list.

The "FF zones" parameter is a global setting that can be overridden with "FF zones configuration" (see section 3.4) which allows options to be set for individual zones that determine how an alarm on the zone is treated. This also depends on whether the zone is a local zone or a zone (alarm) received from another panel.

For local zones

For local zones on an F3200, the following tables show what happens.

No explicit FF zone configuration entry for a zone				
FF zones	Enter in local FF alarm list		Send on network	
	MAF zone	Non-MAF zone	MAF zone	Non-MAF zone
MAF only	Yes	No	Yes	No
All	Yes	Yes	Yes	Yes

Explicit FF zone configuration entry for a zone with MapFF enabled				
FF zones	Enter in local FF alarm list		Send on network	
	MAF zone	Non-MAF zone	MAF zone	Non-MAF zone
MAF only	Yes	Yes	Yes	Yes
All	Yes	Yes	Yes	Yes

Explicit FF zone configuration entry for a zone with MapFF disabled				
FF zones	Enter in local FF alarm list		Send on network	
	MAF zone	Non-MAF zone	MAF zone	Non-MAF zone
MAF only	No	No	Yes	No
All	No	No	Yes	Yes

For alarms received from other panels

For alarms received from other panels, the “FF zones” parameter can affect whether the alarm is entered into the local alarm list or not as follows.

If there is an explicit FF zone configuration entry for the remote zone in the local FF zone configuration list, then that entry determines whether an alarm on that zone enters the local FF alarm list, regardless of whether the zone is MAF or non-MAF.

If there is no explicit FF zone configuration entry for the remote zone, then the zone may be entered into the alarm list if either the global FF configuration “MapFF” option is enabled (refer section 3.4.1.1) or the “Receive FF alarms” option is enabled in the SID list for the SID. Non-MAF zones will not be entered in the alarm list if the “FF zones” parameter is set to MAF only.

FF option 2 : FF RDU remote ack - Y/N

If this option is enabled, alarm acknowledgements received from RDUs will be accepted. If disabled, alarm acknowledgements received from RDUs will be ignored, but reset and isolate commands received from RDUs will still be accepted.

FF option 3 : FF Auto Ack - Y/N

If enabled, alarms entered into the local FF alarm list are acknowledged automatically.

FF option 4 : FF Display Cause by Default – Y/ N - By default, the first line of the F3200 FF Alarm display shows:

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

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

Cause, Number of Alarms

If the “Display Cause by Default” option is enabled, the first line is shown as:

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

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

Full Cause, Alarm Time, Number of Alarms

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

Note: This parameter affects ALL events, network or local, shown on the local display. It does not affect the format of information sent to other devices on a network, or to RDUs. Each of those devices will display alarms according to their own programming.

FF option 5 : Flash non-MAF alarm LEDs – Y/N

If enabled, the alarm LED (if any) for a non-MAF zone will flash when a new alarm occurs on the zone. The reason for enabling this is so that alarms on non MAF zones appear as unacknowledged alarms at an RDU because the RDU interprets the "alarm LED flashing state" as an unacknowledged alarm. This option is disabled by default. At an RDU each zone can be programmed as to whether it should be entered into the RDU FF alarm list when the zone goes into alarm. This allows the choice of where particular zone alarms are displayed.

FF option 6 : Send non-MAF FF alarms to RDU – Y/N

This is disabled by default. If enabled, alarms on all zones are sent to the RDU as displayable FF alarms. The RDU then has the choice of which alarms it displays.

FF option 7 : New cause new alarm – Y/ N

When a zone goes into alarm, the alarm is initially displayed without any point information. When the specific point or points that caused the alarm become known, the alarm entry is updated with the point information (if programmed to be), and if “new cause new alarm” is enabled, the alarm entry will be made unacknowledged (even if it was previously acknowledged) and the alarm buzzer will resound (if programmed to for that zone).

FF option 8 : Multiple cause updates – Y/ N

If a zone is configured with MultiAlm disabled (see FF Zone configuration, Section 3.4) then the alarm list will never have more than one entry for that zone, even if there are multiple points in alarm on that zone. If Multiple Cause Updates is enabled, then the alarm list entry for a zone configured with MultiAlm disabled, will be updated as each point in alarm becomes known, i.e., the alarm entry will show the latest point that has gone into alarm on that zone. If Multiple Cause Updates is disabled, then the alarm entry shows only the first point that goes into alarm on the zone. For zones with MultiAlm enabled, this parameter has no effect, since each point has its own entry in the alarm list.

FF option 9 : Switch to newest alarm – Y/ N

If this parameter is enabled, then, whenever a new alarm is added to the FF alarm list, the display will automatically switch from wherever it currently is, to show the new alarm entry.

FF option 10 : Show zone number on FF display – Y/ N –

If this parameter is enabled, then the zone number will appear on the bottom line of the FF alarm list display of a zone alarm, followed by the name of the zone or point. The zone number identifies both the SID number and the zone number. When the RESET command is used, the zone number briefly appears on the top left of the display, regardless of this parameter.

FF option 11 : Show isol alarms in FF – Y/ N –

This parameter selects whether the display shows isolated alarms. If enabled, isolated alarms are displayed as part of the alarm list if there are no unacknowledged alarms. This is a requirement of AS4428.1.

FF option 12 : Show point text in FF for zone – Y/ N –

For a zone configured with MultiAlm disabled (see FF Zone configuration, Section 3.4), this parameter selects whether the alarm entry for the zone shows the point name(s), (when available), or just the zone name. If this parameter is enabled, point names are shown. For a zone with MultiAlm enabled, this parameter has no effect.

2.4.6.4 All Zones Isolated Mode (Standby Operation)

By default, the Standby relay will de-energise if all zones are isolated. This may be disabled if allowed by the local Fire Brigade.

2.4.6.5 Brigade Test Relay Activate

This parameter selects whether the MAF alarm relay operates for a Brigade Test.

With an AS1603.4 type keypad there is a dedicated Brigade Test key. With an AS4428.1 keypad, a brigade test can be initiated via the TEST key menu. The operation of the MAF alarm relay for a Brigade Test is disabled by default.

If an output logic equation is programmed for the Alarm relay, then the equation must include the BGT token if Brigade Test should operate the alarm relay.

For network systems, if the "brigade test relay activate" parameter is enabled then this also means that the MAF status transmitted onto the network will include a brigade test state of TRUE when a local (or RDU) brigade test is done. If the "brigade test relay activate" parameter is disabled then the brigade test state transmitted onto the network is always FALSE. If a brigade test state of TRUE is received from another panel on the network and this panel is programmed to use the MAF status of that panel, then the local MAF alarm relay and LED will operate regardless of the programming of the local brigade test parameter (unless the alarm relay is controlled by output logic).

2.4.6.6 Printer setup

The printer setup menu options are:

1:Lines per page; 2:Baud Rate; 3:Print relay controls; >

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

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

The right arrow key gives a further menu:

1:Event printer enable/disable; 2:Select print evt; 3:Select history evt

Option 1 allows event printing to be enabled or disabled. When event printing is disabled no events at all are printed and the size of the history queue is doubled if history is stored in RAM rather than non-volatile flash memory.

Options 2 and 3 allow the selection of which types of events are to be printed and logged to history. There are six different types which can be individually enabled or disabled, and these are shown as

1:Zone 2:System 3:Sys run 4:Cct 5:Pnt 6:Relay

Numeric keys 1 to 6 are used to enable or disable each type. A 'Y' character is shown if the type is enabled and 'N' for disabled.

1. Zone events include zone alarm, reset, isolate etc.
2. System events include "system test passed", "system power up" etc and all events which are not one of the other 5 types.
3. Sys run (system running) is for the daily "auto test passed" event (or for network systems the daily "system running" event).
4. Cct (circuit events) applies only to network systems
5. Pnt (point events) applies only to network systems.
6. Relay events include local ancillary and module relay events such as isolate, fault, operate test, and (de)activate. If relay events are enabled then local relay activate and relay deactivate events may be separately disabled (using the "Print relay controls" option as described in the previous menu). For network systems, module relay and ancillary relay events are sent onto the network as zone events and hence the printing and history logging of them is controlled by the zone type option and not the relay event type option. However, it is possible to disable the transmission of relay activate and deactivate events onto the network - refer to section 4.8 the networking chapter.

2.4.6.7 Daylight Saving Start/End

This allows the selection of a date, time, and a time difference for the start and end of daylight saving to allow the panel to automatically set the time forward or back. The programming of the start and end is identical and is described jointly here. At the programmed start date/time the time will be put forward by the programmed start time difference and at the programmed end date/time the time will be put back by the programmed end time difference.

Daylight saving starts and ends on different dates and times, depending on the country and state the FIP is located in.

The following table indicates suitable settings:

COUNTRY/STATE	ENABLED	FORWARD			BACKWARD		
		MONTH	SUNDAY	HOUR	MONTH	SUNDAY	HOUR
NSW, ACT, VIC, SA	Y	10	1	2	4	1	3
TAS	Y	10	1	2	4	1	3
NZ	Y	9	L	2	4	1	3
WA	N	10	L	2	3	L	3
NT, QLD (2)	N	-	-	-	-	-	-

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

There are two menus used to program daylight savings settings. To swap between the two menus the right arrow/left arrow keys are used. The first menu gives options of 1:month; 2:hour; 3:minute; 4:day.

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

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

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

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

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

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

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

2.4.6.8 Mains/Battery Options

1. Mains Frequency

The mains frequency can be selected as either 50Hz or 60Hz.

2. Mains fail = fault after 8 hours

The options for this are 1:Yes 2:No 3:Mains disabled.

If this option is enabled, then fault will be signalled when mains has been failed continuously for 8 hours. This option also allows mains to be selected as "disabled". If the panel is externally DC powered then mains disabled should be selected.

3. Battery Options

a. Battery low monitoring.

If enabled, a fault is signalled when a battery low occurs. For a slim-line NDU with no MAF board, the battery very low threshold is used as the battery low threshold. Battery low monitoring and battery connection tests are required for AS4428.1.

b. Battery connection test.

If enabled, the battery connection will be checked every 30 seconds by reducing the charger voltage.

c. Hourly battery capacity test.

If enabled, a 60 second battery test will be done automatically on the hour.

d. Daily battery capacity test.

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

4. Charger fault monitor

If enabled, a fault is signalled when the charger is high or low. A charger low condition must be present continuously for 60 seconds before a fault is signalled. Charger low is ignored for 30 minutes after a battery capacity test. If the charger fault monitoring parameter is disabled, a charger fault will still be indicated on the charger LED and in system fault recall.

2.4.6.9 Door-switch

This option appears only for an ADU. Refer to section 6.5.4.

2.4.6.10 Keys Enable

Each key on the keypad may be enabled or disabled for each of four operating states.

A use for this feature might be to disable specific keys, such as External Bell Isol or Warning System Isol, when they are not required, or to disable RESET and ISOL keys in FF mode so that the user cannot reset or isolate the alarms. Another use is for an NDU to have selected keys enabled when the door is closed.

The four operating states and the default key enablements for F3200/NDU are:

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

For the NSA, the default setting is all accessible keys enabled for both door closed and door open. For the Compact FF, all accessible keys are enabled only when the door is open.

"FF mode" refers to when the FF alarm list is being displayed. When FF mode is active, the principal keys used are those enclosed in the red border on the keypad - ACK, RESET, ISOL, NEXT, PREV, WARNING SYS ISOL, and EXTERNAL BELL ISOL.

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

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

Note that disabling a particular key does not prevent a particular function from being done another way. For example, if the ISOL key is disabled a zone can still be isolated by pressing the ZONE key from the base display and using the menu option. Enabling RECALL, NEXT, PREV, CLEAR, ACK and NUMERIC keys and disabling ZONE, ISOL, RESET, RELAY, TEST, ALARM TEST, and FAULT TEST keys allows recall of information without allowing reset, isolate, test or programming functions.

Enabling the SET key allows the time and date to be set, but also allows access to the "boards present" function which may not be desirable.

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

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

2.4.6.11 Remote Sounder Silence

Selecting this option shows a menu of:

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

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

If "all commands" is set to yes then all zone reset and isolate commands sent to this panel will silence the buzzer.

Pressing the right arrow key from the above menu shows the following menu.

Global network sounder silence

1:Any Key Tx 2:Cmd Tx 3:Receive

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

2.4.6.12 Buzzer Mode

Selecting the "Buzzer Mode" option shows the following menu. (For an ADU with RZDU connection, refer also to section 6.5.6.5).

Buzzer enable 1:Zone alarms 2:Zone faults 3:System faults >

Pressing right arrow shows more buzzer options

1:Buzzer sound for non-maf zone faults 2:Fault sounder after 8 hours fault >

Pressing right arrow again shows

1:Fault sounder after 8 hours isolate 2:Set 8 hour period in 6 minute units

Pressing right arrow again shows

1:Buzzer operates in loud mode when door/keyswitch is open/enabled

In addition to the options listed below, there are options that can be programmed for individual SIDs and zones that affect buzzer activation. Refer to section 3.4.1.1 (Zones) and section 4.4 (SIDs). For the ADU, refer also to section 6.7.5.

1. Zone alarms, zone faults, system faults

These options determine whether the buzzer sounds for zone alarms, zone faults or system faults.

2. Buzzer sound for non-MAF zone faults

This selects whether a fault on a non-MAF zone should cause the fault buzzer to come on.

3. Fault sounder after 8 hrs fault

Enabling this means the buzzer will be re-activated 8 hours after it was silenced if the fault is still present. AS4428.1 requires this to be enabled.

4. Fault sounder after 8 hrs isolate

If this is enabled, the fault buzzer is activated if an isolate state (zone or relay) has been present for 8 hours with no operator intervention. AS4428.1 requires this to be enabled.

5. Set 8 hr period in 6 minute units

A value from 0 to 255 can be set. A default value of 80 selects a time of 8 hours for the buzzer re-activation period described above.

6. Buzzer operates in loud mode when door/keyswitch is open/enabled

This option allows selection of quiet or loud mode for the buzzer when the door is open. This is particularly for slim-line NDUs where the door may be open (keypad enabled) all of the time. The default setting is quiet mode.

2.4.6.13 New Zealand Mode

This option is available for only an NDU or ADU.

The programmable options that are specifically for New Zealand mode are described in Chapter 5, and are as follows:

1. New Zealand mode enabled Y/N
2. Display bd Y/N
3. Evac defect is fault Y/N
4. External defect is fault Y/N

For an NDU, when the New Zealand mode setting is changed (enabled or disabled), a number of other parameters are changed automatically as shown in the table below.

For an ADU, changing the “New Zealand” mode setting from enabled to disabled or vice versa, does not result in any other parameters being changed. For the Compact FF version of the ADU, the buzzer options should be set as required, and are not changed automatically.

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

The default settings for Australian operation are required for AS4428.1 compliance.

2.5 F3200/NDU/ADU PROGRAMMABLE PARAMETER LIST

The following table lists all of the programmable parameters other than those relating to network operation. For Panel-link network related parameters, refer to section 4.12.

TABLE 2.5.1
PROGRAMMABLE PARAMETERS (NON-NETWORK)

Parameter	Options	Default value	Refer
GENERAL			
Operating mode	F3200 / NDU	"F3200" if any modules present, otherwise "NDU"	2.4.2
Site text	40 characters		2.4.5
Fault action text	40 characters	Contact your service company	2.4.5
Access codes users 0 - 9		User 0, access code 000000	2.4.4
Tandem mode password	12 characters	FIRES	2.4.5
HARDWARE SETTINGS			
MAF Board	Enable/disable	According to hardware	3.1
AZC Modules	0 - 8	According to hardware	3.1
Relay Modules	0 - 8	According to hardware	3.1
LED Display boards	0 - 33	According to hardware	3.1
Max LEDs on	1 - 240	240	3.1
Keypad type	AS4428.1 AS1603.4	AS4428.1	2.4.2
FIP MCP	Enable/disable	Enabled for F3200, maps to zone 1. Disabled for the ADU.	2.4.6.2
MISCELLANEOUS OPTIONS			
Legacy bells	Disable Warning system External bell	Disable	2.4.3
All zones isolated operates standby	Enable/disable	Enabled for F3200. Disabled for the ADU.	2.4.6.4
Warning system maps to MAF	Yes / No	Yes	3.6.4
External bell maps to MAF	Yes / No	Yes	3.6.4
Brigade test relay activate	Enable/disable	Disable	2.4.6.5
LOGIC EQUATIONS			
		Default equations are WSA=ZWA+WST+ITA WSF=AR3F EBA=ZBA+EBT EBF=AR2F AR3=WSO AR2=EBO	3.5
FF OPTIONS			
FF Zones	MAF MAF & non MAF	MAF	2.4.6.3
FF RDU remote ack	Enable/disable	Enabled	2.4.6.3
FF Auto ack	Enable/disable	Disabled	2.4.6.3
FF Display cause by default	Enable/disable	Disabled	2.4.6.3
Flash non-maf alarm LEDs	Enable/disable	Disabled	2.4.6.3
Send non-MAF alarms to RDU	Enable/disable	Disabled	2.4.6.3
New cause new alarm	Enable/disable	Disabled	2.4.6.3
Multiple cause updates	Enable/disable	Enabled	2.4.6.3
Switch to newest alarm	Enable/disable	Disabled	2.4.6.3

Parameter	Options	Default value	Refer
Show zone number in FF	Enable/disable	Enabled for F3200. Disabled for ADU.	2.4.6.3
Show isolated alarms in FF	Enable/disable	Enabled for F3200. Disabled for ADU.	2.4.6.3
Show point text in FF for zone	Enable/disable	Disabled	2.4.6.3
BATTERY/ MAINS/ CHARGER OPTIONS			
Mains frequency	50 Hz; 60 Hz	50 Hz	2.4.6.8
Mains fail is fault after 8 hours	Yes/ No/ Disable	No (not a fault)	2.4.6.8
Charger high/low monitoring	Enable/disable	Enabled if MAF bd present	2.4.6.8
Battery low monitoring	Enable/disable	Enabled	2.4.6.8
Battery connection monitoring	Enable/disable	Enabled if MAF bd present	2.4.6.8
Battery hourly test	Enable/disable	Enabled if MAF bd present	2.4.6.8
Battery daily test	Enable/disable	Enabled if MAF bd present	2.4.6.8
BUZZER OPTIONS			
Alarm buzzer	Enable/disable	Enabled	2.4.6.12
Zone fault buzzer	Enable/disable	For F3200, enabled if Australian mode. For the ADU, disabled.	2.4.6.12
System fault buzzer	Enable/disable		2.4.6.12
Fault sounder after 8 hours fault	Enable/disable		2.4.6.12
Fault sounder after 8 hours isolate	Enable/disable		2.4.6.12
Non-maf zone fault buzzer	Enable/disable	Disabled	2.4.6.12
Fault re-sound period	0 - 255, units 6 minutes	80 (8 hours)	2.4.6.12
Buzzer operates in loud mode when door open	Yes / No	No	2.4.6.12
REMOTE SOUNDER SILENCE OPTIONS			
Sysflt reset	Enable/disable	Enabled	2.4.6.11
FF actions	Enable/disable	Enabled	2.4.6.11
All commands	Enable/disable	Disabled	2.4.6.11
Global network sounder silence - any key	Enable/disable	Enabled	2.4.6.11
Global network sounder silence - command tx	Enable/disable	Enabled	2.4.6.11
Global network sounder silence - receive	Enable/disable	Enabled	2.4.6.11
EVENT LOGGING OPTIONS			
Event printer output	Enable/disable	Enabled	2.4.6.6
Print relay controls	Enable/disable	Enabled	2.4.6.6
Printer lines per page	0 – 250	60	2.4.6.6
Printer baud rate	300 – 9600	9600	2.4.6.6
Event types to print	Zone System Sys running Circuit Point Relay	All enabled	2.4.6.6

Parameter	Options	Default value	Refer
Event types to log to history	Zone System Sys running Circuit Point Relay	All enabled	2.4.6.6
AUTO OPERATION OPTIONS			
Auto test start time	00:00 to 24:00	09:00	2.4.6.1
Auto-test test alarm	Enable/disable	Disabled	2.4.6.1
Auto test inhibit dates		Stat holidays, weekends	2.4.6.1
Daylight saving start options	Month, Hour, Minute, Day	As for NSW - First Sunday in October at 2 a.m. For New Zealand - Last Sunday in September	2.4.6.7
Daylight saving end options	Month, Hour, Minute, Day	As for NSW/ NZ - First Sunday in April at 3 a.m.	2.4.6.7
RZDU MASTER OPTIONS (Not for the ADU)			
Protocol type	LCD; Non LCD	LCD	3.7
For RZDUs 1 - 8	Enable/disable Protocol A or B MCP zone	All disabled A 1	3.7
KEYPAD KEY ENABLE OPTIONS			
Door open FF mode	Enable/disable	All 40 keys enabled	2.4.6.10
Door open non FF mode	Enable/disable	All 40 keys enabled	2.4.6.10
Door closed FF mode	Enable/disable	All 40 keys disabled	2.4.6.10
Door closed non FF mode	Enable/disable	All 40 keys disabled	2.4.6.10
		For the NSA, all accessible keys are enabled in all modes. For the Compact FF, accessible keys are enabled when the door is open.	
AZC CIRCUIT OPTIONS			
AZC Mode	1 Standard 2 Hi current 3 Lo current 4 Tamper 5 Disabled	Standard	3.2
AZC Delay type	1 Std 2 AVF/RAD 3 SAD 4 Delay 5 NonLat	Std	3.2
Voltage band B1 (0 - 3V)	1 Inst alarm 2 Alarm 3 Normal 4 Fault	Inst alarm	3.2
Voltage band B2 (13 - 17.5V)	1 Inst alarm 2 Alarm 3 Normal 4 Fault	Inst alarm	3.2
AZC Delay time D1	0 - 250 seconds	0	3.2
AZC Delay time D2	0 - 250 seconds	0	3.2
Alarm text Instant alarm text	Smoke,Heat,FSW, MCP,VMD,PSW SPR,SIP,flame	Alarm text = Smoke Instant alarm text = MCP	3.2

Parameter	Options	Default value	Refer
ZONE OPTIONS			
Zone name	30 characters		3.3
Latching/ non latching	Enable/disable	Latching	3.3
Mapped to MAF	Enable/disable	Mapped	3.3
Mapped to ANC1	Enable/disable	Mapped	3.3
Mapped to External Bell	Enable/disable	Mapped	3.3
Mapped to Warning System	Enable/disable	Mapped	3.3
RELAY OPTIONS (Module Relays & Ancillary Relays 1,2,3) (Not for the ADU)			
Supervision	Enable/disable	Enabled	3.6
Latching	Enable/disable	No	3.6
Map to MAF	Enable/disable	Yes	3.6
Map to LED (not for ancillaries)	1 to 528	Consecutive	3.6
Isolatable	Enable/disable	Yes	3.6
Testable	Enable/disable	Yes	3.6
Supervise activated state	Enable/disable	Yes	3.6
Logic equation		AR2 = EBO AR3 = WSO	3.6
Mode Door holder/ Load (anc1 & anc2 only)	Door holder/ Load	Anc1 - door holder Anc2 - load	3.6
Text names for module relays	30 characters		3.6
Ancillary 1 text name	30 characters		3.6
Ancillary 2 text name	30 characters	ANC 2 External Bell Output	3.6
Ancillary 3 text name	30 characters	ANC 3 Warning System Output	3.6
ALARM TEXT NAMES			
Alarm text	Nine 6 character strings	Smoke, Heat, FSW, MCP, VMD, PSW, SPR, SIP, flame	2.4.5
FF ZONE OPTIONS			
Global settings & Individual zone or zone range settings	MapFF, AlrmSndr MultiAlm, AckTX AckRX, LocAck ResetFF, IsoIFF	For F3200/NDU : No individual zone settings. Global settings are all disabled.	3.4
ADU in RZDU mode also has these options	Hide, Log, Total, Alarm test, Fault test, Output zone	For the ADU : No individual zones. Global settings : all items are enabled except for AckRX, Hide, Output zone.	3.4
ZONE LED MAPPING OPTIONS (Not for the ADU)			
Local zone to LED mapping		One to one mapping of zones and module relays to LEDs. Zone 1 maps to LED 1. Zone nn maps to LED nn.	3.3.4
Network zone to LED mapping		None assigned.	3.10
Local LEDs show any alarm	Yes/ No	Yes	3.10
Local LEDs show any fault	Yes/ No	Yes	3.10
Local LEDs show any isolate	Yes/ No	Yes	3.10
Local LEDs show partial isolate	Yes/ No	Yes	3.10
RZDU output data	Zone status LED status	For F3200 - Zone status For NDU - LED status	3.10
RZDU output show any alarm	Yes/ No	Yes	3.10
RZDU output show any fault	Yes/ No	Yes	3.10
RZDU output show any isolate	Yes/ No	Yes	3.10

Parameter	Options	Default value	Refer
NEW ZEALAND MODE OPTIONS			
NZ mode	Enable/disable	Enabled if display extender board is present.	2.4.6.13
Display extender board	Enable/disable	Enabled if installed	2.4.6.13
Evac defect fault	Enable/disable	Enabled if NZ mode	2.4.6.13
External defect fault	Enable/disable	Enabled if NZ mode	2.4.6.13
ADU SYSTEM OPTIONS			
Operating mode	NSA / Compact FF	NSA	6.5.3
General Input 3 is door-switch	Enable/ disable	Disabled	6.5.4
Connection type	RZDU/ Panel-link	Panel-link	6.5.6
ADU SYSTEM OPTIONS WHEN CONNECTION TYPE IS RZDU			
Address	1 – 8	0	6.5.6.1
FF mode	AS4428.1 / AS1603.4	AS4428.1	6.5.6.1
Legacy bells	Warning System, External bell, Disabled	Disabled	6.5.6.1
Mimic mode	Enable/disable	Disabled	6.5.6.1
Protocol type	LCD-A Non-LCD	LCD-A	6.5.6.1
MCP connected (Gen. Input 1)	Enable/disable	Disabled	6.5.6.3
Capture remote time/date	Enable/disable	Enabled	6.5.6.3
Capture FIP zone names from alarms	Enable/disable	Disabled	6.5.6.3
Common LEDS show local status; FIP status	Enable/disable	Local	6.5.6.3
Warning System isolate	Passon/follow/ local	Passon/follow	6.5.6.3
External Bell isolate	Passon/ follow/ local	Passon/follow	6.5.6.3
Follow FIP alarm buzzer	Passon/disable	Disabled	6.5.6.5
Follow FIP fault buzzer	Enable/disable	Disabled	6.5.6.5
ADU FF OPTIONS WHEN CONNECTION TYPE IS RZDU			
FF alarm source	LCD messages LED messages Both LED & LCD	LCD messages	6.5.6.2
Global commands - ack, reset, isolate	Enable/disable	All disabled	6.5.6.2
FF Display cause by default	Enable/disable	Disabled	6.5.6.2
New cause new alarm	Enable/disable	Disabled	6.5.6.2
Multiple cause updates	Enable/disable	Enabled	6.5.6.2
Switch to newest alarm	Enable/disable	Disabled	6.5.6.2
Show zone number on FF display	Enable/disable	Disabled	6.5.6.2
Show isol alarms in FF	Enable/disable	Disabled	6.5.6.2
Show point text in FF for zone	Enable/disable	Disabled	6.5.6.2

TABLE 2.5.1
PROGRAMMABLE PARAMETERS (NON-NETWORK)

2.6 ERROR MESSAGES DURING FIP CONFIGURATION

Listed below are some error messages that can appear on the LCD during installation. Refer also to the F3200 Operator Manual LT0250 Section 6.6 System Fault Recall and Section 6.16 Error & Event Messages for a complete list and description of error and event messages.

Error messages that can occur on start-up

"Shift reg clocking fault"

"Invalid # shift regs.Total # regs=xxx # input regs=xxx"

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

"Shift reg driver fault"

This message indicates a problem with the software driver for the shift register bus.

"Clock crystal timebase check fail"

"Clock chip ram write read fail"

"Clock register write read fail"

"Clock startup fault"

These messages indicate a hardware fault on the Controller.

"Firmware checksum fail"

"Eprom CRC fail"

These messages indicate the checksum of the software program code is incorrect. This can be caused by a damaged/corrupted memory chip or some other hardware fault on the controller.

Error messages that can occur on entry to program mode

1. "Flash database version error Must reinit or reload database."

This message appears on entry to program mode and indicates that the database was created with a different version of software and cannot be used. This message does not appear if the database checksum is incorrect so it indicates the database is valid but incompatible with this software version. F3200 is able to convert some older versions of database to the latest version when a database is loaded so it may be that saving and re-loading the database will result in the database being converted.

2. "WARNING-the database in flash is invalid. Recommend save->PC before save to flash"

This message appears on entry to program mode if the database checksum is incorrect.

Error messages that can occur on exit from program mode

1. "Flash database checksum fail. Processing is disabled."

This indicates the database checksum is invalid and the panel is non-operational. A "DBASE CHKSUM ERROR" event is also logged.

2. "History queue is being cleared"

This indicates that the size of the history queue has been decreased to enable the print queue. This occurs when the programmable option to enable or disable event printing is changed from disable to enable. When event printing is disabled, the history queue uses the memory normally used for event printing.

3. **“Shift reg clocking fault”**
“Invalid # shift regs.Total # regs=xxx # input regs=xxx”
“Shift reg driver fault”
This indicates a hardware fault
4. **"Processing disabled."**
If a shift register fault occurs (as listed above), then this message will also appear to indicate the panel is non-operational.
5. **"Not all modules present."**
This message indicates that some modules have temporarily been configured as "not present". This is a configuration setting that is not part of the configuration database and is selected using the "Bds present" menu accessed by pressing the SET key from the base display. The panel is partially operational .
6. **"Display module mismatch."**
This indicates the number of connected display boards does not match the database configuration parameter. A Brigade Fault is signalled.
7. **"Module error. Processing halted."**
This indicates the wrong number of zone and relay modules is connected. The panel is non-operational.
8. **"WARNING programmed number of azc & relay modules is invalid."**
This indicates that the values in the database for the number of modules are invalid e.g. they exceed the maximum number of allowed modules. The panel is non-operational.

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3 PROGRAMMING SYSTEM CONFIGURATION

3.1 SYSTEM CONFIGURATION MENU

The System Configuration menu is Option 4 in the Program base menu as shown in Figure 2.1.2 for an F3200/NDU and Fig 6.3 for an ADU. The menu includes the following:

1:AZC 2:Zones 3:Modules 4:Output Logic 5:Relays 6:RZDU 7:Network

The network option is described in Chapter 4. Fig 3.1.1 shows all of the other programmable items accessible from the System Configuration menu. AZC refers to Alarm Zone Circuits.

When initially programming a new FIP, Fig 3.1.1 may be used as a flowchart. Working from top to bottom, left to right, on first Fig 2.1.2 and then Fig 3.1.1, the entire database can be programmed.

The Modules option should be used to assign the number of AZC and Relay modules before configuring AZCs, Zones or Relays.

CONFIGURING MODULES

Option 3: Modules allows the assignment of the number of AZC/zone and relay modules, the number and type of LED display boards and whether the MAF/PSU board is installed. The display shows the number of modules programmed followed by the number of modules actually installed and normally these are the same. The menu which appears is

1:AZC 2:Relay 3:More

Select: 1:AZC - to change the number of 8 Zone Modules.
 2:Relay - to change the number of 8 Relay Modules.
 3:More - to see additional options.

Setting the number of AZC or Relay modules

When the number of AZC or Relay modules is changed, a warning message appears on the LCD to indicate that changing these values affects other data. The "other data" that is affected refers to zone text names and the mapping to zone LEDs, because these are shared between zones and relays.

When the number of AZC or Relay modules is increased, the associated AZCs, zones or relays are assigned default settings. Refer to section 3.2 regarding the configuring of AZCs; section 3.3 for configuring zones and section 3.6.3 for module relay configuration.

Modules option 3:More

Option 3:More produces the following menu.

1:MAF Board 2:LED Display bds 3:MAX LEDs on 4:Display board type

Option 1 (MAF Board) allows selecting whether a MAF board is installed. For F3200, a MAF board is required but for the NDU, it is optional.

Option 2 (LED Display bds) allows the setting of the number of zone LED display boards (0 - 33) that are connected. A non-networked F3200 would normally not need more than four LED display boards because it has a maximum of 64 zones/relays, but a networked F3200/NDU can display zone states received from other panels.

Option 3 (MAX LEDs on) allows the setting of the max number of zone LEDs that can be on simultaneously. This is to limit the maximum current that is used driving LEDs. The default value is 240 and the maximum value is 240.

Option 4 (Display board type) allows configuring the type of each LED display board. LED boards are configured in ranges. Enter the first board (1-33) and the last board (1-33) in the range to be configured. The following options can be configured for each board.

1:Share Iso/Fault 2:LED Columns 3:Relay type board

A two column board has two columns of LEDs; a red column (for alarm) and an amber column (for fault/isolate). A three column board has a red column and two amber columns. The left-hand amber column indicates fault and the right-hand amber column indicates isolate.

Option 1 (Share Iso/Fault) allows the selection of whether the amber isolate/fault LED should be shared between fault and isolate. On a "two column" board, the amber LED is normally shared and on a three column board it is normally not shared.

Option 2 (LED Columns) allows the selection of whether the board is a 2 column or 3 column type.

Option 3 (Relay type board) allows selection of whether the board has relays on it. For a board that is configured as "relay type", the alarm LEDs never flash and the board is not tested during an LED display test.

LED Phasing

When phasing occurs, six boards at a time show the correct state of their LEDs and the other boards are all off. Every 3 seconds, the "window" moves by one position. Hence a minimum of seven boards must be present for any phasing to occur. Any boards which are programmed as "relay type" will always show their true state. Phasing does not affect the LED data transmitted out of the RZDU port.

F3200 PROGRAMMING MENU
 SYSTEM CONFIGURATION

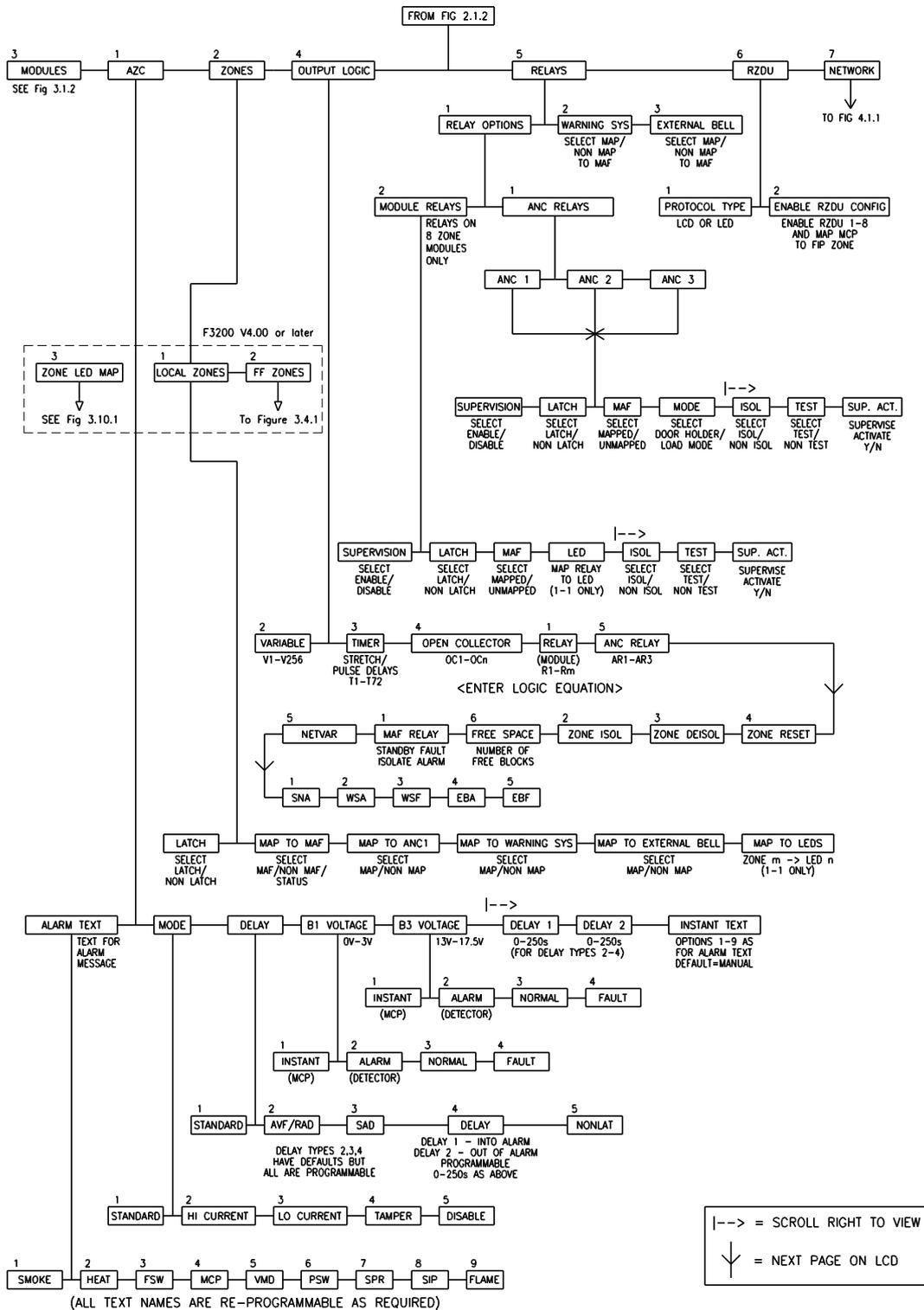


FIG 3.1.1 PROGRAMMING MENU
 FOR SYSTEM CONFIGURATION

F3200 PROGRAMMING MODULES MENU

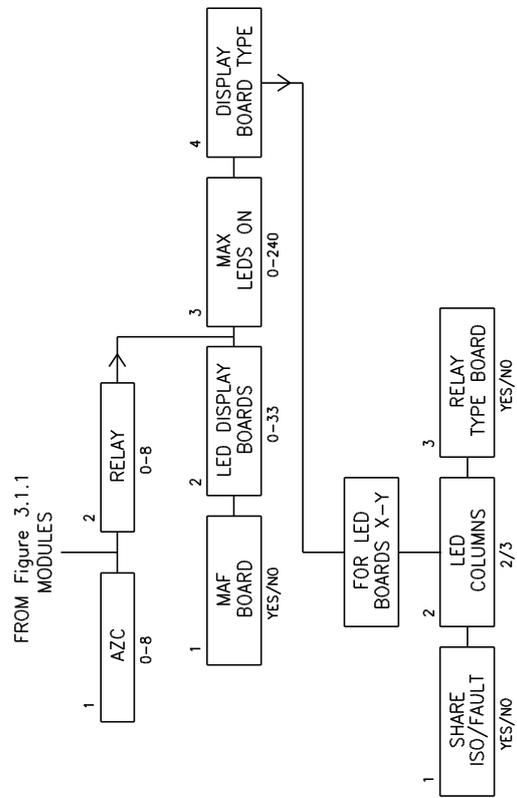


Figure 3.1.2 F3200 PROGRAMMING MODULES MENU

3.2 CONFIGURING CIRCUITS (AZCS)

3.2.1 GENERAL

When the configure AZC option is selected, the LCD shows AZC 01, or the last AZC programmed. For the selected AZC, the LCD shows a list of attributes which can be programmed, and the option that is currently selected for that attribute. The list may be stepped through using the ◀ ▶ keys. As each attribute is selected, the options for it are displayed on the bottom line.

```
AZC 01:AlmTxt 1;Mode 1;Delay 1;B1 1;B3 1  
and  
AZC 01:Delay1 0 ;Delay2 0 ;InsTxt 4
```

The attributes that can be configured are:

Alarm text type; Mode; Delay; Voltage Band B1; Voltage Band B3; Delay 1; Delay 2; Instant alarm text type.

When all the attributes have been configured for the selected AZC, the new settings must be saved to the database by pressing the ACK key. The NEXT and PREV keys can be used to step to the next or previous AZC. The values that can be set for each attribute are described in the following sections.

3.2.2 AZC ALARM TEXT

The Alarm text (detector type) selected is displayed on the LCD as part of the zone status. If an AZC has both smoke detectors and MCPs on it, then the alarm text is normally programmed as Smoke and the Instant Alarm text is programmed as MCP.

A detector operated alarm will be displayed as a "Smoke" alarm, but an AZC Instant Alarm will be displayed as an "MCP" Alarm.

All nine of the alarm texts are programmable as described in Section 2.4.5. The default alarm text is "Smoke".

3.2.3 AZC MODE

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

Select the correct mode for the particular type of detectors being used on the AZC (refer to the installation manual for detector type information).

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

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

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

Mode 3	Low Current 680 Ohm pull up resistor to +22V supply. 10k EOL. Suits high resistance, low current circuit e.g. sub-indicator panel monitoring.
Mode 4	Tamper 680 Ohm pull up resistor to +22V supply. Requires EOL002Z active EOL. Suits supervision of "tamper-protected" sprinkler valves.
Mode 5	Disabled Current limit and pull up disabled. No EOL required. Suits unused AZCs (saves quiescent current).

3.2.4 AZC DELAY TYPE

AZC delay type allows the selection of how an alarm is processed for the circuit. In addition to the delay type, two delay values Delay1 (into alarm delay) and Delay2 (out of alarm delay) can be assigned. The delay types that can be selected are : 1: Std, 2: AVF/RAD, 3: SAD, 4: delay, 5: NonLat

Type 1 Std

For the Std type, the delay into alarm is always 2.0 to 2.5 seconds and the delay times D1 & D2 are ignored.

Types 2,3 AVF/RAD & SAD

AVF is Alarm Verification Facility; RAD is Return Air Detector; SAD is Supply Air Detector. The AVF sequence is described in detail further below. For type 2 (RAD), an AVF reset always occurs, with timing determined by delay D1. For type 3 (SAD), by default, no AVF reset occurs, but if the into alarm delay D1 is made non-zero, then an AVF reset occurs and the behaviour is the same as type 2 AVF/RAD. For the SAD type, the detectors used are normally physically non-latching and the zone is configured as non-latching

Type 4 delay

This is intended for use with flow-switches. The zone is normally configured as non-latching.

Type 5 NonLat

Type 5 provides "non-latching" behaviour for use with latching supply air detectors (e.g., 614P). Reset is automatically applied to the circuit as soon as an alarm is recognized so that the zone will go out of alarm automatically when smoke clears. If the smoke detectors used are physically non-latching, then type 3 (SAD) can be used instead. The zone should be configured as non-latching. MCP/Call-points are not allowed on this type of circuit. If the circuit goes back into alarm before the "out of alarm" delay has expired, the circuit will be reset again and will be repeatedly reset until it stops indicating alarm.

Alarm processing

A circuit must be in an alarm state continuously for the length of the into alarm delay, for an alarm to be signalled. For a smoke detector alarm, the delay into alarm is determined by the delay type selected and the values programmed for Delay1 (D1 - into alarm delay) and Delay2 (D2 - out of alarm delay). For an MCP/Call-point "instant" alarm, the delay into alarm is always 2.0 - 2.5 seconds, except when the delay type is configured as "delay" (option 4) and the into alarm delay is set to zero, in which case the delay into alarm is 0.2 to 0.8 seconds (refer to the table below). The following table shows how each type of circuit is processed for different values of the into alarm delay (D1) and the out of alarm delay (D2).

<u>Delay Type</u>	<u>Delay into alarm</u>	<u>Delay out of alarm</u> (applies to Cct not zone)
1 Std	Instant Alarm 2.3 Detector Alarm 2.3	2.3 2.3
2 AVF/RAD	Instant Alarm 2.3 Detector Alarm - AVF sequence using D1.	2.3 D2 (min. 2.0 secs)
3 SAD	Instant Alarm 2.3 For into alarm delay D1 of zero Detector Alarm 2.3 For non-zero into alarm time Detector Alarm - AVF sequence using D1.	2.3 D2 D2
4 Delay	Behaviour depends on D1 "into alarm time" For non-zero into alarm time Instant Alarm 2.3 Detector Alarm 2.3 + D1 For into alarm time of zero Instant alarm .2-.8 seconds Detector Alarm .2-.8 seconds	2.3 D2 .2-.8 seconds D2 + .2
5 NonLat	For zero into alarm time D1 Detector alarm 2.3 For non-zero into alarm time D1 Detector alarm - AVF sequence using D1	D2 D2

Default Settings for delay times D1, D2

The default settings for the into alarm delay and out of alarm delay are shown below.

<u>Delay Type</u>	<u>D1</u>	<u>D2</u>
1 Std	Not used	Not used
2 AVF/RAD	11	0 (2.3)
3 SAD	0	65
4 DELAY	30	0 (2.3)
5 NonLat	0	65

All times are in seconds.

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

Type 4 circuit with into alarm delay of zero

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

AVF Sequence

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

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

If the detector re-operates in the following 150 seconds then an alarm is generated immediately. If a second alarm does not occur before the end of the 150 second period, then the sequence restarts.

Reset Delay

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

3.2.5 AZC VOLTAGE BANDS

The F3200 monitors the AZC voltage and decides the circuit status on the basis of which one of 5 voltage bands it is in, as shown in Table 3.2.1.

Voltage band B2 (3V to 13V) always generates Alarm (detector operated). B1 (0V to 3V) and B3 (13V to 17.5V) are programmable as to whether they generate Instant Alarm (MCP operated), Alarm (Detector Operated), Normal or Fault.

This allows:

1. Detectors with high alarm voltages (13V to 17.5V) to be used by programming B3 to be Alarm (detector operated);
2. High current mode to be used on detectors with resistive bases (e.g. for LED brightness, remote LED) even though this may increase alarm voltage above band B2 if the LED was to become disconnected;
3. MCPs to be used with a 15V Zener diode (program B3 to be Instant Alarm) so that MCP operation does not reset an operated detector.

Notes

1. Point 3 above allows operation of a time delay (e.g. AVF) on the detectors, while MCPs cause an Instant Alarm (i.e. 2 second delay only).
2. If two devices with different Alarm voltages on the same circuit both operate, then the one with the lowest Alarm voltage will determine the voltage (and hence state) of the AZC. E.g. for MCPs wired to short a detector circuit, MCP operation will cause the AZC to see voltage band B1.

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

3. When testing operation of detectors with In-Situ Test mode (previously known as auto-reset mode), the voltage state of the AZC (B1, etc) is continuously displayed on the LCD. Refer to the Operators Manual.
4. For a circuit with a "delay type" of non-latching, MCP/call-points are not allowed on the circuit so instant alarm cannot be selected for bands B1 or B3.

Voltage bands and their interpretation for modes 1, 2 and 3 are shown in Table 3.2.1.

<u>Band</u>	<u>Voltage</u>	<u>Condition</u>	<u>Default State</u>
B5	21-22V	Fault (Open Circuit)	Fault (Open Circuit)
B4	17.5-21V	Normal	Normal
B3	13-17.5V	Programmable	Instant Alarm (MCP)
B2	3-13V	Alarm (Detector Operated)	Alarm (Detector Operated)
B1	0-3V	Programmable	Instant Alarm (MCP)

TABLE 3.2.1
AZC VOLTAGE BANDS FOR MODES 1-3

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

3.3 CONFIGURING LOCAL ZONES

3.3.1 GENERAL

When the "Zones" option is selected from the main system configuration menu, the following menu appears.

1:Local zones 2:FF zone options 3:Zone LED mapping

Option 1 Local zones is discussed in this section. Option 2 FF zone options is described in section 3.4. Option 3 Zone LED mapping is described in section 3.10

When option 1 Local zones is selected, the following items can be configured for each local zone. Default values are shown in parentheses.

Latching/non latching	(Latching)
MAF/non MAF/Status only	(MAF)
Map to ANC 1	(Mapped)
Map to External Bell	(Mapped)
Map to Warning System	(Mapped)
Map to LED	(Mapped)

For a zone configured as latching, if an alarm or fault occur on the circuit and subsequently clears, the zone remains in alarm or fault until an operator reset is applied to it. For a reset initiated from the FF alarm list, only the alarm state on the zone is un-latched. A fault state is un-latched only when a zone reset is initiated from outside the FF alarm list.

A non-latching zone returns to normal automatically when the circuit returns to normal. It is therefore meaningful only when used with a non-latching detector, e.g. as is used in some air conditioning ducts, or flow switches or when the delay type selected for the AZC is the "NonLat" type which initiates an automatic reset when a circuit goes into alarm.

3.3.2 MAPPING TO MAF

Mapping to the MAF offers 3 options as follows:

1. Mapped to MAF
2. Not mapped to MAF
3. Status Only

A zone mapped to the MAF causes the Brigade relays (Alarm, Fault, Isolate) to turn on for the corresponding condition on the zone and the zone will be entered into the FF alarm list for alarm.

A zone not mapped to the MAF does not operate the brigade relays, and alarms will be entered into the FF alarm list only if the "FF zones" setting is selected as "all zones". Refer to section 2.4.6.3.

A zone programmed as "Status Only" has the following behaviour.

1. It does not operate the Brigade relays;
2. An alarm is not entered into the FF alarm list
3. It does not operate the common LEDs or buzzer on alarm or fault;
4. It is not included in the totals on the base display (not even "other");
5. No event logging occurs for it.
6. It is not tested by System or Auto Test.
7. It does not affect the output logic tokens NML, ALM, FLT, NMA, NMF, MUA and ISO.

Status zones may be mapped to ancillary relays and may be used in output logic equations. Status zones can be mapped to LEDs on an LED Display Board, where fitted.

3.3.3 MAPPING TO WARNING SYSTEM/EXTERNAL BELL/ANCILLARY RELAY

If a zone is mapped to the Warning System, the ZWA logic token (see section 3.5.3) is set true when there is an alarm on the zone and the zone is not isolated.

If a zone is mapped to the External Bell, the ZBA logic token is set true when there is an alarm on the zone and the zone is not isolated.

Mapping a zone to the Ancillary Relay 1 means the relay will operate when the zone goes into alarm and is not isolated, but the mapping is ignored if the relay is controlled by a logic equation.

3.3.4 MAPPING ZONES TO LEDS

Where 16 Zone LED Displays are fitted, zones and relays can be mapped to LEDs. A zone can be mapped to an LED number in the range 1 to 240. A value of zero disables the mapping of the zone to an LED.

Two mapping mechanisms

There are two different mechanisms that allow mapping of a zone to an LED. These are referred to as *Local zone to LED mapping* and *Network zone to LED mapping*. Local zone to LED mapping is described in this section. Network zone to LED mapping is described in section 3.10. Section 3.10. also describes the programmable parameters that determine whether (for fault and alarm), both isolated states and non-isolated states are shown on the LEDs or just non-isolated states.

Network zone to LED mapping

Network zone to LED mapping is normally used to map zone states received from other networked panels to zone LEDs, but it can also be used to map local zones and relays to

LEDs. If network zone to LED mapping is used to map local zones and relays to LEDs, the panel must be assigned a non-zero SID number. Refer to network programming section 4.3.2. for this. A non-networked F3200 is not normally assigned a SID number, but it is necessary to assign one if network zone to LED mapping is used. LED status generated via network zone to LED mapping can optionally be sent on the RZDU bus. LED status generated by local zone to LED mapping does not affect the information sent on the RZDU bus. Apart from this difference, either local zone to LED mapping or network zone to LED mapping can be used for local zones and relays. Local alarm zones map to network zones 1 to 64 for the local SID and local relays map to network zones 65 to 128.

Mapping a zone to multiple LEDs

In F3200/NDU software prior to version 5.00, a zone could map to only one LED and an LED could be mapped to by only one zone. In version 5.00 or later software, by using both local zone to LED mapping and network zone to LED mapping, a local zone can map to two different LEDs, however this is not common practice. An LED can also be mapped to by more than one zone (or relay). Refer to section 3.10 for more detail on configuring zone to LED mapping.

Default mapping for local zones

When the database is re-initialized, a default mapping of zones to LEDs is assigned using "local zone to LED mapping" rather than network zone to LED mapping. When the number of configured AZC modules is changed, the LED numbers of the associated zones must be assigned manually if the zones need to be mapped to LEDs and should take into account any relay modules that are present, since module relays can also map to zone LEDs.

Driving a zone LED with output logic

A zone LED can be driven with output logic. The mapping of a zone to an LED using local zone to LED mapping (or network zone to LED mapping) is ignored if the LED is controlled by output logic.

3.4 CONFIGURING FF ZONES

3.4.1 FF ZONE CONFIGURATION OPTIONS

For a Panel-link connected system, these options determine how alarms received from other panels on the network are processed at this panel. For an ADU that is connected to an RZDU bus instead of Panel-link, these options determine how alarms received from the FIP are processed.

The capability to select the zones for which alarms are displayed is most applicable to the ADU which has a restricted area of interest and is intended for use by non-technical personnel. By restricting which zones are displayed, alarms that are not relevant to the immediate location are not shown. A device that is used as a brigade attendance point should be programmed to show all alarms.

Figure [3.4.2](#) (at the end of section 3.4.2) shows the FF zone configuration menu which is used to select which zones will be shown in the alarm list of this F3200/NDU/ADU and how the alarm is handled. This menu allows programming of a set of options for a zone or range of zones, and also a set of global options. The global options apply to any zone (not including local zones) that does not explicitly appear in the individual zone list. There is also a set of options which determine the operation of the alarm list itself (these are described in section 2.4.6.3 FF options). These options can be found by selecting "Global data" from the main programming menu, followed by "FF options", where there are several pages of options, including parameters such as "Multiple cause updates", which affect the operation of the alarm list.

FF zone configuration is entered by selecting “System Config” from the main programming menu, followed by “Zones”, then “FF zone options”. A help screen is then shown - press any key (e.g. NEXT) to continue (or PRINT to show immediate help). The next display offers a choice of Global Settings or Individual Zone Settings.

The operation of the programming menus is described later in this section.

3.4.1.1 Alarms on Remote Zones

FF zone options can be programmed per zone, or range of zones, and also as global settings which apply to any zone not explicitly programmed. An enabled option is shown as ‘Y’ on the display, disabled is shown as ‘N’. The following descriptions apply to alarms received from remote panels. The operation for alarms on local zones is described in section 3.4.1.2.

Panel-link connected system

A zone alarm received from a remote network panel will be entered into the local alarm list if any of these conditions are true :

1. The zone appears in the local FF zone configuration list with the MapFF option set to true (Y).
2. The “Receive FF alarms” option has been enabled in the network programming SID list for the SID the zone belongs to and the zone does not explicitly appear in the FF zone configuration list with MapFF set to false (N), and the zone is either a MAF zone or the FF zones parameter (refer section 2.4.6.3) is set to “MAF & non MAF”.
3. The global MapFF option is set true and the zone does not explicitly appear in the FF zone configuration list with MapFF set to false (N), and the zone is either a MAF zone or the FF zones parameter (refer section 2.4.6.3) is set to “MAF & non MAF”. The SID that originated the alarm does not have to be present in the local network SID list for its alarms to be shown.

This is shown in the flowchart below.

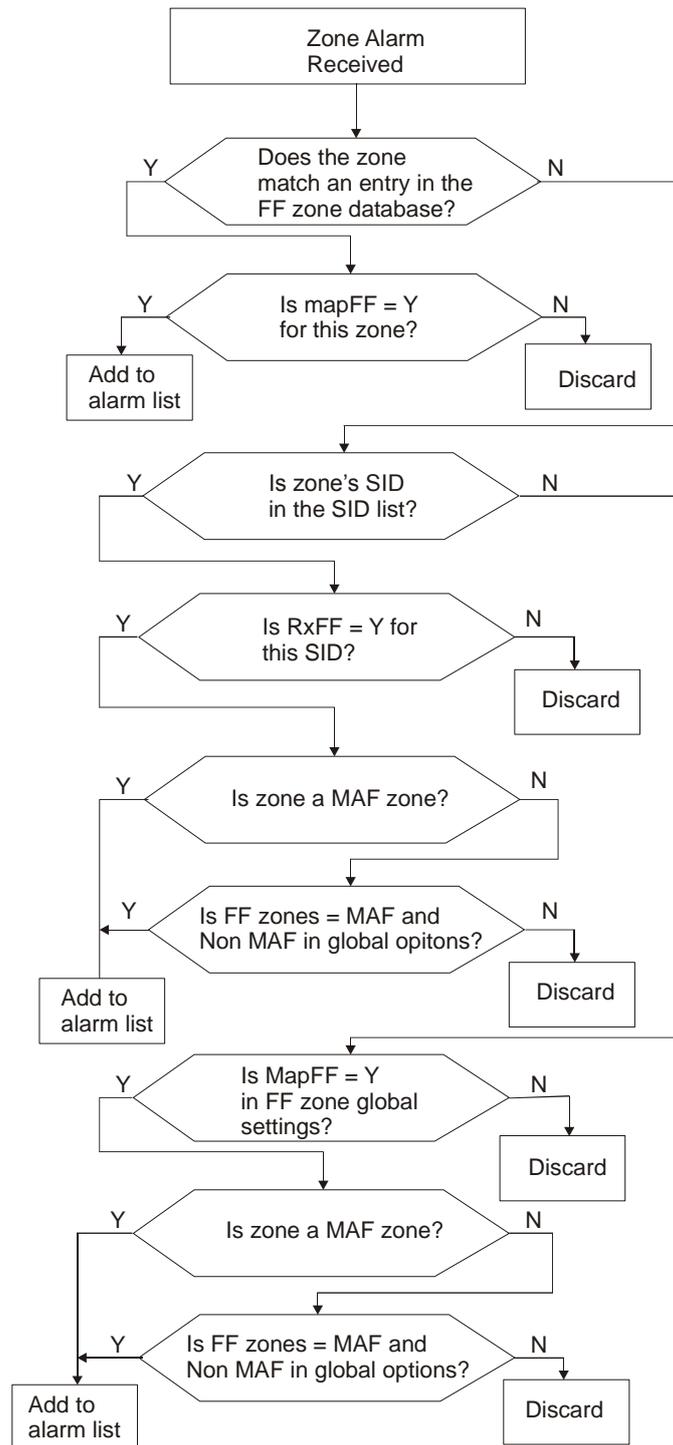


FIGURE 3.4.1 Processing of Network Alarm Messages

Hence, if a zone is explicitly entered into the FF zone configuration list with MapFF set to false, then an alarm on that zone will never be entered into the local alarm list, regardless of the setting of the global MapFF or the SID list RxFF option.

If a zone appears explicitly in the FF zone configuration list, then those individual settings determine the behaviour for that zone alarm. Otherwise, the global FF zone options (AlmSndr, AckRX, etc) determine the behaviour for that alarm.

ADU connected to an RZDU bus

For an ADU connected to an RZDU bus instead of Panel-link, an alarm received from the FIP is added to the FF alarm list if either

1. There is an explicit entry for the zone in the FF zone configuration list and the MapFF option is true, or
2. There is no explicit entry for the zone in the FF zone configuration list and the global MapFF option is true.

Configuration options

The following options can be programmed individually for each zone or zone range, or globally for all zones. The descriptions given here apply only to alarms received from remote network devices, not to alarms on local zones.

1. **MapFF** - If enabled (set to 'Y') an FF alarm on the specified zone(s) will be entered into the alarm list. If set to 'N', no alarm for the specified zone(s) will be entered.
2. **AlmSndr** – If enabled, the alarm buzzer will be activated for a new alarm on the specified zone(s).
3. **MultiAlm** - Multiple entries in the alarm list will be created for the specified zone(s), one for each point that goes into alarm. The sending device must also be configured to send the point alarm information, i.e., in F4000/MX4428 “Create multiple causes” must be enabled and an appropriate text name should be assigned to each point.
4. **AckTx** - “Acknowledge transmission”. This parameter selects whether this F3200/NDU/ADU can send an ACK command to the remote SID for the specified zones. If enabled, then when an alarm is locally acknowledged by pressing the ACK key, if there are no other unacknowledged alarms for that zone, a zone ACK command will be sent to the panel that originated the alarm. This may result in alarm entries in the alarms list of other panels becoming acknowledged, for that zone. If there are other locally unacknowledged alarms for the zone, then they must all be acknowledged first before a zone ACK command is sent to the remote panel.
5. **AckRx** - “Acknowledge receive”. This option selects whether acknowledgments received from remote devices are applied to alarms in the local alarm list. If this is disabled, then an alarm in the alarm list for the specified zone(s) must be acknowledged locally and an acknowledgement received from a remote device will be ignored.
6. **LocAck** - “Local Acknowledge”. This option selects whether an alarm for the specified zone(s) can be acknowledged locally. The LocAck option is normally enabled. If disabled, then alarms must be acknowledged at other devices and this device must have AckRx enabled to allow it to accept acknowledgements from remote devices, otherwise the alarms can never be acknowledged. For a network connected device, local acknowledge is always allowed if AckTx is enabled.

7. **ResetFF** - If enabled, an alarm in the specified zone(s) can be reset locally. When a reset command is applied, if there are other alarms in the alarm list for the same zone, then the alarm being reset will be removed from the alarm list, but no reset command will be sent to the remote device. If there are no other alarms in the list for the zone, then a reset command will be sent to the remote device for the zone. This allows multiple alarms on the same zone in the list and for the zone to actually reset only when the last alarm is reset. If disabled, reset commands are not permitted/actioned.
8. **IsoFF** - If enabled, the specified zone(s) can be isolated from the alarm list on this device. When the isolate command is used, an isolate command will be sent to the remote device but only if there are no other unacknowledged alarms in the local alarm list for the same zone. All alarms for the zone must be acknowledged before the zone can be isolated.

For an ADU connected to an RZDU bus there are the following additional options

9. **Hide** - If this option is enabled, the specified zone(s) do not appear in zone recalls unless the "map to totals" option is set true. If the "hide" option is true, the map to totals option is normally false.
10. **Log** - If enabled, events will be logged to the printer and history for this zone. If disabled, no events are logged for the zone(s).
11. **Total** - If enabled, off normal conditions (alarm, fault and isolate) on the zone are added to the off normal totals. This also determines whether the zone maps to the common fault and isolate LEDs on a Compact FF front panel. The off normal totals aren't normally shown on an ADU because its minimal keypad doesn't allow interrogating which zones are off normal. This option also determines whether the buzzer turns on for a fault on the zone.
12. **Alarm test** - If enabled, an alarm test may be initiated on the zone(s) at the ADU. This option applies only when Tandem LCD mode is being used, since the ADU keypad does not provide the capability to initiate alarm tests/ fault tests.
13. **Fault test** - If enabled, a fault test may be initiated on the zone(s) at the ADU. This option applies only when Tandem LCD mode is being used, since the ADU keypad does not provide the capability to initiate alarm tests/ fault tests.
14. **Output zone** - If enabled, the zone is treated as a relay/ ACZ type zone rather than an alarm zone. This means that off normal conditions on the zone are never treated as alarm.

3.4.1.2 Alarms on local zone(s) on a Panel-link connected ADU

An ADU can generate a zone alarm if the local MCP is mapped to a zone. When an alarm occurs on this zone, the zone alarm will be sent on the Panel-link network if "Transmit FF alarms" is enabled in the network programming FF options (refer section 4.7).

The alarm will be entered into the local alarm list, unless the zone has been explicitly entered into the FF zone configuration list with MapFF disabled. Regardless of whether the alarm is entered in the local alarm list or sent on the network, a brigade alarm will be signalled if the zone is programmed as a MAF zone.

3.4.1.3 No explicit FF configuration entry for a local zone

If there is no explicit FF configuration for a local zone, then:

1. An alarm on the zone will be entered into the alarm list.
2. The alarm can be locally acknowledged.
3. The alarm buzzer will sound if the global buzzer option has been set to enable the alarm buzzer (the global buzzer options are described in section 2.4.6.12 and are found by selecting “Global data” from the F3200 base programming menu – followed by the right arrow key.)
4. The zone can be locally reset or isolated from the FF.
5. Remote reset and isolate commands will be accepted.
6. Remote acknowledge will be accepted if the FF zone global “AckRX” option is enabled - the global “AckRX” option can be found within the FF zone configuration menu under “Global options” (see Figure 3.4.2).

3.4.1.4 Explicit FF configuration entry for a local zone

1. **MapFF** – this must be enabled to get an alarm for the zone entered in the alarm list or disabled to prevent the zone alarm being entered in the alarm list.
2. **AlmSndr** – if enabled, the alarm buzzer activates for alarm on the zone. The global alarm buzzer option under buzzer options (refer 2.4.6.12). must also be enabled.
3. **AckRX** – if disabled, remote acknowledge will not be accepted
4. **LocAck** – if disabled, local acknowledge will be disallowed providing AckRX is enabled.
5. **AckTX** - has no effect.
6. **ResetFF** – must be enabled to allow local reset from the FF. Remote reset commands will always be accepted regardless of this setting. (For a non-networked F3200, local reset is always allowed.)
7. **IsoFF** - must be enabled to allow local isolate from the FF. Remote isolate commands will always be accepted regardless of this setting. (For a non-networked F3200, local isolate is always allowed).

3.4.2 OPERATION OF THE FF ZONE PROGRAMMING MENUS

The FF zone programming menus allow programming a set of options for a zone or range of zones, and also a set of global options. A zone (or range of zones) must be first assigned to the FF zone database before its options can be set. In “view mode”, the cursor cannot be moved between fields – the OR key must be used to step through the option pages.

Note – if the PC application “PanelX” is being used, then the dedicated arrow keys on the PC keyboard can be used as left/right/up/down arrow operations and the numeric keypad plus key can be used as the “OR” key for stepping through the three menu pages (shown as Pg1, Pg2, Pg3).

3.4.2.1 Global Settings for FF Zones

The settings are presented on the display as shown below.

```
Global FF zone settings          Pg1
MapFF:Y  AlmSndr:Y  MultiAlm:Y
```

An enabled option is shown as ‘Y’, disabled as ‘N’. The left and right arrow keys move between fields and from page to page. In each field, the up and down arrows toggle the setting. The OR key steps directly to the next page of options, and the PRINT key displays “help” information. Press CLEAR to exit.

3.4.2.2 Individual Settings for FF Zones

Individual settings apply to a single zone or a group of consecutively numbered zones for a SID, e.g., zones 31 to 40 for SID 2. The NEXT and PREV keys may be used to step through the assigned entries in the FF zone database. These will be shown in numerically ascending (NEXT), or descending (PREV), order. The SYSTEM and RELAY keys may be used to jump to the start of the next or previous SID for which there are some assigned zones.

3.4.2.3 Entering SID and Zone Numbers

The SID number must be in the range 1 to 254. It is not necessary to also enter the SID into the SID list described in the network programming section 4.4, unless that is needed for other reasons (such as accumulating totals for that SID). The zone numbers must be in the range 1 to 999. There is no validity checking on the SID and zone numbers, i.e., the system will not generate a fault if the database contains entries for SIDs or zones which do not exist. The FF zone database has room for at least 2000 entries.

Numerical keys can be used to enter the SID and zone numbers or the up/down arrow keys can be used to increment or decrement these numbers. When some, but not all, of the specified zones are present in the database, then the bottom line of the LCD will show an appropriate message as discussed in section 3.4.2.3.

When a start zone or end zone number is entered, the bottom line of the display will indicate whether some, none or all of the specified zones are present in the database.

3.4.2.4 Entering a New Zone Range

If none of the zones in the range specified by the start and end zone are present in the database, then the bottom line of the display shows "Zones not present, press ACK to assign". For example :

```
SID:2      Start zone:31      End zone:40  
Zones not present, press ACK to assign
```

Pressing ACK will add this zone range to the FF zone database. To assign a single zone, the start zone and end zone should be equal, i.e., the group is only one zone in length. When the zones specified by the start and end zone correspond to an existing entry in the database then the bottom line of the display shows the current settings for those zones. For example :

```
SID:1      Start zone:1      End zone:1      Pg1  
MapFF:Y   AlmSndr:Y   MultiAlm:Y
```

An enabled option is shown as 'Y', disabled as 'N'. The EDIT key switches the cursor between the top and bottom lines. The left and right arrow keys step between fields.

On the bottom line, the up and down arrow keys change the setting. The OR key steps directly to the next page of options. The AND key steps to the previous page. The XOR key displays a command menu as shown in Figure 3.4.2. The DELETE key brings up a menu that allows zones ranges to be deleted from the FF zone database. The PRINT key displays "help" information from which the CLEAR is used to return to the zone range display.

NOTE in “view mode”, the cursor cannot be moved to the bottom line of the display – the OR key must be used to step through the option pages.

If some of the specified zones are present in the FF zone database, but do not correspond to an exact entry in the database, then an appropriate message is shown on the bottom line of the display as described in the examples below.

For example, suppose the database contained the following entries :

SID 2, Start zone 5, End zone 12

SID 2, Start zone 13, End zone 20

If the start zone is now set to 5 and the end zone is set to 20, then the bottom line of the display will show “ACK:Extend range ZONE:Show existing” even though all of the zones are actually already in the database, and the settings for zones in the range 5 to 12 may be different from zones in the range 13 to 20.

Existing entries in the database can be modified (extended, split or deleted) as shown in the following examples. After making changes to the database and exiting program mode, if possible, the database should be “printed” (captured to a PC in text format) and checked to see that it contains the intended FF zone configuration settings.

Example 1 - extending an existing range

SID 2

31	40
----	----

 Existing zone range in database
 SID 2

25	40
----	----

 Entered zone range

SID:2 Start zone:25 End zone:40
ACK:Extend range ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

31	40
----	----

 ZONE: Show Existing
 SID 2

25	40
----	----

 ACK: Extend range

If the ACK key is pressed, the range 25 to 40 will be entered into the database, replacing the range 31 to 40 and with the same option settings. If the ZONE (or NEXT) key is pressed, the display then shows the actual range that is present in the database without changing it.

Example 2 - modifying an existing range

SID 2

31	40
----	----

 Existing zone range in database
 SID 2

25	32
----	----

 Entered zone range

SID:2 Start zone:25 End zone:32
ACK:Assign zone(s) ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

31	40
----	----

 ZONE: Show Existing
 SID 2

25	32	33	40
----	----	----	----

 ACK: Assign zones

If the ACK key is pressed, the range 25 to 32 is added to the database and the existing range 31 to 40 is reduced to the range 33 to 40, i.e., the previous range 31 to 40 has been reduced to 33 to 40. If the overall intention was to remove zones 33 to 40 from the database then they must be explicitly deleted (via the DELETE key).

Example 3 splitting an existing range - 1

SID 2

25		40
----	--	----

 Existing zone range in database

SID 2

32		40
----	--	----

 Entered zone range

SID:2 Start zone:32 End zone:40
ACK:Split range ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

25		40
----	--	----

 ZONE: Show Existing

SID 2

25	31	32		40
----	----	----	--	----

 ACK: Split range

If the ACK key is pressed, the range 25 to 40 is split into two ranges. If the intention was to remove zones 25 to 31 from the database then they must be explicitly deleted.

Example 4 splitting an existing range - 2

SID 2

25		40
----	--	----

 Existing zone range in database

SID 2

32	35
----	----

 Entered zone range

SID:2 Start zone:32 End zone:35
ACK:Split range ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

25		40
----	--	----

 ZONE: Show Existing

SID 2

25	31	32	35	36	40
----	----	----	----	----	----

 ACK: Split range

3.4.2.5 FF Zone Command Menu

At any place in the FF zone menus, pressing the XOR key produces the following "command" menu:

1:Save all to flash 2>Delete zones
3:Copy (& set defaults) 4:Paste

Option 1 - Allows saving the entire database to flash memory. If a lot of data is being programmed, it may be worth saving to flash memory periodically, in case of power fail. The database is held in RAM while it is being changed and changes will be lost if a power fail or restart occurs while in program mode.

Option 2 - Selects the delete menu.

Option 3 - Copy assigns the previously displayed settings as "default settings" that are used when any new zone group is entered into the database.

Option 4 - Paste assigns previously copied settings to the current zone range.

ESC/CLEAR exits the command menu.

3.4.2.6 FF Zone Delete Menu

At any place in the FF zone menus, pressing the DELETE key displays the following menu showing the current values of SID, start and end zone.

Delete zones 25 - 40 for SID 2

1:Yes 2:No 3:Enter range 4:more

Option 1 confirms, and option 2 cancels the deletion of this entry.

Option 3 allows the SID and zone range to be changed:

SID:2 Start zone:32 End zone:35

Enter zones to delete then press DELETE

The zone range can be part of an existing range, as in this example:

SID 2 Existing zone range in database

SID 2 Entered zone range for deletion

SID 2 After deleting

Option 4 in the delete menu allows deletion of all zones for a particular SID, or all zones for all SIDs as shown below.

1>Delete all zones for ALL SIDs

2>Delete all entries for one SID

Option 2 allows the entry of a SID number for which all zones are to be deleted. The delete options should be used carefully as the information cannot be recovered once deleted.

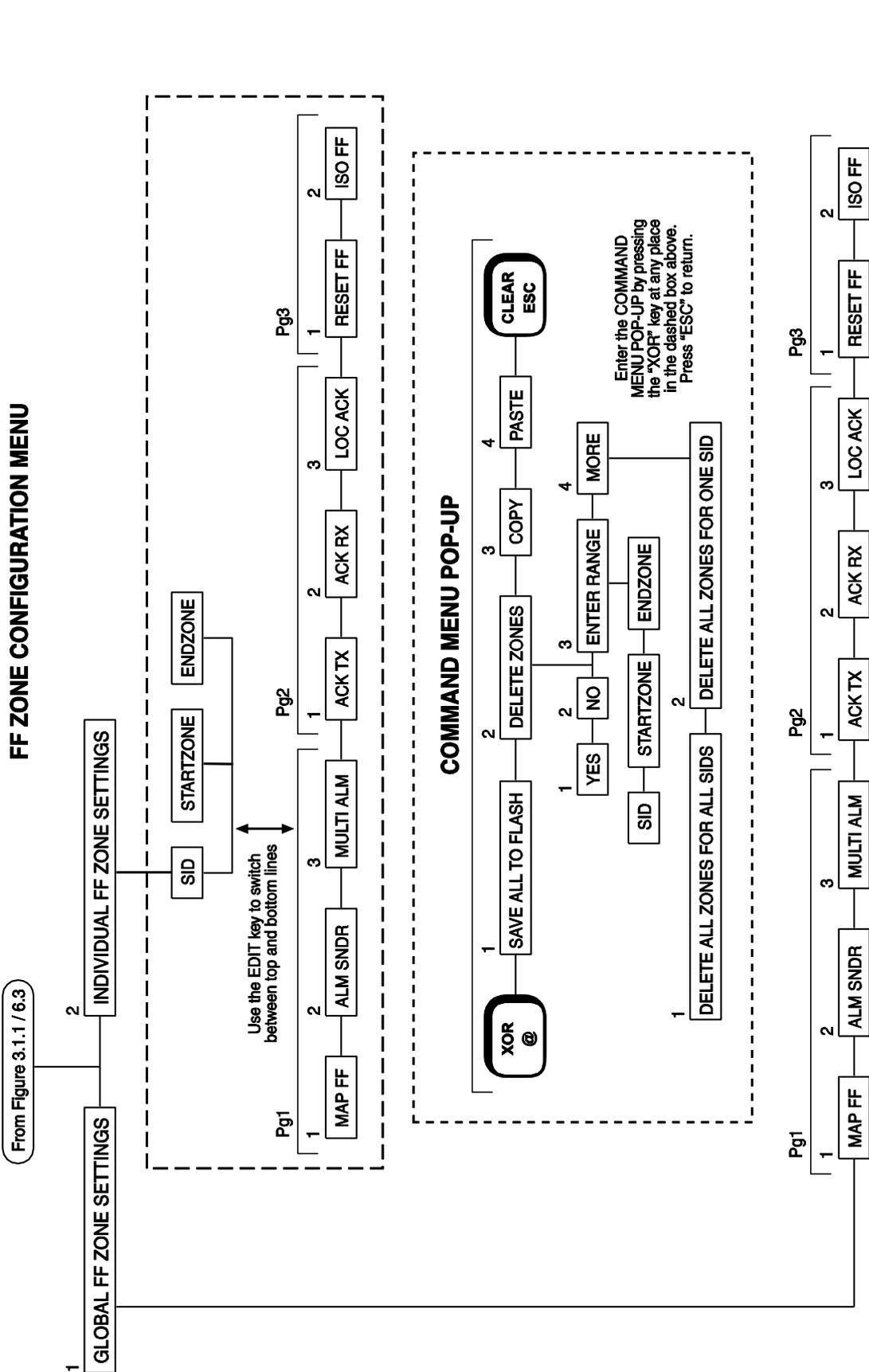


FIGURE 3.4.2 FF Zone Option Menu for F3200/NDU

Figure 3.4.2A FF ZONE OPTION MENU (FOR F3200/NDU)

ADU FF ZONE CONFIGURATION MENU

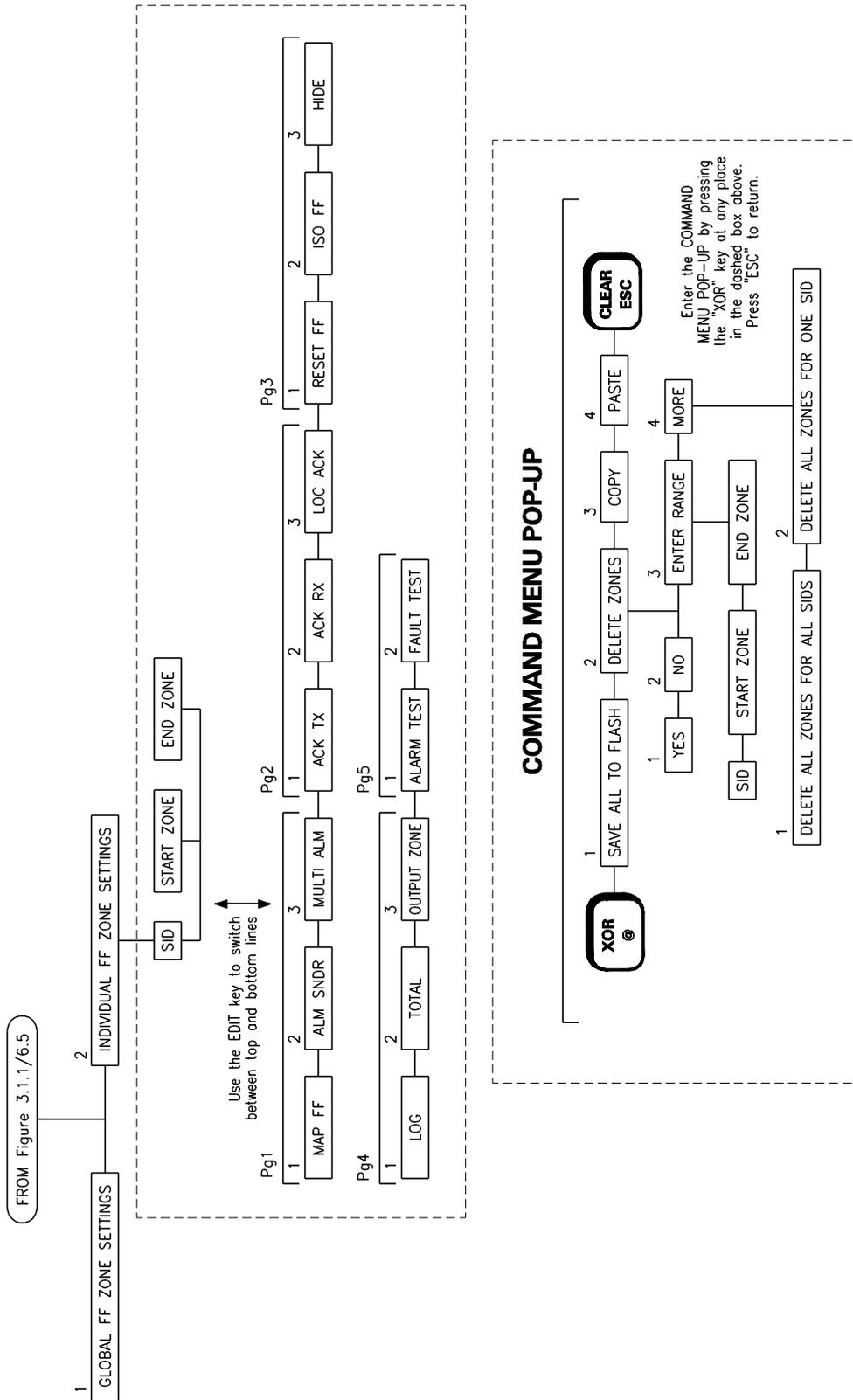


Figure 3.4.2b ADU FF ZONE CONFIGURATION MENU

NOTE: THE OPTIONS, HIDE, LOG, TOTAL, OUTPUT ZONE, ALARM TEST, FAULT TEST APPEAR ONLY FOR RZDU CONNECTION TYPE.

3.5 PROGRAMMING OUTPUTS

3.5.1 GENERAL

The F3200/NDU/ADU outputs (Ancillary Relays, MAF Brigade Relays, 8 Zone Module open collector outputs, 8 Relay Module relays and the Warning System/ External Bell, may be driven by a logic equations. The LEDs/relays on zone LED display boards may be driven by a logic equation using a relay equation where the relay number is in the range 65 to 256. Logic equations may also be used to isolate, de-isolate or reset local zones. Outputs which can be programmed are shown in the output logic menu part of Fig 3.1.1 and are described in section 3.5.6.

Database reinitialise creates some default logic and logic equations as follows.

1. Open collectors. By default, open collector output n is active when zone n is in alarm and not isolated. This is done without an explicit logic equation but appears as an explicit logic equation ($OC_{nn} = Z_{nn}A$) on the display when the logic equation for an open collector is inspected and there is no non-default equation.
2. Ancillary 1 relay. By default, all zones map to the Anc 1 relay so the relay will be operated by an alarm on any non-isolated zone. If an equation is entered for the Ancillary 1 relay, then the mapping of zones to the relay is ignored.
3. For ancillary 2 and 3 and the Warning System/ External Bell, refer to section 3.8.

Output Logic Equation Format

An output logic equation takes the form of:

Output = operand [operator operand] [operator operand] ...

For example, the logic equation $RL1 = Z3A + Z4A$ means that Module relay number 1 will be energised when zone 3 or zone 4 are in alarm.

Some examples of logic equations are given in section 3.5.4.

Output Logic Specifications

Maximum number of equations	512
Maximum number of "(" per equation	14
Maximum equation length (note 1)	100 bytes
Number of variables	256
Number of network variables	128 per SID
Number of seconds timers	64 (1-64)
Number of minutes timers	8 (65-72)
Time range of timers	0-250 seconds/minutes
Error margin of seconds timers	0-1 sec.
Error margin of minutes timers	0-1 Minute

NOTES

1. The maximum size of an equation is approximately 30-40 operands plus operators. It is 100 bytes, where most operands use 2 bytes, and operators use 1 byte.
2. The Controller continually "updates" the status of the inputs to the output logic equations, processes the equations, and updates the resultant outputs. The processing time taken is dependent on the number and size of the equations.

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

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

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

3. The amount of programming memory left can be viewed by using the "free space" option of the output logic programming menu.

3.5.2 LOGICAL OPERATORS

The logical operators are as follows:

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

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

XOR (@) exclusive or
C = A @ B C is active if A is true and B is false, or if A is false and B is true (i.e. if A and B are in opposite states).

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

Associated with these operators are "logic operator keys" in the right hand column of the 4 x 4 numeric keypad on the controller.

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

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

TRUTH TABLE

Priorities & Evaluation

Logic operators have a precedence/ priority that determines the order they are applied. Parentheses () are used to override operator precedence. The operators in order of precedence are NOT, AND, OR, XOR with NOT having the highest precedence and XOR having the lowest.

Example:

In the following equation, the AND operator is applied before the OR operator because it has higher precedence

$$R1 = Z1A + Z2A . V1$$

which means that relay 1 is active if

- a. zone 1 is in alarm or
- b. zone 2 is in alarm and variable V1 is true.

whereas with the following equation

$$R1 = (Z1A + Z2A) . V1$$

relay 1 is active if V1 is true and zone 1 is in alarm or zone 2 is in alarm.

The parentheses operators "(" and ")" can be entered into a logic equation using the "RECALL" and "PRINT" keys.

3.5.3 LOGIC OPERANDS

Logic operands return a value of true or false. Some operands are simple three letter names and others include a numeric value and condition. For example, a zone operand consists of the letter Z, a number 1 to 64, and a condition which is represented by a single letter (A, F, I, N, D, M, R). E.g. Z12A returns true when zone 12 is in alarm and not isolated.

The operands available are as follows:

<u>Abbr</u>	<u>Name</u>	<u>In Equation</u>	<u>Example</u>
AR	Ancillary Relay	AR	AR2F
RL	Module Relay	R	R4I
VL	Variable	V	V7
ZN	Zone	Z	Z3A
TM	Timer	T	T15
OC	Open Collector Output	OC	OC32
ZR	Zone Range (n of m)	Z:()	Z1:8(2)A
NA	New Alarm	NA[r1...;s1..]	NA[ACK;Z1F,Z5F,Z7F]
NV	Network variable	NVsid:varnum	NV3:120
VR	Variable Range (n of m)	VR:()	VR12:19(3)

(ADU only)

GP	General Purpose input	GPn	GP1
----	-----------------------	-----	-----

Zone (ZN)

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

- A - Alarm . ^ (Isolated + In-Situ Test mode) (i.e. Alarm on a zone which is not isolated or in In-Situ Test mode).
- F - Fault . ^ (Isolated + In-Situ Test mode).
- I - Isolated + In-Situ Test mode.
- N - Normal - true when none of A, F or I are true.
- D - True if the current state of the circuit input is "Detector Operated" (Alarm). I.e. the voltage is in voltage band B2, or B1 or B3 and these are programmed as "Alarm". Refer Section 3.5.10.
- M - True if the current state of the circuit input is "MCP Operated" (Instant Alarm) i.e. the voltage is in voltage band B1 or B3 and these are programmed as "Instant Alarm". Refer Section 3.5.10.
- R - True if a reset is currently being applied to the zone. This is true for the duration of the 5 second reset applied to the circuit when the zone is reset by an Operator a logic equation, for the 5 second AVF reset, and also for the In-Situ mode reset.

NOTES:

1. When entering numbers, leading zeros need not be entered.
2. Alarm and Fault refer to the latched status for a latching zone and the current status for a non-latching zone.
3. None of these zone tokens are affected by the programming of a zone as MAF mapped, non-MAF or status only.

Zone Range (ZR)

Zxx:yy(zz)q

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

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

Example

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

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

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

Z1:10(1)A

is equivalent (but more efficient) to

Z1A + Z2A + Z3A + Z4A + Z5A + Z6A + Z7A + Z8A + Z9A + Z10A

Z11:13(3)F

is equivalent to

Z11F . Z12F . Z13F

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

Rxxq

where xx = 1 - 64

q can be A,F,I,N as follows

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

The module relay tokens are not affected by whether the relay is mapped to the MAF or not. The F condition may be latching or non-latching (as programmed under relay supervision for that relay). The status of a pseudo relay is accessible as an operand on the "right hand side" of a logic equation using Rnn.

Ancillary Relay (AR)

ARxq

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

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

Open Collector (OC)

OCxx

where xx = 1-64

The OCxx operand returns true if the open collector output has been activated. Not available in an ADU.

General Purpose Inputs (GP)

GPnx

where n is the input number 1, 2 or 3 and x is the state (s = short circuit, n = normal, O = open circuit). Refer to Section 6.5.5.

New Alarm (NA)

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

NA[r1,r2,...rn;s1,s2,...sm]

where r1-rn is the list of tokens which reset the latch and

s1-sm is the list of tokens which set the latch.

Entry of an NA token into an equation is described in Section 3.5.6.

If a set and a reset token were to both go true at the same time, then reset will override set, i.e.. the latch will turn off.

Variables & Variable Range

Vxxx where xxx = 1 – 256 - single variable

VRxxx:yyy(mmm) - variable range (mmm = 1-256)

A variable holds a logical state of true or false. The VR variable range operand allows checking for a minimum number of variables being true within a specified range of variables. For example, VR12:19(2) returns true when any two or more of the variables V12 to V19 are true.

All variables are set to "false" on power up.

Network Variables

NVsss:nnn

where sss = SID number 1-254 and nnn = variable number 0-127.

A networked F3200 or NDU has 128 network variables of its own that it may assign values to with an equation, e.g. NV5=Z1A+Z2A.

The states of the 128 local network variables are transmitted onto the network for use by other systems. This panel receives network variables from other systems and may use their values in equations, but may not assign values to network variables from other systems. All network variables are set to FALSE on power up.

Timers

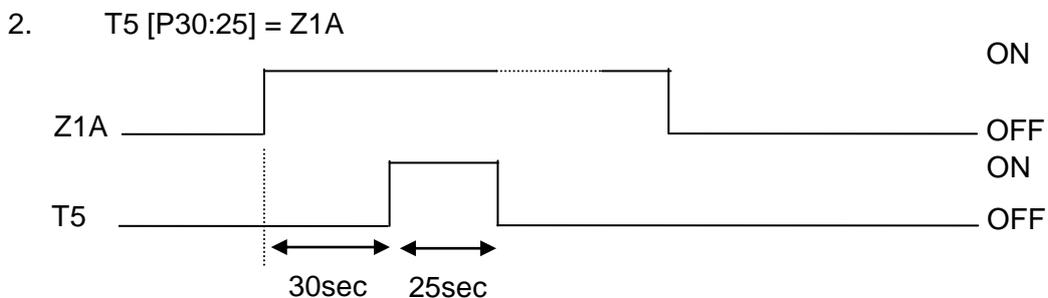
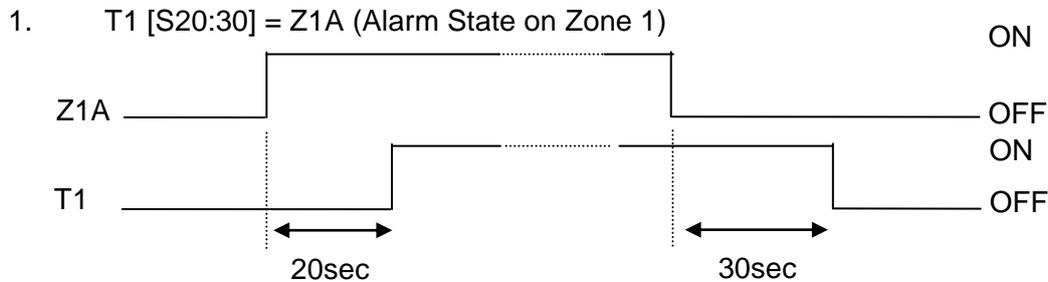
Txx where xx = 1 - 64 for seconds timers and 65-72 for minutes timers.

Timers allow outputs to be timed from inputs. They all have two time delays associated with them and can be "stretch" timers or "pulse" timers. The default configuration sets both delays to zero, and all timers are set to "false" on power up.

A stretch timer (S) follows the programmed input with two programmable delays, i.e. Input on to Output on, and Input off to Output off.

A pulse timer (P) is initiated by the input with two programmable delays, i.e. Input on to Output on, and Output "on" duration.

Examples: These examples show a seconds based timer 1-64, but the same logic applies to the minutes based timers.



Notes

1. If the input turns off before the first delay has expired, the timer is reset. Timing will restart from zero when the input next turns on.
2. Any changes to the input while a pulse timer output is on will not affect the output.
3. For a pulse time of 0, the output may or may not momentarily turn on.

THREE LETTER OPERANDS

- ACK** When the "ACK" key is pressed with the base display selected this returns true for between 1 and 2 complete passes of all output logic equations.
- ALM** True if one or more local MAF zones are in alarm.
- BEL** The BEL token was used in previous 1603.4 compliant software and is not valid in V3.XX or later software.
- BFT** This is true when there is a battery connection fault or a battery capacity fault. Note the battery connection tests and battery capacity tests must be enabled for them to produce faults. This token will be false if PSU faults inhibit for 24 hours is active.
- BGT** True if the brigade test key (or menu option) on the local FIP or an RDU has been held down for 2 seconds. The token remains true while the key is held down (even if the brigade test has been programmed to not operate the Brigade Alarm relay). For

- networked systems this token is not true for a brigade test initiated at another panel on the network.
- BLI The BLI token was used in previous 1603.4 compliant software and is invalid in V3.XX or later software.
- BLO If battery low fault monitoring is enabled, BLO is true when there is a battery low fault. BLO is false when 24 hour PSU fault inhibit is active.
- BSR New Zealand mode local services restore input operated.
- BTS True if a manual, hourly, or daily battery test is in progress. This does not include a battery connection test.
- CGF This is true when there is a charger fault, regardless of whether a charger fault is programmed as being a system fault.
- EBF True when the External Bell is in fault (i.e. the equation for EBF is true) and the External Bell is not locally isolated.
- EBO True when the External Bell is activated and not isolated or silenced, i.e. when the equation for EBA is true and EBS is false.
- EBS True when the local External Bell is locally isolated or silenced by an External Bell silence state received from the network.
- EBT True when the local External Bell is tested by a test command at the local panel or by a test command received from a remote network panel.
- FFA True when there is one or more events in the FF alarm list.
- FLT True if 1 or more local MAF-mapped zones, module/ancillary relays or the Warning System/External Bell are in fault.
- ISO True if 1 or more local MAF-mapped zones, module/ancillary relays or the Warning System/External Bell are isolated.
- ITA True for 2 seconds when there is an alarm on a non-isolated zone in In-Situ test mode and the zone is mapped to the Warning System.
- MFL True if the mains is failed. If it is desired to detect a condition of mains failed continuously for 8 hours then timer logic must be used in conjunction with this token.
- MRA MAF Relay Alarm. True if any condition that would cause the MAF alarm relay to be operated is true.
- MRF MAF Relay Fault. True if any condition that would cause the MAF fault relay to be operated is true.
- MRI MAF Relay Isolate. True if any condition that would cause the MAF isolate relay to be operated is true.
- MRS MAF Relay Standby. True if any condition is present that would cause the MAF standby relay to be de-energised.
- MUA True if there are 1 or more unacknowledged alarms in the FF queue.
- NED New Zealand mode external defect input true.

- NEV New Zealand mode Evac defect input true.
- NMA True if 1 or more non MAF-mapped zones are in alarm.
- NMF True if 1 or more non MAF-mapped, non-isolated zones, module/ancillary relays or Warning System/External Bell are in fault.
- NML For Australian operation, the NML token is false if any of the conditions (including network states) which cause either the Brigade Alarm or Brigade Fault relay to operate (if not controlled by output logic) are true. Note this does not include conditions which cause the standby relay to de-energise and do not energise Brigade Defect (e.g. fuse blown, database checksum error). The SFT token includes conditions which de-energise standby but not Brigade Fault.
- For New Zealand operation the NML token is true if there are no abnormal conditions.
- NSA New Zealand mode local silence alarms operated.
- ODR True if the outer door is currently open.
- PLI True if the "Plant" flag is set to isolated. The PLI token may be used to isolate a set of relays from the single option on the Ancillary Isolate key menu. The equation of each relay to be isolated must take the form $R_n = (eqn) \cdot ^{PLI}$. The PLI token is not mapped to the MAF (i.e. Plant Isolate does not operate the Brigade Isolate relay, common Isolate LEDs, etc). To have the Isolate relay operate on PLI it is necessary to program it as follows: $ISO = ISO + PLI$.
- When PLI is true, the Ancillary Isolated LED on an AS1603.4 keyboard is on (as it is if ancillary relay 1 or 2 is isolated, or any module relay is isolated) and the others total is incremented by 1.
- RBA True when an "External Bell" alarm state is received from a network panel that appears in the SID list of this panel and has "use MAF relay data" enabled. If the remote panel is an F3200 then it will send an " External Bell alarm state" onto the network when it has a non-isolated zone mapped to the External Bell in alarm (i.e. when its ZBA token is true).
- RMA True when a MAF alarm state is received from a network panel that appears in the SID list of this panel and has "use MAF relay data" enabled.
- RST When the "RESET" key is pressed with the base display selected. This returns true for between 1 and 2 complete passes of all output logic equations.
- RTE In NZ mode True if another panel on the network has Trial Evac asserted and the remote panel appears in the SID list of this panel and has "use MAF relay data" enabled.
- RWA True when a "Warning System alarm state" is received from a network panel that appears in the SID list of this panel and has "use MAF relay data" enabled. If the remote panel is an F3200 then it will send a "Warning System alarm state" onto the network when it has a non-isolated zone mapped to the Warning System in alarm (i.e. when its ZWA token is true).
- SFT True if any system fault is present (refer to Operator's Manual Section 6.6.3 for a list of system faults).
- SOA True when the alarm buzzer is currently sounding.

- SOF True when the fault buzzer is currently sounding.
- STS True if a system test or auto test is currently in progress.
- TEV New Zealand mode local Trial Evac input operated.
- WSF True when the Warning System is in fault (i.e. the equation for WSF is true) and the Warning System is not locally isolated.
- WSO True when the Warning System is activated and not isolated or silenced, i.e. when the equation for WSA is true and WSS is false.
- WSS True when the Warning System is isolated or is silenced by a Warning System silence state received from the network. For NZ operation, the WSS token is not affected by the local Silence Alarms key-switch but the Warning System silence state received from the network includes silence alarms conditions from other panels. The NSA token can be used to get the state of the local Silence Alarms key-switch.
- WST True when the Warning System is tested by a test command at the local panel or by a test command received from a remote network panel.
- ZBA True when there is an alarm on a local non-isolated zone mapped to the External Bell.
- ZWA True when there is an alarm on a local non-isolated zone mapped to the Warning System.

NOTE - the MRA, MRF, MRI and MRS operands were added in F3200 software version 5.00 and are not available in earlier versions of software.

3.5.4 EXAMPLES OF LOGIC EQUATIONS

Example 1 - Use of Variables

Assume that two relays are required with similar logic equations, as follows:

$$R1 = (Z1A + Z2A + Z9A + Z10A) \cdot Z3A$$
$$R9 = (Z1A + Z2A + Z9A + Z10A) \cdot Z11A$$

Rather than enter both equations in full, it is easier to assign a variable to the common section of logic and enter three equations as follows:

$$V2 = Z1A + Z2A + Z9A + Z10A$$
$$R1 = V2 \cdot Z3A$$
$$R9 = V2 \cdot Z11A$$

Example 2 - Use of Zone Range and Timers In a Deluge System

A manned area in a building has a high risk of fire but some chance of false operation of a smoke detector. The area is protected by a solenoid operated deluge system. It is considered best to run three separate smoke detector circuits through the area, and have a "voting" system. Also, there is to be one circuit with heat detectors and MCPs, and a circuit of different coloured MCPs which function as "Inhibit Deluge".

The logic specified by the consultants is that any smoke, heat or MCP operation sounds an Alert warning tone in the area.

If any 2 of the 3 smoke circuits operate, an Evacuate tone is sounded, and 20 seconds later the deluge is to operate if no one has operated "Inhibit".

If an MCP or heat detector operates, the Evacuate tone and timer are to start and "Inhibit" must not prevent the deluge from operating.

Solution:

By assigning the smoke and thermal circuits consecutively, the zone range operand can be used. Inhibit is assigned a separate zone which is configured as non-mapped to MAF,ANC1, External Bell and Warning System.

The "zones" could be assigned as follows:

- Zones Z9, Z10, Z11 are the smoke circuits
- Zone Z12 is the heat/MCP circuit
- Zone Z13 is the "Inhibit" circuit
- Relay R4 switches the "Zone Alert"
- Relay R5 switches the "Zone Evacuate"
- Relay R6 switches the "Zone Deluge" solenoid.

The appropriate names for zones and relays should be programmed. For thermal detectors with electronic bases and 15V MCPs, the AZCs should be configured with:

- AZC 12 as "Heat", with B3 = Instant Alarm;
- AZC 13 as "Manual" with B3 = Instant Alarm.

The logic may be entered using the zone range (ZR) option as follows:

- R4 = Z9:12(1)A (i.e. alert on any of zones 9-12 in alarm)
- V1 = (Z9:11(2)A.^Z13A)+Z12A (i.e. any two of zones 9-11 in alarm with Zone 13 not in alarm, or Zone 12 in alarm).
- R5 = V1 (evacuate tone)
- T1[S20:0]=V1 (stretch timer, input delay 20 sec)
- R6 = T1 (deluge)

The variable, V1, is used to start the timer rather than relay R5, so that if someone operates R5, e.g. by the Test Relay function, there is no chance of it starting the time delay and initiating the deluge (R6).

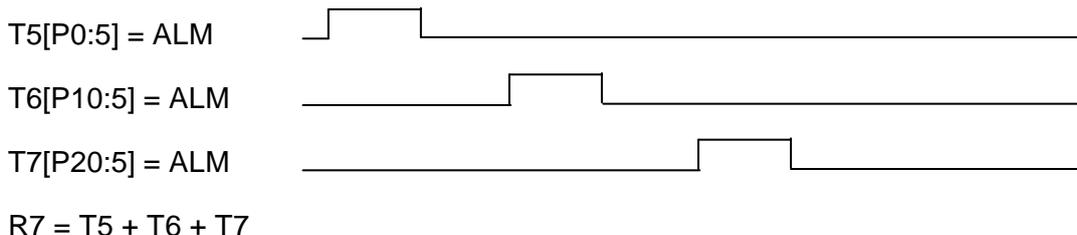
Example 3 - Use of Timers

Timers 1 to 64 are "seconds based" with a range of 0 to 250 seconds, and timers 65 to 72 are "minutes based" with a range of 0 to 250 minutes.

A certain building has an outdoor yard with a very loud sounder. It is too loud to be left on continuously. For any alarm in the premises it is desired to give one set of three 5 second bursts on the sounder with 5 second delays between the bursts.

Solution:

A relay (say R7) is assigned to switch the sounder. Three pulse timers (say T5, T6, T7) are required.

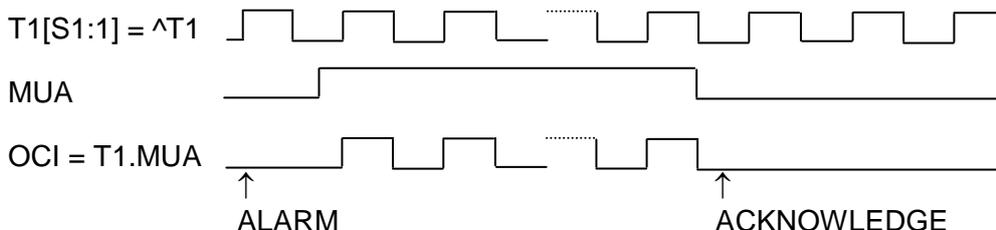


Example 4 - Use of Timer To Make Continuous Pulsing

A building has a loud "hooter" to attract the operator to the FIP. The hooter is relay driven and must pulse 1 second on, 1 second off, on occurrence of any alarm until it is acknowledged.

Solution:

Use a timer to make a 1 second on, 1 second off oscillator. An open collector output (say OCI) and a timer (say T1) are assigned. The MUA (MAF unacknowledged alarm) is used as follows:



Example 5 - Using an Open Collector output to reset a detector circuit

The following logic equations result in the detector circuit corresponding to AZC 1 (Zone 1) being reset 30 seconds after a detector operated condition appears on the circuit. A wire is connected between the open collector output for AZC 1 to the +ve wire of the detector circuit for AZC 1. This can be used to achieve automatic non-latching behaviour when the detectors are physically latching.

$T1[P30:5] = Z1D.\wedge T1$
 $OC1 = T1$

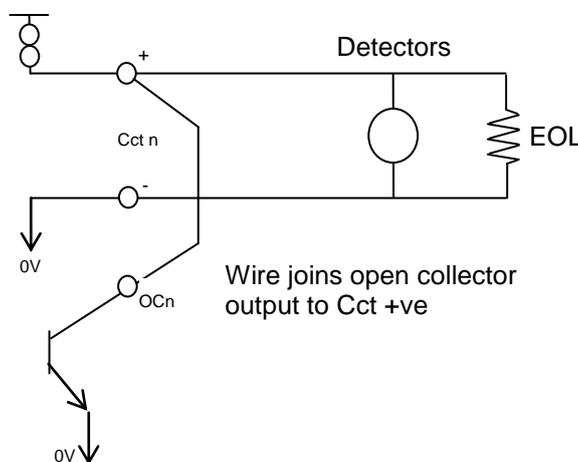


Figure 3.5.4 Wiring between open collector output and Circuit +ve

3.5.5 ENTERING EQUATIONS

Entering equations from the keypad is similar to entering text names, but includes entering logical operators and parentheses with specific keys.

When an output (e.g. Relay 01) is selected, press "EDIT", "ENTER" or "▶" to enable equation entry mode for that output.

There are two cursors shown on the display, one on the top line to indicate where the next item will be entered in the equation, and one on the bottom line to indicate which operand is selected. The active cursor is a large block character **█** and the inactive cursor is a small

block character ■. The active cursor ■ may be moved using the ◀ ▶ arrow keys. The SET/EDIT key is used to swap the active cursor between the top and bottom lines. Parentheses and the NOT operator may also be entered directly using the NOT, RECALL and PRINT keys. The bottom line of the display shows one of eight sets of operands. These may be scrolled through using the ▲ and ▼ keys to choose the desired set. Note that numbers and operators can be entered directly from the keypad.

"EDIT"	toggles the cursor between the top and bottom line.
"DELETE"	If the cursor is at the end of the equation it deletes the last item in the equation, otherwise it deletes the item under the cursor.
"ACK"	saves the equation.
"NEXT" & "PREV"	step through outputs (e.g. relays).

NOTES:

1. Remember that operators NOT AND OR XOR have an associated precedence (or priority) as described in section 3.4.2 and are not necessarily evaluated left to right.
2. It is recommended that parentheses be used liberally to ensure the correct order of evaluation.
3. It is recommended that all equations be written on forms before they are entered, and checked against the forms after they have been entered.

Example

Enter an equation to program module relay 5 to activate if Zones 9 or 10 go into alarm, but not if Open Collector 4 is active (say open collector 4 drives a status LED and has a logic equation entered to do this).

The equation is:

$$R5 = (Z9A + Z10A).^OC4$$

From the "System Configuration" menu (4), select "Output Logic" (4) followed by "relay" (1).

Use "NEXT" to step onto Relay 5 (R5)

<u>Press</u>	<u>LCD Shows</u>
"▶"	R5 = ■ AR RL VL ■ N TM OC ZR NA NV VR
"("	R5 = (■ AR RL VL ■ N TM OC ZR NA NV VR
"ENTER"	R5 = (Z ■
"9", "ENTER"	R5 = (Z9 ■
"1"	R5 = (Z9A ■
"OR"	R5 = (Z9A + ■ AR RL VL ■ N TM OC ZR NA NV VR
"ENTER"	R5 = (Z9A + Z ■

"1" "0" "ENTER" R5 = (Z9A + Z10) █
 "1" R5 = (Z9A + Z10A) █
 ")" R5 = (Z9A + Z10A) █
 "AND" "NOT" R5 = (Z9A + Z10A).^ █
 AR RL VL █ N TM OC ZR NA NV VR
 "▶" "▶" AR RL VL ZN TM █ C ZR NA NV VR
 "ENTER" R5 = (Z9A + Z10A) .^OC █
 "4" "ENTER" R5 = (Z9A + Z10A) .^ OC4 █
 "ACK" R█ = (Z9A + Z10A) .^ OC4
 Equation Saved OK

The next relay can be selected. Note that (Z9A + Z10A) could have been entered as zone range ZR9:10(1)A.

Entering an NA Operand

To enter an NA operand, do the following:

1. Select NA with the █ in the bottom line and press "ENTER".
2. Select the first token in the "RESET" group with the cursor keys and enter it.
3. Select the next token in the "RESET" group and enter it (the , will automatically be inserted when this token is entered).
4. When all the "RESET" tokens are entered, press one of the Operator keys ("AND", "OR", etc) then enter the "SET" tokens (on the right side of the ;).
5. Select the desired token with the cursor keys.
6. When all the "SET" tokens are entered, press "AND", "OR", "XOR" or "NOT" to exit from NA. If the NA is the last token in an equation and the operand just entered is not required, press "DELETE".

NOTES:

1. A logic equation or another NA token cannot be entered directly as an NA operand. An intermediate variable can be used to achieve the same effect.

3.5.6 THE OUTPUT LOGIC MENU

3.5.6.1 F3200/NDU

For F3200/NDU there are three menus in the output logic programming that allow selection of an output logic "destination" and they are shown in Fig 3.1.1. The three menus can be cycled around by pressing the < or > keys.

Menu 1 has

1:relay 2:variable 3:timer 4:opencoll 5:anc relay

Menu 2 has

1:maf relay 2:zone isol 3:zone deisol 4:zone reset 5:netvar 6:freespace

Menu 3 has

1:SNA 2:WSA 3:WSF 4:EBA 5:EBF

Menu 1: Option 1 (relay) applies to module relays (1 to 64). Option 1 (relay) is also used to control the LEDs (relays numbers 65 to 256). Option 4 (OpenColl) is used to control an open collector output (1 to 64) on an AZC module. Option 5 (Anc relay) applies to the three ancillary relays.

Menu 2: option 1 (maf relay) is used for the four Brigade relays (standby, Fault, Isolate, Alarm) which have default functions that may be overridden by a logic equation.

Menu 2: options 2, 3, 4 (isol, deisol, reset) are described in Section 3.5.9.

Menu 2: option 5 (netvar) applies only to network systems and is used to set the state of logic variables 1 to 128 sent on the network.

Menu 2: option 6 (freespace) shows the output logic memory available.

Menu 3: SNA,WSA, WSF, EBA, EBF are described in Section 3.8.1.

3.5.6.2 ADU

For ADU there are three menus in the output logic programming that allow selection of an output logic “destination” and they are shown in Fig 6.5. The three menus can be cycled around by pressing the < or > keys.

Menu 1 has

1:variable 2:timer

Menu 2 has

1:netvar 2:freespace

Menu 3 has

1:SNA

Menu 2: option 1 (netvar) applies only to a panel-link connected ADU and is used to set the state of logic variables 1 to 128 sent on the network.

Menu 2: option 2 (freespace) shows the output logic memory available.

Menu 3: option 1 (SNA) is described in Section 3.8.1.

3.5.7 PROGRAMMING RELAYS

When programming equations for relays, note the following.

1. The default operation of the F3200 **MAF Brigade relays** conforms to AS4428.1. Programming relays for operation other than default may contravene AS4428.1. The logic tokens MRA, MRF, MRI, MRS may be used to drive the alarm, fault, isolate and standby relays respectively with the same behaviour as the implicit default operation when there is no logic equation for the relay.
2. If programming the **Alarm relay** with a logic equation and it is desired to have it operate during Brigade Test, then the equation should include the BGT token.

3. Although the **MAF Standby relay** may be programmed to operate off a logic equation, it is still de-energised (by hardware) for the Battery Very Low condition.
4. If it is desired to use the **Plant Isolate** option of the "ANCIL ISOL" function menu, all relays to be isolated must include the PLI token in their equations. E.g. $R3 = (Z5A + Z6A) \cdot \wedge PLI$.
5. It is **not** recommended to program **normally energised relays** because they are de-energised when isolated. Also, they increase FIP quiescent current. All relays have normally closed contacts (i.e. for relay de-energised).
6. Equations may be entered for relays 1-64 even though the corresponding 8 Relay Modules are not fitted. The resulting states are sent on the RZDU bus as zones 65 - 128 and also on the network as zones 65 to 128. See Section 3.5.8.

3.5.8 CONTROLLING LOCAL ZONE LEDS, PSEUDO RELAYS AND RZDU ZONES 129 TO 192

Pseudo relays 1 to 64

It is valid to have a logic equation for a relay for which there is no corresponding physical relay in the system. Relays in the range 1 to 64 for which there is no physical relay are referred to as "pseudo relays" and the states generated by these logic equations are sent on the network (if any) by the Status Transfer application as zones 65 to 128 (refer section 4.10). Pseudo relay states (relays 1 to 64) are also sent on the RZDU bus as zones 65 to 128. The status of a pseudo relay zone sent on the network is either operated or de-operated. The status of a pseudo relay sent on the RZDU bus is either alarm or normal - the receiver interprets this in whatever way it needs. Pseudo relays cannot be isolated or in fault.

The status of a pseudo relay can be viewed by pressing the RELAY key on the base display, then selecting option 1 Module relays, and entering the relay number. The NEXT PREV keys can be used to step through the relays and the up-arrow (fault test) and down-arrow (batt test) keys can be used to step through relays for which there are logic equations i.e. skipping relays for which there is no logic equation. If there are no "pseudo relay logic equations", the status of pseudo relays cannot be viewed on the LCD.

Relays 65 to 256

It is also valid to have logic equations for relays in the range 65 to 256. Since there are never more than 64 physical relays in a panel, these relays numbers have been "borrowed" for the purpose of controlling local zone LEDs (1 to 64) and driving zone status sent on the RZDU bus for zones 129 to 192.

Controlling local LEDs

1. Relay equations for relay numbers 65 to 128 control alarm LEDs 1 to 64, i.e., the first four display boards. E.g. the equation $R65 = Z1:20(1)A$ drives alarm LED 1.
2. Relay equations for relay numbers 129 to 192 control fault LEDs 1 to 64. E.g. the equation $R129 = SFT$ drives fault LED 1.
3. Relay equations for relay numbers 193 to 256 control isolate LEDs 1 to 64. E.g. the equation $R256 = PLI$ drives isolate LED 64.

The LEDs being controlled will be either on steady or off and cannot be selected to flash (unless the equation generates a flashing state by alternating the output state). Relay numbers 65-256 cannot be used in the "right hand side" part of an equation as an operand.

If an LED is driven by both output logic and by a zone LED mapping (refer sections 3.3.4 and 3.10) then output logic overrides.

Controlling RZDU Zones 129-192

In addition to driving local LEDs, the information generated by logic equations for relays with relay numbers 65 to 256 is also sent on the RZDU bus as zones 129 to 192. Refer to section 3.7.3 for information on the zone mapping applying to the RZDU bus.

For example, with the following equations

R65=Z1:20(1)A,
R129=Z1:20(1)F
R193=Z1:20(1)I

then the status of RZDU zone 129 will be alarm if any of zones 1 to 20 at the F3200 controller is un-isolated alarm. Similarly for fault and isolate. RZDU zone 129 will be fault if any of zones 1 to 20 at the F3200 are in fault and isolate if any of zones 1 to 20 at the F3200 are isolated.

NETWORK ZONE MAPPING VERSUS RZDU ZONE MAPPING

The mapping of panel status to Panel-link network zones is **not the same** as the mapping to RZDU zones. In particular, relays 1 to 64 (including pseudo relays) map to network zones 65 to 128. Open collectors 1 to 64 map to network zones 129 to 192. The network zone mapping is designed to make the local status of the panel accessible as zone status from other panels on the network. An exception to this is pseudo relay status which is not directly recallable (as zones 65 to 128) from other network panels. Refer to section 4.10 for more detail.

3.5.9 PROGRAMMING ZONE ISOLATE/DE-ISOLATE/RESET COMMANDS

F3200 allows the programming of equations which initiate zone isolate, zone de-isolate or zone reset commands. These commands have the same effect as if the operator initiated the command using the keypad.

3.5.9.1 ENTERING OUTPUT LOGIC ZONE COMMANDS

Selecting one of the menu options from output logic menu two "2:Zone isol 3:Zone deisol 4:Zone reset" will show the first programmed equation of that type. Pressing NEXT and PREV steps forward and back through the list of equations of that type. The equation is shown with a "first zone" and "last zone" and the command is applied to the range of zones specified inclusively. If the first zone is the same as the last zone then the command applies to that zone only. If there are no equations of the selected type then a "blank" equation is shown with the first zone and last zone equal to zero. A "blank" equation is also shown after stepping through all existing equations of the selected type and this can be used to enter a new equation.

When an existing equation (call it "E1") is shown, the first and/or last zone may be modified and if an equation with the new first and last zone does not already exist then the "right hand side" of equation "E1" will be copied into the new equation (call it E2). Equation E2 may then be modified if desired, or immediately saved. When equation E2 is saved the user will be given the choice of either deleting/overwriting the prior equation E1 or of keeping the existing equation E1 and creating a completely new equation E2. This allows the user to modify the first or last zone of an existing equation (E1) and save it without having to then go back and delete the previously existing equation E1 (and perhaps forgetting to). It also allows the "right hand side" of an existing equation to be copied to a new equation with a different range of zones. The DELETE and INSERT keys may be used to modify the copied equation as with normal equation editing.

The logic equations for zone commands are entered as:

ZRn:m="equation" to reset zones n to m inclusive
ZIn:m="equation" to isolate zones n to m inclusive
ZDn:m="equation" to de-isolate zones n to m inclusive

If n and m have the same value then the command applies to that single zone.

There may be only one equation of each type (reset/isolate/de-isolate) with the same first zone/last zone. E.g. it is not possible to have both ZI3:7=BLI and ZI3:7=Z1I as two separate equations. The logic should be combined into one equation.

When an existing equation is recalled or has just been saved, the cursor will be positioned on the "I", "D" or "R" immediately to the left of the "first zone" number. The "up arrow" key may be used to cycle through "I" (isolate), "D" (de-isolate), or "R" (reset) and if the equation of the new type exists it will be recalled otherwise it will be created and the "right hand side" of the previously shown equation will be copied into the new equation.

After entering all of the zone isolate/de-isolate/reset equations it is recommended that they be checked by printing the database to a printer or computer, or by stepping through the list of equations on the LCD. Check that the equations are correct and that no unwanted equations have been inadvertently left in the list. An entire equation may be deleted using the DELETE key when the cursor is on the left hand side of the equals (=) sign of the equation.

WARNING

To view the zone command logic equations that have been programmed, the preferred method is to "PRINT" the database or output logic to a computer or printer. If this is not possible then the equations can be viewed on the LCD. To do this, select one of the options 2:Zone Isol, 3:Zone deisol or 4:Zone reset and use the NEXT and PREV keys to step through the entire list. DO NOT use the up arrow/down arrow keys to swap between isolate, de-isolate or reset types and do not enter explicit zone numbers as this may create a new equation where one did not previously exist (as a convenience, the previously displayed equation is copied to the new one if there is no equation already defined for the new type or zone numbers).

Hence if you wish to view existing equations, use only the NEXT and PREV keys.

3.5.9.2 OPERATION OF OUTPUT LOGIC ZONE COMMANDS

Reset Command

A single zone or a range of zones may be reset. All zones in the specified range will be reset, regardless of whether they are in alarm or not, as if the zones had been reset by an operator from the keypad.

The output logic initiates the reset command whenever the equation on the right hand side is true. If the equation is still true at the end of the reset then another reset will be immediately initiated, and this will repeat until the equation becomes false. Therefore, to avoid repeated resets the equation should be arranged so that it becomes false before the end of the reset. The equation needs to be true for only one pass of the output logic for the zone reset to be initiated.

Isolate / De-isolate Commands

A single zone or a range of zones may be isolated/de-isolated. The command will be applied to all zones in the specified range regardless of the type of zone.

Whenever the right hand side of the equation is true, the zones will immediately be isolated/de-isolated if they are not already isolated/ de-isolated.

If an equation to isolate/de-isolate a zone is continually true, and an operator enters the opposite command using the LCD/keypad, then the zone will briefly change but will quickly revert back due to the output logic.

Therefore the logic equation should be arranged so that the equation is only true for a brief time or on a change of state. The NA operator may be used for this purpose.

3.5.9.3 EXAMPLE EQUATIONS

- (i) The equation $ZI3:7=WSS$ will cause zones 3 to 7 (inclusive) to be isolated whenever WSS is true, i.e. the Warning System is silenced. If the operator manually de-isolates any of zones 3 to 7 then the output logic will immediately isolate them again if WSS is true.
- (ii) An external switch is used to isolate or de-isolate a group of zones. The equation $ZI5:8=Z16M$ will result in zones 5, 6, 7 and 8 being isolated when zone 16 (the switch) is in a short circuit state. If it is necessary to de-isolate the zones again when zone 16 is taken out of short circuit then a second equation is needed, perhaps $ZD5:8=\wedge Z16M$.

However, including these two equations would prevent an operator from isolating or de-isolating the zones using the keypad because one or other of the two equations (whichever has a TRUE "right hand side") is continually attempting to isolate or de-isolate the zones. An "NA" function can be used to overcome this as follows.

```
V1=NA(V1;Z16M)
V2=\wedge Z16M
V3=NA(V3;V2)
ZI5:8=V1
ZD5:8=V3
```

The output logic will isolate/de-isolate the zones only when a transition of zone 16 into/out of the short circuit state occurs. Only one of variables V1 or V3 is true for exactly one complete pass of the output logic after a transition of zone 16.

- (iii) To reset a zone after it has been in alarm for 30 seconds.

```
T1[S30:0]=Z1A
ZR1:1=T1
```

After zone 1 alarm (Z1A) has been true for 30 seconds, timer T1 will become true and a reset command will be issued to zone 1. This will immediately cause Z1A to become false, resulting in timer T1 becoming false and removing the reset command initiation. If the zone subsequently goes back into alarm, then after a further 30 seconds it will be reset again.

Note: If the zone is isolated then it will NOT be reset 30 seconds after being in alarm due to the fact that the Z1A token is false for an isolated zone.

3.5.10 USING THE ZND AND ZNM TOKENS

Some applications require the use of a switch, where the state of the switch can be accessed in output logic. One of the zone output logic tokens listed in section 3.5.3 would normally be used to access the state of the switch - ZnA, ZnF, ZnN, ZnD, ZnM, ZnI or ZnR. For example if a short circuit state is produced when the switch closes then band B1 could be programmed as instant alarm, and the ZnM token will become true when the state of the circuit is short circuit/B1.

The ZnD and ZnM tokens have a faster "response" time (80-240 milliseconds) than ZnA or ZnF. As described in section 3.2.4 "Time Delays", a type 4 circuit with an into alarm delay of zero has an actual delay of 200 to 800 milliseconds (typically 400 milliseconds) which means that the ZnA and ZnF tokens become true within 200 to 800 milliseconds. Otherwise the time delay for the ZnA and ZnF tokens is 2.0 to 2.3 seconds. The ZnD and ZnM tokens are not affected by whether the zone is isolated (unlike ZnA and ZnF), so the ZnI token could be used in an equation to qualify the ZnD and ZnM tokens if necessary.

Which zone token to use and which circuit delay type to program depends on the response time required for the switch.

There are some other special considerations to note when using the ZnD and ZnM tokens. In particular, during system or auto test, or at the termination of a zone alarm test, the circuit input may be in the band B3 long enough for the ZnD or ZnM token to become briefly true. During system/auto test if band B3 is programmed as "detector operated" or as "instant alarm", then the ZnD or ZnM tokens will be true for the 1 to 2 seconds that the circuit is in band B3 during the test.

A "status only zone" (refer Section 3.3.2 Configuring Zones) does not get tested during system or auto test and hence will not have the problem of the circuit going into band B3 during system test.

During zone alarm test the state of the circuit will appear to be in band B2 (unlike system/auto test). However, if the zone test is terminated by pressing the ACK key without resetting the zone, then the circuit will appear to be in band B3 for a short time (approx 200 milliseconds) - long enough to cause the ZnD or ZnM tokens to return true for a short time, depending on the programming of band B3.

During zone reset (other than AVF reset or In-Situ mode reset) the ZnD and ZnM operands will be the value that existed at the start of the reset. This includes the 2 second post reset delay, a total of 7 seconds. After this they will be the current state of the circuit input.

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

Therefore for a "status only zone" it is recommended that band B3 be programmed as normal rather than instant alarm.

Note that the default mapping for band B3 is "instant alarm" which is the state that causes the ZnM token to be true.

3.6**RELAY OUTPUTS****3.6.1 GENERAL**

The Ancillary relays (Anc 1, 2, 3) on the MAF/PSU and the Module relays all have the option of supervision (i.e. checking the wiring from a relay to its load to see that it is not "short" or "open" circuited).

In F3200, the supervision also includes a "confirmation" function. i.e., it expects to "see" a different state after a relay has been activated. If an incorrect state is "seen" by the supervision, before or after relay activation, then it generates a "fault" condition for that relay. Supervision in the activated state can be disabled for "load" mode if it is not required, for example when the relay switches the load to 0V.

For each relay the supervision can be disabled if not required, mapped to the MAF, and made latching or non-latching. Anc 1 + 2 relays can be programmed for two different modes of supervision - door holder or load mode. All relays can also be individually made non-isolatable (stops the Operator isolating them) and non-testable.

"Door holder mode" refers to when the load is normally energised with the relay itself de-energised. i.e. for door holders, the normal state is for the door to be held open by energised magnets (i.e. the load is energised) and the relay itself is de-energised. When the door is closed, the relay energises but the load de-energises. "Load mode" is the opposite of door holder mode where the load is de-energised when the relay is de-energised.

To program relay outputs, select option 4: System config from the base programming menu, then option 5: relays, then option 1: relay options.

3.6.2 ANCILLARY RELAY OUTPUTS

This is option 1 in the Relay Options menu.

Ancillary Relay Options

The options which may be entered for ANC 1, 2, and 3 are:

- Supervision enabled (E) or disabled (D).
- Supervision latching (L) or non-latching (N) (applies to faults).
- Fault and isolate mapped (M) or not mapped (N) to the MAF.
- Supervision is load (L) or door holder (D) mode (not for Anc 3)
- Isolatable (yes/no)
- Testable (yes/no)
- Supervise Activated State (yes/no)

The default setup (by database reinitialise) is.

ANC 1: supervision enabled, non-latching, mapped to MAF, Door holder, isolatable, testable, activated state is supervised.

ANC 2: supervision enabled, non-latching, mapped to MAF, Load mode, non-isolatable, non-testable, activated state is supervised.

ANC 3: supervision enabled, non-latching, mapped to MAF, non-isolatable, non-testable, activated state is supervised.

3.6.3 MODULE RELAY OUTPUTS

This is option 2 of the Relay Options menu.

To program module relay options the desired relay number is selected by use of the "NEXT" and "PREV" keys.

The options which may be selected for each module relay are:

- Supervision enabled (E) or disabled (D).
- Supervision latching (L) or non-latching (N) (applies to faults).
- Fault and isolate mapped (M) or not mapped (N) to the MAF.
- Supervision and relay status mapped to LED n on an LED Display (where fitted).
- Isolatable (yes/no)
- Testable (yes/no)
- Supervise Activated State (yes/no)

The supervision mode on module relays is always "load".

The mapping of the relay status (activated, isolated, fault or normal) to LEDs on an LED Display is described in section 3.3.4.

The default setup by database reinitialise is supervision enabled, non-latching, mapped to MAF, isolatable, testable, activated state is supervised.

3.6.4 WARNING SYSTEM/ EXTERNAL BELL MAP TO MAF

The mapping of Warning System and External Bell to the MAF can be enabled or disabled. If enabled, fault and isolate conditions signal Brigade fault and Brigade isolate respectively. This is a requirement of AS4428.1.

To enable or disable these options, from the main system configuration menu, select option 5 Relays. This will produce the following menu.

1:Relay options 2:Warning system/ External bell

Option 2 produces the following menu

1:Warning system maps to MAF 2:External bell maps to MAF

These options allow the mapping to MAF to be enabled or disabled.

3.7**RDU CONFIGURATION**

F3200/NDU transmit information ("zone status") on the RZDU bus. There are some programmable parameters which affect the information sent on the RZDU bus (refer section 3.10). This is discussed further in section 3.7.3 below.

3.7.1 RDU CONFIGURATION

The **RZDU menu** (option 6 in the System Configuration menu) has two options as follows: 1 Protocol Type; 2 RZDU config.

Protocol Type

The two protocols available for communication between the panel and RZDUs are:

LCD - the newer protocol with more capability.

Non-LCD - the older protocol that may need to be used with some older versions of RZDUs, IO-NET or Colour Graphics.

The default protocol is LCD. Non-LCD can be selected by pressing "ENTER". If LCD protocol is used, each RDU may then be programmed as using either LCD-A or LCD-B. LCD-A is normally used, but LCD-B may be used with some versions of RDU. The selection of LCD-A or LCD-B must be done in both the panel and the RDU. A mixture of LCD-A and LCD-B type RDUs may be used on the same panel.

RDU config

RDUs 1-8 can be selected by use of the "NEXT" key. The cursor left and right keys are used to step through the items that can be programmed for each RDU. The cursor up key is used to enable or disable each RDU and to select LCD-A or LCD-B.

The **RDU MCP** can be mapped to a FIP zone by entering a zone number.

3.7.2 SENDING ZONE NAMES TO AN RDU

F3200/NDU provide a command to initiate the sending of programmed zone and module relay names to RDUs via the RZDU bus. From the base display, press the SET key then the right arrow key and select option 1 RZDU zone name transmit. A password is required to initiate this command. An RDU that is to receive these names and save them in its database must have its database write protect link in the write enable position.

After the command is initiated, the FIP will send up to 8 zone names every 2 seconds. The current zone number being sent is displayed on the LCD. The CLEAR key may be used to terminate the process at any time. The FIP will send the names of up to 64 alarm zones and 64 module relays.

The panel also sends the name of a zone to an RDU whenever an FF alarm is generated for that zone. If programmed to, the RDU can save the zone name received with an FF alarm event into its database. Refer to the RDU Programming manual.

3.7.3 STATUS SENT ON THE RZDU BUS

By default, local zone and relay status is sent on the RZDU bus, but alternatively, LED status as generated by network zone to LED mapping can be sent instead (refer section 3.10). When the "zone status maps to RZDU output" parameter is true (the default setting), a combination of local zone/relay status and LED status is sent on the RZDU bus as follows.

1. Local alarm zones 1 to 64 map to RZDU zones 1 to 64.
2. Local module relays 1 to 64 map to RZDU zones 65 to 128. Even if there are no relay modules fitted, F3200 still allows equations for relays 1 to 64 to be entered. The logic state calculated for the equation is sent as the alarm state for the corresponding zone 65 to 128 sent on the RZDU bus.
3. Logic equations for module relays with a relay number in the range 65 to 255 map to RZDU zones 129 to 192. (refer to section 3.5.8).
4. The LED status generated by network zone to LED mapping for LED numbers 193 to 528 is sent on the RZDU bus as zones 193 to 528. (refer section 3.10.1)

Figure 3.7 on the following page shows the mapping of F3200 zone status, relay status and logic equations to the RZDU data output more clearly.

If the parameter "zone status maps to RZDU output" is set to false then the information sent on the RZDU bus consists entirely of "LED status" as generated by network zone to LED mapping. Refer section 3.10.

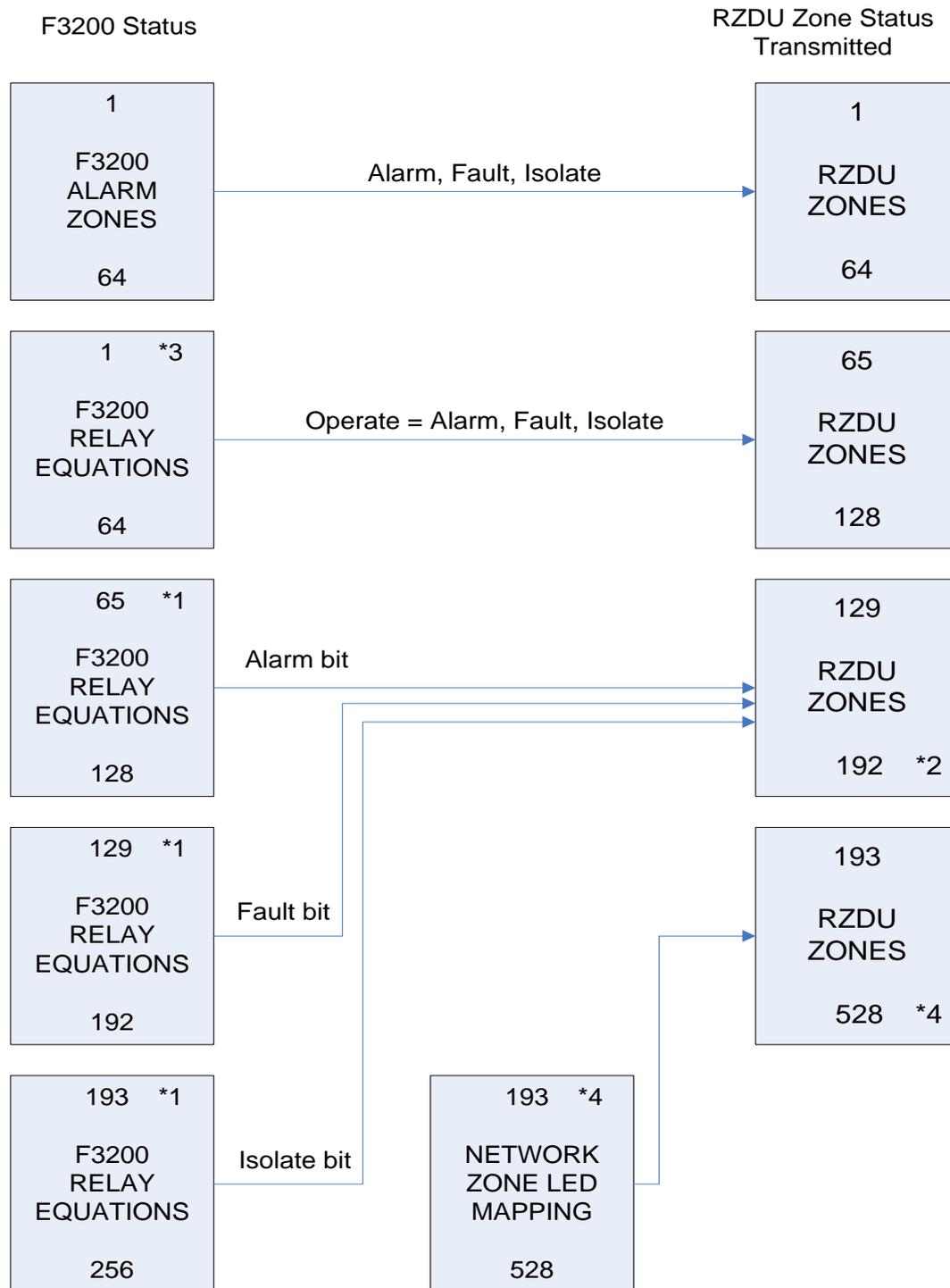


Figure 3.7 F3200 Status to RZDU Zone Mapping

- *1 Relay equations for relays 65 - 256 also control alarm, fault, isolate LEDs (1-64) on local LED display boards if present. Refer section 3.5.8.
- *2 Zones 129 to 192 are sent on the RZDU bus only if there are one or more logic equations for relays 65 - 256 in the output logic.
- *3 Logic equations for relays 1 to 64 may be entered even though there may be no corresponding physical relays. These states are also sent on the network, if any. Refer to section 4.10.
- *4 Refer section 3.10 for information on network zone to LED mapping and the associated programmable parameters that determine the RZDU output.

3.8 OPERATION OF WARNING SYSTEM/EXTERNAL BELL

AS4428.1 introduced two new concepts, the Warning System and the External Bell, which the previous AS1603.4 standard did not have. AS1603.4 systems have a “Bells” output which usually corresponds to the External Bell in AS4428.1.

The purpose of the AS4428.1 Warning System is to evacuate people from the building when an alarm occurs. The purpose of the External Bell is to allow the Fire Brigade to locate the fire panel where an alarm has occurred. In an AS4428.1 F3200 system, the Ancillary 3 relay (Bells) is normally used for the Warning System and the Ancillary 2 relay for the External Bell. The Ancillary 3 relay has different supervision to Ancillary 1 and 2 and can supervise multiple connections, which is why it is used for the Warning System. The External Bell normally has only a single bell connected.

There are some zones associated with the Warning System (zone 198) and External Bell (zone 199) which allow their status to be displayed and controlled locally or from other networked panels.

3.8.1 OUTPUT LOGIC CONTROL OF WARNING SYSTEM/EXTERNAL BELL & SOUNDER

The operation and fault indication of the Warning System and External Bell are determined by output logic.

Output Logic Destinations

Five output logic destinations enable control of the Warning System, External Bell and the Sounder. To access these from the main output logic programming menu, press the right arrow key twice.

- EBA Activates the External Bell. This state is shown on Zone 199 and is ANDed with NOT EBS internally to create EBO.
- EBF Generates fault state on the External Bell (Zone 199).
- SNA A change from False to True will activate the sounder on the Controller Module (and the SOF token). Pressing any key will silence the sounder. SNA must go False then True again to restart the sounder.
- WSA Activates the Warning System. This state is shown on Zone 198 and is ANDed with NOT WSS internally to create WSO.
- WSF Generates a fault state on the Warning System (Zone 198).

Default Logic Equations

The default equations that are created on initialisation of an AS4428.1 system are:

EBA = ZBA + EBT
WSA = ZWA + WST + ITA
AR2 = EBO
AR3 = WSO
EBF = AR2F
WSF = AR3F

These equations determine the operation of the Warning System and External Bell as follows (refer to Section 3.5.3 for a description of the tokens):

1. Output logic determines which physical outputs operate when the Warning System or External Bell are activated. The default equations for this are:

$$\begin{aligned} \text{AR2} &= \text{EBO} \\ \text{AR3} &= \text{WSO} \end{aligned}$$

The Ancillary 2 relay operates when the External Bell is operated (i.e. activated and not isolated). The Ancillary 3 relay operates when the Warning System is operated (i.e. activated and not isolated). These equations can be modified if necessary. Other outputs can be operated when the Warning System/ External Bell is activated by setting up equations to drive them.

For example $\text{R1} = \text{WSO}$ will result in module relay 1 being operated when the Warning System is operated.

For an NDU in New Zealand mode the equation for AR3 may need to be $\text{AR3} = \text{WSO} + \text{TEV} + \text{RTE}$

2. Output logic determines which conditions cause the Warning System or External Bell to be activated. The default equations for this are :

$$\begin{aligned} \text{WSA} &= \text{ZWA} + \text{WST} + \text{ITA} \\ \text{EBA} &= \text{ZBA} + \text{EBT} \end{aligned}$$

The Warning System is activated by alarm on any non-isolated zone mapped to the Warning System (ZWA), or by a test of the Warning System (WST), or by an alarm on a zone in In-Situ test mode that is mapped to the Warning System (ITA).

The External Bell is activated by alarm on any non-isolated zone mapped to the External Bell (ZBA), or by a test of the External Bell (EBT).

These equations can be modified so that the Warning System or External Bell can be activated as desired. When the equation for WSA becomes true, the Warning System is activated, the logic token WSO becomes true (if the Warning System is not isolated), and the outputs driven by the WSO token will be operated unless the Warning System is isolated. When the equation for EBA becomes true, the External Bell is activated, the logic token EBO becomes true (if the External Bell is not isolated) and the outputs driven by the EBO token will be operated unless the External Bell is isolated.

Network systems that need the local Warning System to be activated for alarms on other panels can include the RWA token (see the networking section 3.8.5 for further information on the RWA token).

$$\text{WSA} = \text{ZWA} + \text{WST} + \text{ITA} + \text{RWA}$$

Network systems that need the local External Bell to be activated for alarms on other panels can include the RBA token (see Section 0 for further information on the RBA token).

$$\text{EBA} = \text{ZBA} + \text{EBT} + \text{RBA}$$

The RMA and FFA tokens may also be needed in some situations.

3. Output logic determines which conditions cause the Warning System or External Bell to be in fault. The default equations for this are :

$$\text{WSF} = \text{AR3F}$$

$$\text{EBF} = \text{AR2F}$$

When a supervision fault occurs on any of the outputs driven by the warning system, the Warning System must signal fault and this is achieved with a logic equation.

Similarly with the External Bell. The equation for WSF must be modified to include supervision faults of all the outputs controlled by the Warning System. Similarly with the External Bell and the equation for EBF. When the equation for WSF is true, a brigade fault will be signalled if the Warning System is mapped to the MAF and the Warning System is not isolated. When the equation for EBF is true, a brigade fault will be signalled if the External Bell is mapped to the MAF and the External Bell is not isolated.

3.8.2 ISOLATING /DE-ISOLATING /TESTING WARNING SYSTEM / EXTERNAL BELL

The Warning System and External Bell can be isolated, de-isolated and tested. When the Warning System is isolated the WSO token is always false and hence any outputs driven by the Warning System will not be operated. The WSS token is true when the Warning System is isolated (or silenced).

Similarly with the External Bell, the EBO token is always false when the External Bell is isolated and the EBS token is true.

Depending on programming, the physical relays that are driven by the Warning System or External Bell can themselves be isolated so that the relay will not operate when the WSO or EBO token becomes true. If the Ancillary 3 relay is isolated and the Warning System is de-isolated, the Warning System isolate LED will be off but the common isolate LED will be on and the Isolate total on the LCD base display will be non-zero. The zone used to display the Warning System status (zone 198) does not indicate when any of the physical outputs driven by the Warning System are themselves isolated. Similarly with the External Bell. To avoid this the physical Ancillary outputs can be programmed so that they are not isolatable.

By default, the Ancillary 2 and Ancillary 3 relays cannot be isolated or tested but this can be changed with programming. The configure Module relay /Ancillary relay menu is used to select whether an individual relay can be isolated or tested. This menu is also used to select whether a relay has supervision enabled, is mapped to the MAF, and is latching/non latching.

3.8.3 MAPPING THE WARNING SYSTEM, EXTERNAL BELL AND RELAYS TO THE MAF

The Warning System and External Bell can be programmed to map or not map to the MAF. If the Warning System is mapped to the MAF, then:

- When a fault occurs on the Warning System (i.e. the equation for WSF is true), a fault is signalled to the Brigade unless the Warning System is isolated.
- Isolating the Warning System will cause the Brigade Isolate relay to operate.

Similarly for the External Bell. The Warning System and External Bell are mapped to the MAF by default.

The Configure Relays menu is used to select the mapping to MAF of Warning System, External Bell and relays. By default, all ancillary and module relays have supervision enabled, are non-latching and are mapped to the MAF. If a relay is programmed as latching and a supervision fault occurs on it, then the fault state latches on that relay and a reset command must be applied to that relay to clear the latched fault state after the physical fault has been cleared. Faults do not latch on the Warning System or External Bell themselves.

3.8.4 ISOLATING/ DE-ISOLATING WITH OUTPUT LOGIC

Output logic equations can be used to isolate or de-isolate zones. Because the Warning System (zone 198), External Bell (zone 199), module relays (zones 65 to 128) and Ancillary relays (zones 194,195,196) each have their own unique zone number, they can be isolated or de-isolated with output logic using the appropriate zone number.

3.8.5 WARNING SYSTEM /EXTERNAL BELL WITH NETWORKED SYSTEMS

When two or more F3200s or NDUs are networked together, the Warning System and External Bell can be activated due to an alarm on another panel and can be silenced due to an isolate state on another panel, depending on programming. This allows the Warning System or External Bell to be silenced at multiple selected panels (or all panels) with a single command at one panel. Each panel has its own Warning System and External Bell isolate status, but in addition, the Warning System /External Bell can be inhibited (silenced) when the Warning System /External Bell are isolated at another panel on the network.

3.8.5.1 Network Warning System/External Bell Isolation

On F3200/NDU there are two parameters which affect the operation of Warning System isolate on a network system and are accessed through the network programming "MAF" menu option. These are :

"Receive Warning System silence" - enable/disable
"Send Warning System isolate as network silence" - enable/ disable

Similarly with the External Bell there are two parameters:

"Receive External Bell silence" - enable/disable
"Send External Bell isolate as network silence" - enable/ disable

These parameters are disabled by default. If the "Send Warning System isolate as network silence" parameter is enabled, then when the Warning System is isolated the panel will send a Warning System silence state to other panels on the network. Panels on the network that have "Receive Warning System Silence" enabled will use the Warning System silence state to inhibit their Warning System outputs (by forcing the WSO token to be false). The receiving panel must be programmed to use the MAF status of the sending panel. I.e. the sending panel must be in the SID list of the receiving panel and have "Use MAF relay data" enabled.

Similarly with the External Bell and the parameters "Receive External Bell silence" and "Send External Bell isolate as network silence".

When the Warning System is locally isolated, the Warning System isolate LED is on steady. When the Warning System is inhibited due to a Warning System silence state received from another panel on the network, the Warning System isolate LED flashes at 1 Hz and this overrides the steady LED state shown for local isolation.

Both these states are indicated on a recall of Zone 198.

Similarly with the External Bell Isolate LED and Zone 199.

3.8.5.2 Warning System /External Bell Activation For Network Alarm

When an alarm occurs at a panel that causes the Warning System to be activated, (i.e. the equation for WSA is true), this condition is sent onto the network as a Warning System alarm state. It is not inhibited by Warning System isolate at the sending panel. A panel that receives the Warning System alarm state can use it to activate its own Warning System by including the "RWA" token in the equation for WSA. The receiving panel must also have the sending panel in its SID list and have "Use MAF relay data" enabled. The RWA token is not inhibited by Warning System isolate at the sending or receiving panels.

Similarly with the External Bell. When an alarm occurs at a panel that causes the External Bell to be activated (i.e. the equation for EBA is true), this condition is sent onto the network as an External Bell alarm state. The RBA token is true when an External Bell alarm state is received from any panel that appears in the SID list and has "Use MAF relay data" enabled.

The RMA token may sometimes be needed instead of the RWA or EBA tokens. The RMA token is true when a MAF alarm state is received from any panel that appears in the SID list and has "Use MAF relay data" enabled. In many cases, all zones will map to the MAF, the Warning System and the External Bell, so RMA, RWA and RBA are the same.

The FFA token may also be useful. It is true whenever there is an alarm in the FF alarm list, regardless of where the alarm came from.

3.8.5.3 Operation Of Warning System For In-Situ Test Mode

When a zone in In-Situ test mode goes into alarm, the logic token ITA is set true for 2 seconds if the zone is mapped to the Warning System. With the default logic equation the local Warning System will be activated when ITA becomes true, however, the Warning System on other panels on the network will not be activated.

On some network systems the Warning System outputs may be spread over two or more panels. To have all these outputs activated briefly for In-Situ test mode alarms requires the use of network logic variables to send the state of the ITA token to the other panels. Because of potential time delays with messages being sent across the network it may be necessary to use timers to help ensure correct operation, as in the following example.

Assume SID 1 is the panel with the In-Situ test mode alarm and SID2 is the panel with the Warning System outputs.

At F3200 SID 1, program the following logic.

```
T1S [0,5] = ITA
NV0 = T1
T2S [3,2] = T1
NV1 = T2
```

The last two equations involving timer 2 and NV1 are optional but will give more reliable performance on a busy network.

At SID 2, program the following.

```
T1S [0,2] = NV1:0. ^ V1
```

$V1 = NV1:0. (T1 + V1)$
 $AR3 = WSO + T1. \wedge WSS$

Where AR3 is the output used to signal the In-Situ test alarm.

3.8.6 LEGACY BELLS

Legacy Bells is a concept introduced into AS4428.1 F3200 panels to allow them to inter-operate across a network with AS1603.4 panels.

The Legacy Bells setting determines which of External Bell, Warning System, or neither, corresponds to the AS1603.4 Bells facility.

A panel with AS4428.1 software and an AS1603.4 keyboard, uses the Legacy Bells setting to determine whether the Bells Isolate button and LED correspond to the External Bell, the Warning System, or neither.

A networked AS4428.1 panel (with either AS4428.1 or AS1603.4 keyboard type) uses the Legacy Bells setting to map the External Bell, the Warning System, or neither, to the Bells functions when it communicates with an AS1603.4 panel.

If a Bells Isolate command is received from an AS1603.4 panel then this will be mapped by an AS4428.1 panel to the Warning System, the External Bell, or ignored, according to the Legacy Bells setting. Similarly an External Bell command or a Warning System command, whichever is the Legacy Bells setting, will be translated into a Bells Command when these are sent to an AS1603.4 panel.

An AS4428.1 F3200/NDU will transmit a "MAF Alarm with no Bells" state in its network MAF status if any MAF-mapped zone is in alarm. It will also include "MAF Alarm" in its network MAF Status if the zone in alarm is mapped to the Warning System and this is the Legacy Bells setting, similarly for the External Bell being the setting. This functionality matches an AS1603.4 panel on the network.

An AS4428.1 F3200/NDU also maps a MAF alarm received from an AS1603.4 panel (in its SID list with "use MAF relay data" enabled) into the RWA or RBA logic tokens according to the Legacy Bells setting. The appropriate token can then be used to activate the required output if operation like an AS1603.4 panel is desired, i.e. turning the bells on when an alarm is received.

An NDU with AS4428 software that is operating in "New Zealand" mode automatically maps its Trial Evacuation and Silence Alarms states to the Warning System irrespective of the Legacy Bells setting.

3.9 INSTALLING AS4428.1 COMPLIANT SOFTWARE IN AN AS1603.4 F3200/NDU

F3200/NDU AS4428.1 software (V3.XX or later) can be installed in a panel that was previously running AS1603.4 software (V2.XX or earlier). This may be done for a number of reasons.

1. To make the panel fully AS4428.1 compliant - in which case a new front panel with a new controller board must be fitted as well.
2. To upgrade the software to give AS4428.1 operation but retain the old AS1603.4 type keypad. This may be done on network systems so that all panels are running AS4428.1 type software even though some have the older AS1603.4 keypad and front panel.
3. To upgrade the software to get some of its new features.

In all cases, the database from the existing panel can be used in the new panel but will need modification and programming of the new features that were not present in the older software. If the panel is to be fully AS4428.1 compliant then it must have separate relay outputs for the Warning System and External Bell. Any available relay outputs can be used for these, but they must be supervised. The ancillary 3 relay is most suitable for the Warning System because it supports wiring to multiple alerting devices.

It is necessary to understand the existing panel configuration (unless the panel is being completely reconfigured), by printing its database and checking the output logic programming, the zone programming (which outputs zones map to) and the relay programming. If the output logic uses the BEL or BLI logic tokens, these will need to be reprogrammed as they are not available in AS4428.1 software.

In the following steps, the menu keystrokes to get to a particular command are identified as, for example, (Menu ► 2). This means from the base programming menu (which shows "Programming 1: Access code 2: Text 3: Global Data etc") press the ► (Alarm Test) key followed by the 2 key.

The main differences in the database programming between AS1603.4 V2.XX and AS4428.1 V3.XX or later software are listed below.

1. When upgrading to AS4428.1 software the "keypad type" and "legacy bells" options need to be programmed.

The keypad type can be programmed (Menu ► 1) as either 1603.4 (old type) or AS4428.1 (new type) to match the keyboard installed. The legacy bells can be programmed as (Menu ► 2) 1:Warning System 2:External Bell 3:None. For Australian operation this is usually set to option 2 External Bell.

2. For an AS4428.1 compliant panel, the alarm text names should be Smoke, Heat, FSW, MCP, VMD, PSW, SPR, SIP, flame instead of
Smoke, Heat, FSW, Manual, Valve, PSW, SPKLR

These are programmed using the text programming menu (section 2.4.5).

3. An AS1603.4 keypad has a Brigade Test key. With AS4428.1 software installed, this key may still be used to do a Brigade Test. AS4428.1 software provides another mechanism for doing a Brigade Test. Pressing the TEST key at the base display, then on a network system selecting option 1:Local system, then pressing and holding the "6" key for 2 seconds will initiate a Brigade Test.

For brigade test there is a programmable option (Menu 3 ► 1) which selects whether the brigade alarm relay is to be activated by a brigade test. This should be disabled if it is not needed.

4. The programmable option "Bells on for an FFCIF alarm" is no longer available with AS4428.1 software. The FFA token can be included in the equation for EBA to activate the External Bell when there is any alarm in the FF alarm list.
5. Type 2 FF operation is not available with AS4428.1 software.
6. There are new battery tests and battery/mains/charger monitoring options that may not have been available in earlier software. These are :
 - Battery connection test
 - Hourly 90 second battery test
 - Daily 40 minute battery test
 - Battery low monitoring
 - Charger high/low fault signalling
 - Mains fail signalling fault after 8 hours.

These options are accessed via Menu 3 ► ► 3, and all but the last option need to be enabled to comply with AS4428.1. If the daily 40 minute battery test is enabled then it is essential that the battery test resistors R52/R53 on the MAF module be removed.

7. Equations for the Warning System and the External Bell need to be entered (Menu 4 4 ► ►). By default they are as follows, but may need to be changed for specific installations.

AR2 = EBO
 AR3 = WSO
 WSA = ZWA + WST + ITA
 EBA = ZBA + EBT
 WSF = AR3F
 EBF = AR2F

It is necessary to determine how the various outputs in the system will be used before these equations can be entered. This will depend on whether the system is being made fully AS4428.1 compliant or not, and what the previous configuration was. If the Warning System is not going to be used then the equations for WSA and WSF do not need to be entered.

8. The mapping of zones to ANC 1 relay, Warning System, and the External Bell needs to be thoroughly checked.

Zones mapped to ANC 1, ANC 2, and ANC 3 become mapped to ANC 1, Warning System, and External Bell, respectively, when AS4428.1 software is installed. I.e. a zone which previously mapped to ANC 2 will now be mapped to the Warning System (which by default uses ANC 3) and a zone previously mapped to ANC 3 becomes mapped to the External Bell (which by default uses ANC 2). Therefore on upgrading it is likely that the output wiring from ANC 2 and ANC 3 will need swapping over and

changes made to the wiring to allow supervision.

If the ANC 2 relay is not going to be used for either the Warning System or the External Bell, but is still required to operate for an alarm on zones that were previously mapped to it, then those zones will need to have their mapping to the Warning System removed (unless they also need to operate the Warning System) and a logic equation should be entered to drive ANC 2 directly from the zone alarms, or from the ALM token if the ANC 2 relay should operate for any MAF alarm.

Similarly with the ANC 3 relay, some systems may need to remove the mapping of zones to the External Bell (these are zones which previously mapped to ANC 3) and enter a logic equation for AR3. If the ANC 3 relay is actually used to drive the External Bell then the zones which previously mapped to ANC 3 will have become mapped to the External Bell and this can be left unchanged, but it will be necessary to enter an equation for the External Bell to drive AR3 e.g. $AR3 = EBO + EBT$

9. The Ancillary 1, 2, 3 relays and module relays can be configured as latching/non latching; mapped to maf; isolatable/non-isolatable etc and they can all be configured with a text name. For AS4428.1 compliant systems, the Warning System and External Bell outputs must be supervised.
10. Mapping of the Warning System/ External Bell to MAF.
It is recommended that these be enabled (Menu 4 5 2) so that fault and isolate conditions are signalled to a monitoring centre.
11. The BEL/BLI logic tokens are no longer valid and a system fault will occur until these tokens are removed/ replaced in the output logic. The equivalent tokens in AS4428.1 software are EBO and EBS if the Bells in the previous configuration corresponds to the External Bell and WSO/WSS if the Bells corresponds to the Warning System.
12. Network systems.
For network systems the following parameters may need to be programmed.

"Receive Warning System silence"
"Send Warning System isolate as network silence"
"Receive External Bell silence"
"Send External Bell isolate as network silence"

These parameters correspond to the following AS1603.4 software parameters.

"Allow net bells control"
"Send bell Iso as net silence"
"Allow receive net bells silence"

The "Allow net bells control" parameter is no longer used with AS4428.1 software, because a corresponding mechanism is provided with output logic equations where the RWA and RBA tokens can be used.

13. Check what settings are needed for "FF options". Refer to section 2.4.6.3.

3.10 NETWORK ZONE TO LED MAPPING & CONFIGURATION

This section describes how to map network zones to the LEDs on zone LED display boards and to RDUs. F3200/NDU version 5.00 or later software provides functionality similar to an NLDU (Network LED Display Unit) for displaying network zone status on LEDs. As with the NLDU, F3200/NDU receive the status of zones from other panels on the network via the Panel-Link "Event logging application", so the remote panels must be configured to send zone events and event updates onto the network (refer section 4.8).

Up to 33 LED display boards may be connected to an F3200/NDU, with 16 LED sets per board. The mapping of zones to LEDs described in this section is referred to as *Network zone to LED mapping*. F3200 also provides *Local zone to LED mapping* which is described in section 3.3.4. Local alarm zones map to network zones 1 to 64 and local relays map to network zones 65 to 128.

F3200/NDU optionally allow the information sent on the RZDU bus to be a duplicate of the information shown on the local LEDs. By default, the information sent on the RZDU bus is local zone and relay status, rather than LED status, but there is a programmable option that allows selecting LED status to be sent on the RZDU bus instead of zone status. Hence, the mapping of network zones to LEDs can determine both the information shown on the local LEDs and the information sent on the RZDU bus.

NOTE : Network zone to LED mapping may be used even when there are no LED display boards connected to the F3200/NDU, because if the LED status is being sent on the RZDU bus, then network zone to LED mapping determines the information that is sent on the RZDU bus.

Menu access

To access the menus for configuring and mapping network zones to LEDs, from the main programming menu, select option 4: System config, then option 2:Zones, then option 3: Zone LED mapping. The following menu appears.

1:LED mapping options 2:LED mapping

Option 2 LED mapping allows the mapping of network zones to LEDs and is described in the following section 3.10.1. Option 1 LED mapping options, produces the following menu.

1:Local LED mapping options 2:RZDU output options

Option 1 Local LED mapping options produces the following menu

Local LEDs show 1:Any alarm 2:Any fault 3:Any isolate 4:more

Options 1, 2 and 3 allow the selected parameter to be enabled or disabled. Option 4:more produces the following menu

1:Local LEDs show partial isolate

Option 1 allows this parameter to be enabled or disabled.

From a previous menu, option 2 "RZDU output options" produces the following menu.

RZDU LED output shows 1:Any alarm 2:Any fault 3:Any isolate 4:more

Options 1, 2 and 3 allow the selected parameter to be enabled or disabled. Option 4: more produces the following menu.

1:Zone status maps to RZDU output

Option 1 allows this parameter to be enabled or disabled.

The parameters shown in the menus above are listed below, with a description of their usage. Unique LED cadences are used to indicate various conditions - isolate, partial isolate, fault & isolate, fault & partial isolate. The cadences are described later in this section.

Local LED mapping options

1. Any alarm [Yes/No]

If this parameter is true (i.e. set to "yes"), then for local LEDs, the alarm LED is turned on for both isolated alarms and non-isolated alarms. If false, then only non-isolated alarms are indicated.

2. Any fault [Yes/No]

If this parameter is true ("yes"), then for local LEDs, the fault LED is turned on for both isolated faults and non-isolated faults. If false then only non-isolated faults are indicated.

3. Any isolate [Yes/No]

Show partial isolate [Yes/No]

These parameters apply only to LEDs that have more than one zone mapped to them.

LEDs with multiple zones mapped

- a. If all zones mapped to the LED are isolated, then the isolate LED is on steady, regardless of the "any isolate" and "show partial isolate" parameter settings.
- b. If some but not all mapped zones are isolated (i.e. a partial isolate condition is present), then if the "show partial isolate" parameter is true ("yes"), a partial isolate state is indicated on the LED.
- c. If some but not all mapped zones are isolated and the "show partial isolate" parameter is false, then the "any isolate" parameter determines what is indicated. If "any isolate" is true then an isolate state is indicated (steady LED) when there is at least one mapped zone isolated. If "any isolate" is false then an isolate state is indicated only when all mapped zones are isolated.

LEDs with only one zone mapped

With only one zone mapped to an LED, a partial isolate state never occurs. The isolate LED is on steady when the zone is isolated. If the zone is not isolated, then for a two column board, the isolate LED indicates fault if the zone is in fault and is otherwise off.

Information sent on the RZDU bus

Refer also to section 3.7 RDU configuration. The information sent on the RZDU bus can be local zone status, LED status, or a combination of both, depending on the setting of the "zone status maps to RZDU output" parameter shown in the menus earlier in this section. Logically, the information sent on the RZDU bus can be thought of as zone status for up to 528 zones where each zone has an alarm, fault and isolate state (3 "status bits" per zone). How the information is interpreted depends on the receiving device. Some devices will treat

it as zone status and generate alarms from it (e.g. the RDU). Some devices treat it as LED status and show it on LEDs (e.g. the LED RZDU). The "zone status maps to RZDU output" parameter determines what is sent on the RZDU bus as follows.

Zone status selected to be sent on the RZDU bus

When the "zone status maps to RZDU output" parameter is true, a combination of local zone/relay status and LED status is sent on the RZDU bus as follows.

1. Local alarm zones 1 to 64 map to RZDU zones 1 to 64
2. Local module relays 1 to 64 map to RZDU zones 65 to 128
3. Logic equations for module relays with a relay number in the range 65 to 255 map to RZDU zones 129 to 192.
4. The LED status generated by network zone to LED mapping for LED numbers 193 to 528 is sent on the RZDU bus as zones 193 to 528.

LED status selected to be sent on the RZDU bus

When the "zone status maps to RZDU output" parameter is false, the information sent on the RZDU bus is a copy of the LED status generated by the *Network zone to LED mapping* for LEDs 1 to 528. The number of the highest zone sent on the RZDU bus is determined from the number of the highest LED that is mapped to with network zone to LED mapping. The LED status generated by *Local zone to LED mapping* does not affect the information sent on the RZDU bus. NOTE : the information sent on the RZDU bus in this mode is described as "LED status" because it is generated from the network zone to LED mapping, however, receiving devices may treat the data as zone status, depending on how they are configured. Receiving devices may actually have no LED display boards.

Default value

For F3200, the default value for the "zone status maps to RZDU output" parameter is true. For the NDU, the default value is false because the 16 local zones that an NDU has are mostly not used (zone one is sometimes used for an MCP).

WARNING

When the "zone status maps to RZDU output" parameter is false, i.e., zone status is not being sent on the RZDU bus, if the panel is sending LCD FF alarms to the RDU, then there must be a mapping from zone xx to LED xx in the network zone LED mapping or the panel will not send the LCD alarm on the RZDU bus for zone xx. e.g. zone 1 must map to LED 1 if an LCD FF alarm is to be sent on the RZDU bus for zone 1. This is because receiving devices use the "LED data" sent on the RZDU bus to determine the status of a zone. If the "zone status maps to RZDU output" parameter is true, then it doesn't matter which LED the zone maps to because the status of zones 1 to 64 is sent on the RZDU bus as zones 1 to 64.

RZDU LED output options

As described just above, LED status is sent on the RZDU bus when either the "zone status maps to RZDU output" parameter is false, or when the parameter is true but network zone to LED mapping includes mappings for LEDs 193 or higher. When LED status is sent on the RZDU bus (for both of these cases), the following parameters ("any alarm", "any fault", "any isolate") determine what is actually sent as follows.

1. Any alarm [Yes/No]
If this parameter is true ("yes"), then the alarm status bit is set true for both isolated alarms and non-isolated alarms on zones mapping to the "LED/RZDU zone". If the parameter is false then only non-isolated alarms set the alarm status bit.
2. Any fault [Yes/No]

If this parameter is true ("yes"), then the fault status bit is set true for both isolated faults and non-isolated faults on zones mapping to the "LED/RZDU zone". If the parameter is false then only non-isolated faults set the fault status bit.

3. Any isolate [Yes/No]

This parameter is meaningful only for "LEDs" that have more than one zone mapping to them. If true ("yes"), then the isolate status bit is true when one or more zones that map to the LED are isolated. If false, then the isolate status bit is true only when all zones that map to the LED are isolated.

LED Display board types and LED cadences

There are two types of LED display boards that can be connected to an F3200/NDU. One type of board has two columns of LEDs (red and amber) and the other type has three columns of LEDs (one red column and two amber columns). On the three column board, the red column is used to display alarm states, the middle amber column displays fault states and the right-hand amber column displays isolate states. On a two column board, the amber LED can be configured to show isolate states only, or the amber LED can be shared by fault and isolate.

Three column board LED cadences

1. Unacknowledged alarm - 2 Hz flash
2. Acknowledged alarm - on steady
3. Fault - on steady
4. Isolate - on steady
5. Partial isolate - 2.5 seconds on, 0.5 seconds off
6. Auto-reset mode (in-situ) - Isolate LED flashes at 2 Hz

Two column board cadences

1. Unacknowledged alarm - 2 Hz flash
2. Acknowledged alarm - on steady
3. Fault - 2 Hz flash
4. Isolate - on steady
5. Fault and isolate - 2 Hz for 1 second then 1.5 on, 0.5 off (2 short, one long)
6. Fault and partial isolate - 2 Hz for 1 second then 1 Hz for 2 seconds (2 short, 2 long)
7. Partial isolate - 2.5 seconds on, 0.5 seconds off
8. Auto-reset mode (in-situ) - Isolate LED flashes at 2 Hz

3.10.1 OPERATION OF THE NETWORK ZONE TO LED MAPPING MENUS

Zone to LED mapping allows programming a set of zones or zone ranges for one or more SIDs. For a zone range, all zones in the range can map to the same LED or they can map to a range of LEDs where the number of LEDs in the range is the same as the number of zones in the range. E.g. a zone range of 1 to 5 (5 zones) can map to LEDs 17 to 21 (5 LEDs) or they can all map to LED 17. The display always shows a start zone and an end zone, plus a start LED and an end LED. When a single zone is being mapped, the start zone and end zone are the same value. When a zone range is being mapped to a single LED, the start LED number is the same as the end LED number.

Note – if the PC application "PanelX" is being used, then the dedicated arrow keys on the PC keyboard can be used as left/right arrow operations.

3.10.1.1 Entering SID and zone numbers

The left and right arrow keys are used to move the cursor between fields. The SET key is used to swap the cursor between the top and bottom line of the display. The SID number and zone numbers are entered on the top line and the LED numbers are entered on the

bottom line. A SID number must be in the range 1 to 254. It is NOT necessary to enter the SID into the network SID list (see network programming section 4.4), unless that is needed for other reasons (such as accumulating totals for that SID). Zone numbers must be in the range 1 to 999. There is no validity checking on the SID and zone numbers, i.e., the panel will not generate a fault if the database contains entries for SIDs or zones which do not exist in the system/network.

When some, but not all, of the specified zones are already present in the database, then the bottom line of the display indicates this with a "split range" (or "extend range") message as shown in the examples following. When an existing range is being split, the "non-visible" part of the existing range that is being kept, has its LED numbers adjusted to match the reduced size of the zone range. This adjustment should be checked to ensure it gives the desired mapping

3.10.1.2 Entering a new zone range

If none of the zones in the range specified by the start and end zone are present in the database, then the bottom line of the display shows "Zones not present, press ACK to assign". For example :

```
SID:2   Start zone:31   End zone:40
Zones not present, press ACK to assign
```

Pressing ACK will add this zone range to the database. To assign a single zone, the start zone and end zone should be the same value.

When the zones specified by the start and end zone correspond exactly to an existing entry in the database then the bottom line of the display shows the current LED mapping for those zones. For example :

```
SID:1   Start zone:1   End zone:1
        Start LED :5   End LED :5
```

NOTE in "view mode", the cursor cannot be moved to the bottom line of the display.

If some of the specified zones are present in the mapping database, but do not correspond to an exact entry in the database, then an appropriate message is shown on the bottom line of the display as shown in the examples below.

For example, if the database contained the following entries :

```
SID 2, Start zone 5, End zone 12
```

```
SID 2, Start zone 13, End zone 20
```

If the start zone is now set to 5 and the end zone is set to 20, then the bottom line of the display will show "ACK:Extend range ZONE:Show existing" even though all of the zones are actually already in the database, and the LED mapping for zones in the range 5 to 12 might be different from zones in the range 13 to 20.

Existing entries in the database can be modified (extended, split or deleted) as shown in the following examples.

Example 1 - extending an existing range

SID 2

31	40
----	----

 Existing zone range in database
 SID 2

25	40
----	----

 Entered zone range

SID:2 Start zone:25 End zone:40
ACK:Extend range ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

31	40
----	----

 ZONE: Show Existing
 SID 2

25	40
----	----

 ACK: Extend range

If the ACK key is pressed, the range 25 to 40 will be entered into the database, replacing the range 31 to 40. If the ZONE (or NEXT) key is pressed instead of the ACK key, the display then shows the actual range that is present in the database without changing it.

Example 2 - modifying an existing range

SID 2

31	40
----	----

 Existing zone range in database
 SID 2

25	32
----	----

 Entered zone range

SID:2 Start zone:25 End zone:32
ACK:Assign zone(s) ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

31	40
----	----

 ZONE: Show Existing
 SID 2

25	32	33	40
----	----	----	----

 ACK: Assign zones

If the ACK key is pressed, the range 25 to 32 is added to the database and the existing range 31 to 40 is reduced to the range 33 to 40, i.e., the previous range 31 to 40 has been reduced to 33 to 40. If the overall intention was to remove zones 33 to 40 from the database then they must be explicitly deleted (via the DELETE key).

Example 3 splitting an existing range - 1

SID 2

25	40
----	----

 Existing zone range in database
 SID 2

32	40
----	----

 Entered zone range

SID:2 Start zone:32 End zone:40
ACK:Split range ZONE:Show existing

According to which key is pressed, the result is as follows.

SID 2

25	40
----	----

 ZONE: Show Existing
 SID 2

25	31	32	40
----	----	----	----

 ACK: Split range

If the ACK key is pressed, the range 25 to 40 is split into two ranges. If the intention was to remove zones 25 to 31 from the database then they must be explicitly deleted.

3.10.1.4 Delete menu

At any place in the LED mapping menus, pressing the DELETE key displays the following menu showing the current values of SID, start zone and end zone.

Delete zones 25 - 40 for SID 2
1:Yes 2:No 3:Enter range 4:more

Option 1 confirms, and option 2 cancels the deletion of this entry.
Option 3 allows the SID and zone range to be changed, for example :

SID:2 Start zone:32 End zone:35
Enter zones to delete then press DELETE

The zone range can be part of an existing range, as in this example:

SID 2 Existing zone range in database
SID 2 Entered zone range for deletion
SID 2 After deleting

Option 4 in the delete menu, allows deletion of all zones for a particular SID, or all zones for all SIDs as shown below.

1>Delete all zones for ALL SIDs
2>Delete all entries for one SID

Option 2 allows the entry of a SID number for which all zones are to be deleted. The delete options should be used carefully as the information cannot be recovered once deleted.

3.10.1.5 Zone LED Mapping Menu Diagram

F3200 PROGRAMMING NETWORK ZONE LED MAPPING MENU

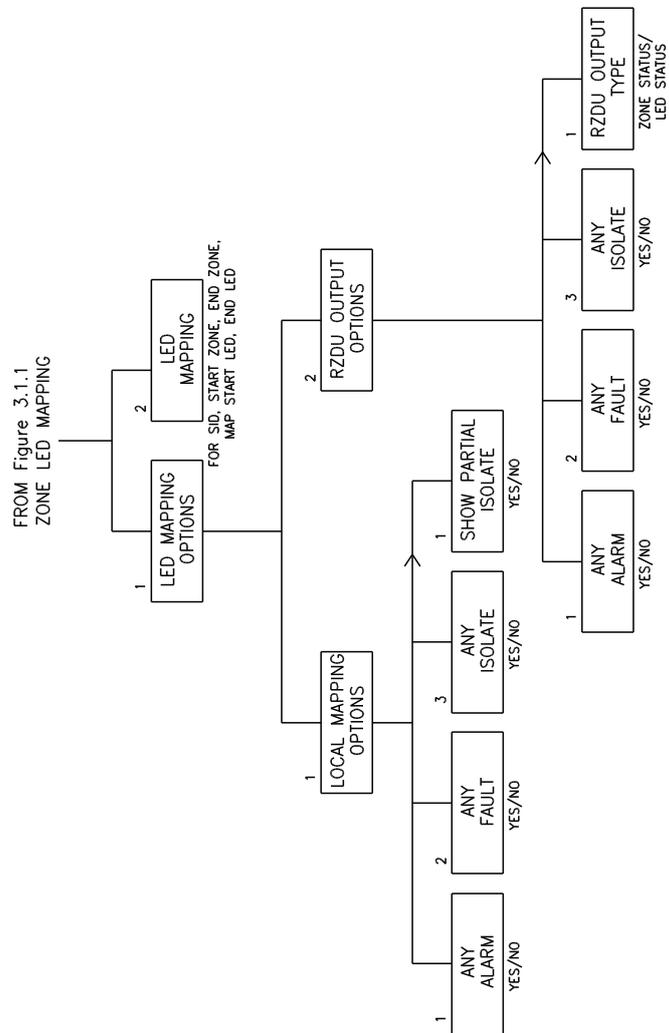


Figure 3.10.1 F3200 PROGRAMMING NETWORK ZONE LED MAPPING MENU

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4 NETWORK PROGRAMMING

4.1

INTRODUCTION

4.1.1 PANEL-LINK NETWORK

Networking enables up to 64 FIPs, NDUs, ADUs, etc, to be interconnected via single or duplicated 2 wire connections, and information to be exchanged between devices.

Alarms occurring on any FIP on the network may be displayed and acknowledged on the LCD FF of any other FIP. Similarly output logic variables are available on the network, enabling data from any FIP to be used as input parameters in logic equations on any other FIP in the system.

Commands can be entered at one networked device to reset, isolate, de-isolate, test and recall/search for status for zones on networked FIPs.

Networked devices can also send and receive system commands over the network such as isolation/de-isolation of bells, system test and bells test.

Intended use of Panel-Link:

- (i) Connection of two or more fire panels together to share data and expand fire panel capability, either by co-locating two systems, or having them geographically separate.
- (ii) Connection to remote displays such as NDUs and ADU.
- (iii) Connection of printers, BMS systems and PCs using a PTM or PMB to receive data from panels on the network.
- (iv) Connection of a Fire Panel to an Evacuation System for network connection initiation of evacuation sequences.
- (v) Connection to an XL C/S Graphics system.

To enable devices to be identified on the network, each device is configured with a System Identification Number (or SID) in the range 1 to 254. This number must be unique for each device on the network.

4.1.2 NETWORK APPLICATION OVERVIEW

The main benefits of networking are the sharing of zone, event and alarm information, the ability to remotely control other devices, and overall, to expand the size of a system beyond 64 zones.

The F3200/NDU is programmable in a number of ways to customise the type of information to be shared, how it is to be shared, and the extent to which remote control is permitted.

The Network Configuration menu is Option 7 in the Program/System Config menu (as is shown in Figure 2.1.2). It allows programming of the parameters which determine the way the networking operates.

The Network menu includes the following options:

1. Config, 2. SIDs, 3. MAF, 4. Cmds, 5. FF, 6. Events, 7. Net-variables, 8. Status;

1. Config defines the network type, the critical timing parameters, whether this panel sends link integrity messages, and the group membership for this panel.

2. The Network SID settings define which other panels on the network the F3200 is to send information to or receive from.
3. The Network MAF settings control the use of common panel status for brigade interfaces, status totals and networked External Bell or Warning System.
4. The Network Command settings are associated with the sending and receiving of commands to/from other panels.
5. The FF settings control the sending of FF alarm events to other panels on the network. Receiving FF alarm events is programmed in the Network SID menu.
6. The Network Event settings are associated with the transmitting of event information onto the network.
7. The Network Variable settings control the transmitting of network variable data onto the network.
8. Network Status configuration controls the refreshing of zone status onto the network.

Figure 4.1.1 shows the Network Configuration menu and its hierarchical structure.

When a user needs to change one particular parameter in an existing FIP, Figure 4.1.1 acts as a "road map" that shows the path required to access that parameter.

Detail on each menu is given in the following sections.

4.2 PROGRAMMING METHODS

4.2.1 DATA FILTERS - THE SID LIST & GROUPS LIST

The Panel-Link network utilises a number of concepts to allow a network designer to determine not only what information gets onto the network, but where that information can be used.

The first concept is the SID list: an F3200 can only use Network Logic, MAF data and MAF totals from units whose SID is in the list and can only send and receive commands, recall zones and monitor the scan status (link integrity) for SIDs in the SID list.

The second concept is the Group Membership list. This concept affects Event Annunciation (FF alarms) and Event Logging, where the events are broadcast onto the network. Each unit on the network is programmed for membership in any number of the 8 groups possible. Events contain the group membership list of the unit that generated the event.

The third concept is the FF zone list. This allows individual or small groups of zones on multiple devices to be selectively visible. This list is only applied to reception of zone and point messages from other devices. See Section 3.4 for full details.

4.2.2 NETWORK MAF STATUS

An F3200 panel transmits (if programmed to) its MAF status and totals (alarm, fault, isolate and "others" as shown on the base display) onto the network for use by other panels. Other panels will use that MAF status to drive their own MAF outputs (alarm, fault, isolate, standby External Bell and Warning System outputs) only if they are programmed to use the MAF status that comes from this panel (refer to SID list programming section 4.4.2 "use MAF relay option"). This allows the brigade connection/signalling to be done at only one panel on the network if desired (although it may be done by more than one panel if necessary).

The totals received from other panels on the network may be added to the local totals of this panel and shown on the base display. If any of the totals (alarm, fault, isolate) shown on the base display of this panel are non zero then the corresponding front panel LED will be on.

The MAF status transmitted onto the network includes the following information. All of the states are normally false and become true for an off normal condition.

1. MAF alarm state.
True if any non isolated MAF mapped zone is in alarm.
When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to energise the MAF alarm relay.
2. MAF fault state.
True if any non isolated MAF mapped zone or relay is in fault.
When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to energise the MAF fault relay, and (if the receiving panel is an F3200 panel) to turn its buzzer on when a new fault occurs.
3. MAF isolate state.
True if any MAF mapped zone or relay is isolated. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to energise the MAF isolate relay.
4. MAF standby state.
True if there is any "standby fault" present (e.g. all zones isolated). When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to generate a system fault.
5. System fault state.
True if any system fault is present. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to energise the MAF fault relay, and (if the receiving panel is an F3200 panel) to turn its buzzer on when a new fault occurs.
6. Brigade test state.
True if a brigade test has been initiated (by holding down the brigade test key for 2 seconds) AND the local MAF alarm relay, (if any), is programmed to operate for a local brigade test. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF alarm relay.
7. External Bell and Warning System states.
A number of states are transmitted for the External Bell and the Warning System. These map to tokens or to the panel operation if programmed.

At an F3200 panel the MAF status and totals it is currently receiving from any other panel may be viewed by recalling net panel status (from the base display press [RECALL] [RECALL] [3] - refer also to the F3200 Operator's Manual).

F3200 Output Logic Tokens Affected By Network MAF Status

The output logic tokens in an F3200 panel that are affected by the MAF status received from other panels are listed below. These tokens are only affected by another panel if it is programmed into the SID list of this panel and has "use MAF relay data" option enabled (refer section 4.4.2).

NML This token is described in Section 3.5.3. and is affected by any network states which cause the Brigade Alarm or Brigade Fault relays to operate at this panel. This includes MAF alarm, MAF fault or system fault.

RMA This token is true when there is a MAF alarm on a panel.

RWA This token is true when there is a "Warning System Alarm" on a panel. If the remote panel is an F3200 then it sends a "Warning System Alarm" when there is a non-isolated zone mapped to the Warning System in alarm.

RBA This token is true when there is an "External Bell Alarm" on a panel. If the remote panel is an F3200 then it sends an "External Bell Alarm" when there is a non-isolated zone mapped to the External Bell in alarm.

No other output logic tokens are affected by MAF status from other panels.

4.2.3 PROGRAMMING METHODOLOGY

1) SID designation

A unique SID number (1-254) must be given to every fire panel and network device (PTM, NLDU, PMB etc). Numbering can be achieved in different ways, for example a multi-building scenario

Each main FIP in each building could have a SID number starting with 10, 20, 30 etc. Every FIP in the same building could then be consecutively numbered after the main FIP, or perhaps a number which may signify the level in the building of which the FIP is located. (i.e. SID number 22 could mean the second slave FIP in building 2).

2) Group Membership

Groups could be allocated on the basis of buildings, for example all units in one building are members of the same group. A printer in a building allocated as Group One will only print Group One events.

Units can, if necessary, belong to more than one group. For example, there may be three independent groups for three buildings on the site, but a unit in a site monitoring office can be a member of all three groups.

To continue the example, the Group One printer prints only Group One events, but the site monitoring printer prints all events from Groups One, Two and Three.

Units that receive the events are permitted to process them only if there is at least one group that the sender and receiver have in common.

The groups concept also applies to Alarm annunciation on the F3200 LCD. An F3200 can be programmed whether to receive alarms from other FIPs on the network. If this is so, the F3200 will only display alarms from sending FIPs that have a Group common to the receiving F3200.

For example, a building has 3 FIPs which are members of Group 7. Two are sub-FIPs, which only display alarms from any of the 3 FIPs in Group 7. The main FIP can display its own alarms, plus those of the other two.

However, the main FIP could be programmed to also be a member of Group 4, thus alarms from a panel in Group 4, e.g. another building, could be displayed on the main FIP's LCD.

3) SID List programming

Section 4.4 describes the programming of the SID list. Each SID on the network that this panel needs to know about must be programmed into the SID list of this panel. Determine what functions are to be performed by each SID and what information is to be shared by which SIDs. The SID list provides a number of options which can be enabled or disabled per SID. A master SID will probably have nearly all of these options set to YES, while a slave SID will probably have less options enabled.

4) Determine whether acknowledgement of broadcasts is to be enabled.

Some of the messages transmitted on the network are "broadcast", i.e. not directed to one particular SID but to all SIDs. A single device on the network may be programmed to acknowledge these broadcast messages to provide some confirmation that the broadcast message was received by other devices. All non-broadcast messages are acknowledged by the SID that the message is directed to. Enabling acknowledgement of broadcasts does increase the loading on the network.

It is recommended that if an F3200 panel is to acknowledge broadcasts then it should be the most lightly loaded FIP on the network, taking into consideration the number of circuits, amount of output logic and the number of display boards. If a PTM, NLDU, NDU, or PMB is present then it is preferable to use one of these to do the acknowledging of broadcasts, rather than an F3200 panel.

5) Determine Network MAF Configuration

This allows a panel to send out its MAF status/totals to other panels, which may combine it with their own, and the status of other panels, to control a single brigade interface. MAF status is not controlled by network groups.

6) Network Variable Setup

Determine what information needs to be sent to other panels using network variables. If individual brigade signals are required per panel on the network then network variables can be used to transfer status.

7) Network External Bells, Warning System

Determine the required network operation of these facilities.

4.3 NETWORK CONFIGURATION MENU

These configuration settings determine how the panel communicates with other panels on the network. In general, most settings should be left at default values. However, there may be some settings that need to be customised for some installations.

The < and > keys allow movement between the menus NetPg0 through NetPg5.

4.3.1 NETPG0 OPTIONS

1. Network operation : (enable/ disable)

For a non-networked F3200 panel, this should be left disabled. For an ADU or NDU, this is enabled by default. For a networked F3200, this will need to be enabled after a database reinitialise.

1. Point access : (enable/ disable)

This parameter allows access to individual points (e.g. analogue smoke detectors on an F4000/ MX4428), to be enabled or disabled. If point access is enabled, individual points can be recalled and controlled (reset or isolated) from this panel.

4.3.2 NETPG1 OPTIONS

1. SID: (1-254)

This is the network address (SID number) of this device, allowing for the unique identification of zones, events, and for remote controls to be sent to this panel. The SID for any device on the network must be a unique number between 1 and 254. It is suggested that all Fire Alarm Panels are numbered sequentially from 1 upwards, so as to make zone numbering consistent. This is because the SID is combined with the local zone number to form a network zone number.

2. Mode : (Multidrop/Point to point)

The default operation is multi-drop. Point to Point mode is used when the F3200/NDU connects to one other device only and a full duplex data path is provided. For the ADU, refer to section 6.4.

3. NIC : (Yes/No)

NIC should be set to "Yes" if there is another device on the network that is configured to acknowledge broadcasts. Acknowledgement of broadcasts provides extra confirmation that a message sent has been received. Panel throughput is reduced as the panel must wait for an acknowledgement before it can transmit further messages. It is recommended that acknowledgement of broadcasts is enabled on the network. This means that every panel has the NIC option set to yes except for the panel doing the acknowledging (See NetPg4 option 1).

4. RX Timeout : (1-250)

Number of 5 millisecond time periods of delay before a channel is assumed to be free.

5. TX Delay : (1-250)

Scaling factor for randomised delay before transmission. Measured in 5 millisecond time periods.

4.3.3 NETPG2 OPTIONS

1. Ack time : (1-9999)

Time to wait for Acknowledge before retransmission. Measured in 1 millisecond periods.

2. DUP time : (1-9000)

Time during which duplicate messages are ignored. Measured in 1 millisecond periods.

3. Leading FF : (0-250)

Number of \$FF preamble characters transmitted after asserting RTS, before sending a message.

4. Trailing FF : (0-250)

Number of \$FF characters inserted after a message to ensure that the message is transmitted by the UART before RTS is dis-asserted. For an ADU, this should be a minimum of two.

4.3.4 NETPG3 OPTIONS**1. Link TX : (Yes/No)**

This controls whether the F3200 sends Link Integrity messages. This should be enabled for every panel.

2. Link TX time : (1-250)

Time period (in seconds) between successive Link Integrity Transmissions from this SID.

3. Link RX time : (1-250)

Maximum time period (in seconds) permitted between the reception of successive Link Integrity messages from any SID, before generating Net Scan Fail events.

4. Groups : ([12345678])

This setting controls the usage of the following information types:

- FF Alarm Information
- Network Event Information

Groups can be used to limit where the information is printed out or displayed. For example an F3200 can belong to any combination of 8 groups, or none. The group data is sent out with alarm and event information, and panels receiving this information are able to process the data only if the sender is a member of at least one group that the receiving F3200 is a member of.

If the group number is shown then this F3200 is a member of that group. Membership can be changed by pressing keys 1-8.

4.3.5 NETPG4 OPTIONS**1. ACK broadcasts : (Yes/No)**

This selects whether this panel does the acknowledging of broadcasts or not. Only one device on the entire network should be programmed to do acknowledging of broadcasts. Refer also to section 4.3.1 item 3 (NIC). If acknowledge of broadcasts is enabled then all devices on the network should be programmed to expect acknowledge of broadcasts, which, in the case of F3200/NDU is the NIC option (NetPg1).

It is recommended that if an F3200 panel is to acknowledge broadcasts then it should be the most lightly loaded FIP on the network, taking into consideration the number of circuits, amount of output logic and the number of display boards.

2. Baud rate.

This sets the baud rate for the network. The choices are 300, 600, 1200, 2400, 4800, 9600 and 19200 baud.

3. Retries (0-250)

This parameter sets the number of times a message will be retransmitted if an acknowledge is not received for it. After all attempts to transmit the message have been made, the message is discarded (and a Netmsg Discard Event is generated). If the device the message is being sent to has scan failed, then only one transmission of the message is done.

4. Slots (8, 16, 32)

There are only three allowable values for this parameter - 8, 16 or 32. When a panel wants to transmit onto the network it selects a random slot position from slot 1 up to slot 8/16/32 depending on the maximum slot number set by this parameter. The greater the number of devices connected to the network, the greater the number of slots available.

For 1-12 devices, select 8 slots

For 13-24 devices, select 16 slots

For 25 or more devices, select 32 slots

5. Mode B

This is a numeric value 0-7 which is used to control some of the network operations as follows. This value should be changed only under guidance from a systems engineer. For normal operation, a value of 3 should be used.

Early Collision Detection

Values 0-3 enable early collision detection

Values 4-7 disable early collision detection

Message Combination

Values 0, 4 Combine no messages

Values 1, 5 Combine "ack" messages into a single network access with up to maximum of 10 ack messages combined.

Values 2, 6 Combine application messages when possible. This includes combining MAF status, MAF totals, Netvars and Link Integrity A and B.

Values 3, 7 Combine both ACK messages and application messages.

4.3.6 NETPG5 OPTIONS

1. Ack broadcasts to specific SID

If this parameter is set to a non-zero SID number XYZ, then this panel will send an acknowledge to a broadcast message sent by SID XYZ. If this parameter is set to zero then this operation is disabled.

Only one device on a network (say SID XYZ) should be programmed to acknowledge all broadcasts, but it can have its own broadcasts acknowledged by another panel on the network that has "ACK broadcasts to specific SID" set to XYZ.

4.4 SID CONFIGURATION

Each panel on a Panel-link network must have a unique SID number (System Identification Number). F3200/NDU must be programmed with the SID numbers of all the panels that it interacts with on the network. A maximum of 64 SID numbers may be entered into the F3200 SID list, although there may be physically more than 64 devices on the network.

In general, the SID number of another device on the network should be entered into the SID list of the F3200/NDU for one of the following reasons:

1. Its link integrity status needs to be monitored by this panel .
2. Its MAF status or totals need to be received and displayed or annunciated at this panel .
3. Its events need to be logged at this panel.
4. Zone commands (isolate, reset, test) or system commands need to be sent to it or received from it.
5. It needs to be included in zone or system status recalls.
6. Its FF alarms need to be displayed at this panel. (Refer section 3.4).

On entry to the programming of the SID list, the total number of SIDs currently in the SID list will be displayed.

There are two ways of moving through the SID list. By pressing the 'NEXT' or 'PREV' keys you can step through the list of programmed SIDs, or by using the Up/Down arrow keys to move sequentially through the SID numbers 1-254. The number of a specific SID to be programmed may also be entered by selecting option 1 from either menu 1 or menu 2.

Each SID has two configuration menus which can be scrolled through using the < or > keys.

The DELETE key can be used to delete a SID from the list. The EDIT key can be used to display a menu which has options for setting or clearing all the settings for the current SID and for turning on or off the display of a full description of each item as it is being changed. Turning the full description display off allows faster programming.

4.4.1 SID MENU ONE

1. SID : (1-254)

Change the network SID number that is being viewed/modified. A maximum of 64 SID numbers may be entered into the F3200 SID list.

2. Link RX : (Yes/No)

When enabled, the link integrity transmissions from the selected SID are monitored by this panel, and if no transmissions are received for a programmed length of time (section 4.3.4 Link RX time) a Scan Fail system fault is generated. Link RX should be enabled at this panel for all SIDs that this panel needs to receive information from or wishes to monitor the presence of.

3. Log events : (Yes/No)

If yes, events received from the selected SID are logged to the local history queue and also to the local printer, but they will only be printed if event printing is enabled. Only certain types of events will be logged to the history and printer according to the programming of event type selections described in section 2.4.6.6.

4. RX FF : (Yes/No)

If enabled, FF Alarms received from the selected SID will be placed into the local FF alarm list, providing that the two panels have at least one common group. The remote SID must also be programmed to send FF alarms. FF alarms received from remote network panels do not get sent to local RDUs - local RDUs receive only alarms for zones on the panel.

If the F3200 is programmed to receive FF events from a particular SID, then it is also able to send Ack, Reset and Isolate commands for the event back to the originating SID (providing that reset and isolate of remote alarms is also enabled - refer section 4.7 Net FF configuration).

5. TX CMD : (Yes/No)

If enabled this allows this panel to send commands to the selected SID. This includes zone reset/isolate/test commands, as well as system commands such as system test/battery test/bell test. If disabled, this panel is still allowed to recall the status of zones from the selected SID but not control them.

6. RX CMD : (Yes/No)

If enabled this allows this panel to receive and execute commands from the selected SID. If disabled, commands received from the selected SID will be ignored, but a recall of zone status will still be permitted. NOTE :- this option does not affect FF commands received from another panel, which will still be accepted if FF TX alarms is enabled, even if the RX CMD option here is disabled. (refer also section 4.7 Net FF configuration).

4.4.2 SID MENU TWO

1. SID : (1-254)

Change the SID number that is being viewed/modified.

2. Use MAF relay data : (Yes/No)

If enabled, MAF data received from the selected SID will be used by this panel, i.e., combined with local MAF status and possibly MAF status of other SIDs and used to drive the brigade signalling, etc. Refer to section 4.2.2 for a description of network MAF status.

When the "Use MAF Relay Data" option is enabled for a SID, if the system fault buzzer option is enabled, then the local buzzer will turn on when a "standby condition" is received from that SID/panel. A panel signals standby when it is in program mode or when it has a critical fault such as memory failure.

3. Use MAF totals : (Yes/No)

If enabled, the totals received from the selected SID are included in the totals shown on this panel. If enabled, it also means that a non zero total received from the selected SID (alarm, fault or isolate) will cause the corresponding LED on the front panel to turn on. Also, if enabled, the buzzer will turn on when a new MAF or system fault (as received in the MAF status) is received from the selected SID. The buzzer will turn on if "use MAF totals" is enabled even if "use MAF relay data" is disabled for the selected SID.

4. Status search : (Yes/No)

If enabled, a recall of off normal zones will include the selected SID in the search. If disabled, an off normal recall will not search the SID, but specific zones from that SID may still be recalled using their network zone number.

4.5 NETWORK MAF CONFIGURATION

As described in section 4.2.2, a panel can be programmed to transmit its MAF status and totals onto the network for use by other panels. If both the "Refresh Tx Time" and the "Max COS rate" listed below are zero then this panel will not transmit MAF status.

The MAF status and totals are transmitted at regular intervals, defined by the 'Refresh TX time'. If a change of MAF Status occurs the new MAF status will be transmitted immediately as long as the minimum time specified by 'Max COS TX Rate' has elapsed since the last transmission of MAF status.

If individual brigade signals are required per panel on the network, Network Variables can be used to transfer the status and to control the relays.

The < and > keys allow movement between two menus named NetMAF1 and NetMAF2.

4.5.1 NETMAF1 OPTIONS

1. Refresh TX time : (0-250)

A value in seconds which specifies the rate at which a refresh of the network MAF status/totals of this SID should be transmitted onto the network.

2. Max COS rate : (0-250)

This is a value in seconds which specifies the maximum rate at which MAF status can be transmitted into the network. If set to zero then MAF status is only sent according to the Refresh Tx time and is not sent for every change of state. If set to zero and Refresh Tx time is also 0 then transmission of MAF Status is disabled.

4.5.2 NETMAF2 OPTIONS

Refer also to Section 3.8.5 Warning System/External Bell network operation.

1. Receive Warning System silence

If enabled, this panel will use the Warning System silence state received from another panel on the network to inhibit its Warning System.

2. Send Warning System Isolate as network silence

If enabled, this panel will send a Warning System silence state onto the network when its Warning System is isolated.

4.5.3 NETMAF3 OPTIONS

1. Receive External Bell silence

If enabled, this panel will use the External Bell silence state received from another panel on the network to inhibit the External Bell.

2. Send External Bell Isolate as network silence

If enabled, this panel will send an External Bell silence state onto the network when its External Bell is isolated.

4.6 NETWORK COMMANDS

The Network Command configuration provides some parameters involved in the sending and receiving of commands to/from other devices on the network.

When F3200 issues a command, it may take some time for the message to be sent on the network, processed by the receiver, and the response sent back. The length of time the F3200 will wait for the response is defined as the 'ACK time' (Net Command Acknowledge Delay Time). A device that is processing a command that cannot be replied to immediately will send a "response pending" message at a rate defined by the 'Work time'. This message indicates to the sender of the command that the command is still being processed, and the required response cannot yet be given. An F3200 receiving the response pending message will extend the time that it waits for the required response.

1. ACK time : (1-250 seconds)

Net Command ACK Delay Time. Length of time the F3200 will wait for a response before displaying an error message.

2. Work time : (1-250 seconds)

Command Work TX Time. If a message cannot be sent immediately a "response pending" message is sent at a rate determined by this. Work time should be less than ACK time.

3. RX Time/Date : (Yes/No)

If enabled, this allows this panel to process a "new time/date" command received from the network and to set its clock time/date from the time/date in the received message. If disabled, this panel will ignore new time/date command messages received. See also "TX time/date" below. The SID of the sending panel does not have to be in the SID list of the receiving panel to process this message.

4. TX Time/Date : (Yes/No)

If enabled, this panel will transmit (broadcast) a "new time/date" command onto the network at the following times.

1. When the local time/date is set manually from the keypad.
2. At 12 pm and 12 am every day.
3. Whenever the local time is changed due to daylight saving.
4. Whenever this panel receives a message indicating that another panel has just powered up.

In all cases the time/date is broadcast onto the network and will therefore be received by all devices on the network, but whether each device uses the command to set its local time/date depends on the device type (i.e. F3200, PTM etc) and its programming.

It is preferable, but not essential, that only one panel on the network (or network segment) is configured to transmit time/date. F3200 panels and NDUs with a MAF board maintain their local time very accurately (using 50 Hz mains frequency), but an ADU or an NDU without a MAF board have a less accurate local time clock and, if possible, should not be configured to transmit time/date onto the network.

4.7 NETWORK FF CONFIGURATION

This determines whether FF alarm events are sent onto the network, and can provide an extra level of confirmation that alarm events have been received by one or more devices on the network. FF alarms sent onto the network will be entered into the FF alarm list of another panel only if the panel sending the alarm has at least one group in common with the panel receiving the alarm (refer section 4.3.4 groups). For F3200 and NDUs the SID list programming also determines whether FF alarms received from other panels are entered into the FF alarm list of this panel.

Alarms which are entered into the local FF alarms list may be either local alarms or alarms which have come from other panels. In both cases, these alarms can be acknowledged from either the local panel or from a remote panel, but it is possible to disable the acceptance of acknowledgements which come from remote network devices to force all FF alarms to be acknowledged locally - see item 3 "Remote ACK" below.

If FF auto ack is enabled (refer Section 2.4.6.3) any alarms which are entered into the local FF alarm list (i.e. both local alarms and remote alarms) are automatically flagged as "acknowledged", but this does not result in any acknowledge indication or command being sent onto the network.

Options under FF1

1. TX alarms : (Yes/No)

If enabled, any FF alarm that is entered into the FF list of this panel will also be sent onto the network. Setting this to enabled also determines whether this panel accepts FF commands from other panels to acknowledge, reset or isolate FF alarms. **NOTE** :- an FF command is not the same as a zone command. If FF alarms are not being transmitted onto the network then FF commands will not be accepted from other panels, but zone/system commands etc. may still be accepted depending on the RX CMD option programmed in the SID list of this panel. Refer also section 4.3 SID list RX CMD option.

Note, an FF command is an acknowledge, reset, or isolate command which is initiated when the associated ACK, RESET or ISOLATE key is pressed when in FF mode i.e. when the FF alarm list is being displayed. Zone commands or system commands are initiated using the ZONE or SYSTEM keys.

2. Dedicated TX SID : (0-254)

If this parameter is zero, then any FF alarms that are transmitted onto the network (i.e. TX alarms enabled) will be broadcast (i.e. sent to all devices on the network), and each receiving device can individually decide (according to group programming and SID list programming) whether to enter that FF alarm into its own FF alarm list.

If this parameter is non zero then FF alarms will not be broadcast onto the network but will be sent specifically to the SID specified by this number. No devices on the network other than the specified SID will receive FF alarms sent by this panel.

If FF alarms are broadcast onto the network, then confirmation of delivery can be provided by enabling "acknowledge of broadcasts" (refer section 4.3.2 NIC option). If FF alarms are directed to one specific SID then that SID will acknowledge receipt of the alarm and acknowledge of broadcasts is not involved. If acknowledge of broadcasts is not enabled (or this device is doing the acknowledge of broadcasts), and only one other device is required to receive FF alarms from this SID, then it is preferable to set the "TX dedicated SID" parameter here to a specific SID number.

Note – The following parameters, (remote ack, TX iso/reset commands & TX ack commands), are present only in "older" software. In F3200 V4.xx and the ADU, they are replaced by FF zone global config parameters. Refer section 3.4.1.1.

3. Remote ACK : Yes/No

If enabled, this allows alarms in the local FF alarm list to be acknowledged by commands from remote network devices. If disabled, then any alarm which is entered into the local FF alarm list must be acknowledged locally - this applies to both alarms generated by local zones and alarms which come from remote devices. If acceptance of remote acknowledgements is disabled FF commands (or zone commands) to reset or isolate will still be accepted and a reset or isolate is performed, but the alarm will not be taken out of the local FF alarm list until it has been acknowledged locally. The remote ack acceptance parameter here affects only commands coming from network devices and does not affect commands coming from local RDUs devices. Acceptance of acknowledgement from local RDUs can be enabled or disabled with a separate parameter described in section 2.4.6.3 (FF mode).

Options under FF2

1. TX iso/reset cmds

If enabled this allows this panel to send FF reset or FF isolate commands to remote panels. The local FF alarm list may contain alarms which were generated by alarms on local zones or alarms which originated from remote network devices. When an FF reset or isolate command is initiated (by pressing RESET or ISOLATE keys when in FF mode), all acknowledged local alarms will always be reset or isolated. But for alarms which originated from remote network devices a reset or isolate command will only be sent to the remote network device if this parameter is enabled.

2. TX ack cmds

If enabled this allows this panel to send FF acknowledge commands to remote network panels to acknowledge alarms which originated from remote panels. When an FF alarm is being displayed it can be acknowledged by pressing the ACK key. If the alarm originated locally, then the word "ACKD" will appear on the display and an "acknowledge indication" will be sent on the network and also sent to local RDU devices. If the alarm originated from a remote network device then the word "ACKD" will appear on the display (i.e. it will be flagged as acknowledged), and if the "TX ack cmds" parameter here is enabled then an acknowledge command will be transmitted onto the network to the device which originated the alarm.

4.8 NETWORK EVENT CONFIGURATION

The network event parameters determine the transmission of event log information onto the network.

When an event occurs (e.g. zone isolate, zone alarm, system test fail etc.), the event is logged into the local history queue and printed on the local event printer (if event printing is enabled - refer section 2.4.6.6), and the event may also be transmitted onto the network if transmission of events is enabled. If an event is transmitted onto the network, some of the parameters here determine whether additional text data is included with the event.

The event and its text may be used by a network printer (e.g. PTM or NDU), network history logger (e.g. an NDU or another F3200 panel), graphics display, or NLDU (network LED display unit).

If an NLDU is being used on the network to display zones from this panel, then transmission of events and event updates should be enabled, but an NLDU does not require the text information to drive its LEDs. If events from this panel are to be logged into the history of, or printed by, a remote panel, then transmission of events and all event text should be enabled, but transmission of "event updates" is not required for remote logging. Colour graphics displays require everything to be sent, i.e. events, event updates and all text. Check with the user manuals of each particular device type on the network to find what information they require.

To reduce the loading of the network, transmission of events, event updates or text should be disabled unless they are needed.

Options under Events1

1. Transmit events : (Yes/No)

If enabled, each new event will be transmitted onto the network.

2. Transmit event updates : (Yes/No)

Event updates are used to update the status of an object (e.g. zone) when the status has changed but has not produced a printable event. e.g. an alarm on an isolated zone does not produce a printable event but the status of the zone has changed. Colour graphics displays and NLDUs need updated zone status and hence transmission of event updates should be enabled if they are displaying status from this panel. Remote event printers or remote event history logging do not require event update transmission enabled.

3. TX relay controls : (Yes/No)

If disabled, activate and deactivate events for local module and ancillary relays will not be sent onto the network and hence will not be logged to the printer and history of any remote device. Other relay events such as isolate and fault will still be sent on the network.

NOTE - relay events are always sent onto the network as zone events.

Options under Events2

1. Zone/relay cmd text tx : (Yes/No)

If enabled, the text name of the zone or relay will be transmitted onto the network along with the event for zone/relay command event types. "Command" type events include isolate, de-isolate, reset, alarm test, fault test, operate test, auto reset test.

2. Zone/relay event text tx : (Yes/No)

If enabled, the text name of the zone or relay will be transmitted onto the network along with the event for zone/relay non-command event types. These include zone alarm, zone fault and zone normal.

3. Sys event text tx : (Yes/No)

If enabled, the text associated with a system event will be included when the event is transmitted onto the network.

4.9 NETWORK LOGIC VARIABLES

Network Variables can be used to transfer output logic status between panels for applications such as:

- (i) Fan controls.
- (ii) Remote zone mimics.
- (iii) Transfer of zone alarm status between panels.
- (iv) Transfer of alarm status to a common Evacuation Panel interface.
- (v) Transfer of brigade relay status for multiple brigade interfaces at one panel.

An F3200 is always able to modify and use its own network variables - this gives an extra 128 Variables for use, but they should be used sparingly as processing of network variables takes longer than ordinary output logic variables.

The local F3200 will only send its own Network variables onto the network if 'TX enabled' is set to Yes. The transmit rate is programmed by "TX refresh rate". If a change of state occurs, the network variables will be transmitted immediately providing the minimum time specified by Max COS TX rate has elapsed since the last transmission.

The "Max COS TX rate" should be less than the "TX refresh rate". Both times should be set so that an F3200 does not clog up the network with messages. The "Max COS rate" should be set to the longest time possible, taking into consideration the configuration of the panel. In general, the default settings should be adequate.

1. TX enabled : (Yes/No)

Enable sending of network logic variables onto the network.

2. TX refresh rate : (0-255 seconds)

Transmit refresh rate for network logic variables. A value of 255 for the TX refresh rate will result in the Netvar data being refreshed at the same rate as MAF status refresh (Section 4.5.1), and the Netvar message will be transmitted in a single burst at the same time as MAF status and MAF totals messages. This also requires the "Mode B" parameter to be set to 3 (refer network configuration programming Section 4.3.5).

3. Max COS TX rate : (0-250 seconds)

Minimum time between transmission of network logic variables after each change of state.

4.10 NETWORK STATUS REFRESH

The Network Status Refresh (a.k.a "Status Transfer") application provides a continual refresh of zone status onto the network. This information may be used, for example, by colour graphics systems to display zone status. F3200 maps a variety of information to zones as shown in the list below. Zones for which status information is sent on the network are as follows.

- Alarm zones - zones 1 to 64.
- Module relay zones/ pseudo relays - zones 65 to 128.
- Open collector zones - zones 129 to 192.
- Ancillary 1 relay - zone 194.
- Ancillary 2 relay - zone 195.
- Ancillary 3 relay - zone 196.
- Plant isolate - zone 197.
- Warning System - zone 198.
- External Bell - zone 199.

All of the above types of zones use the panel-link standard zone status format which is as follows:

Bit Number	Status Description
0 (\$01)	Pre-Alarm
1 (\$02)	Reserved
2 (\$04)	Under Test
3 (\$08)	Under Reset
4 (\$10)	Alarm
5 (\$20)	Fault
6 (\$40)	Operate/Activate
7 (\$80)	Isolated

For module relay and ancillary relay zones, the operate status bit is true if the output/relay is activated and not isolated. For open collector zones, the operate status bit is true if the output is activated.

Unused zones are not sent on the network - e.g. if the panel has only one AZC module (8 circuits) fitted, then zones 9 to 64 are never sent on the network. If there are no module relays fitted then zones 65 to 128 are not sent on the network unless there are some logic equations driving one or more of the 64 relays. These are referred to as "pseudo relays". Refer to section 3.5.8. The status of pseudo relays is also sent on the RZDU bus. Refer to section 3.7.3. For alarm zones, module relays and ancillary relays, when a change of state occurs, the new status is immediately sent on the network. The status of open collector zones is sent via a background refresh process only and is not immediately sent when a change of state occurs.

An NDU (with or without a MAF board) sends the status of the following zones: (1) Alarm zones 1 to 16, (2) Pseudo relays if any, (3) Ancillary relays 1, 2, 3, (4) Plant isolate, Warning System and External Bell.

NOTE - "pseudo relays" were introduced in F3200/NDU software version 5.00. In earlier versions of software, zones 65 to 128 are sent on the network only if the corresponding relay is physically present in the system.

Enabling of the Network Status application is necessary only when there are devices on the network, e.g. some colour graphics systems or PMB, that require this information. Otherwise, it should be left disabled to reduce network traffic. Check with the user manuals of the other devices on the network to see if they require status refresh data to be sent from this panel.

1. Status refresh enabled : (Yes/No)

Determines whether this F3200 sends zone status refresh data onto the network. If disabled, no refreshes or changes of status will be sent onto the network. However, the F3200 will still respond to requests for status from other devices on the network.

2. TX rate : (0-250)

A value in seconds which is the normal background refresh rate of status.

3. Fast TX rate : (0-255)

A value in seconds which is the faster background refresh rate. This is used when the F3200 first starts running, and whenever another device on the network requests a faster refresh, i.e. the other device may be initialising.

NOTE : F3200 maps information to zone status that is sent on the RZDU bus and this mapping is slightly different to the mapping of information to zones sent on the Panel-link network - e.g. the status of open collectors is not sent on the RZDU bus. Refer to section 3.7.3 for a description of the mapping applying to RZDU zones.

4.11**NDU PROGRAMMING**

An NDU can be thought of as an F3200 FIP without any alarm zone modules or relay modules and with networking enabled. An NDU can optionally have a MAF board fitted, providing mains connection and relay outputs etc.

With F3200/NDU software V4.XX onwards, "NDU mode" is a programmable option that must be enabled to get NDU functionality (refer section 2.4.2). With V3.XX software, F3200 and NDU were separate software items and "NDU mode" was not programmable. With V4.XX or later software, NDU mode is selected during a database re-initialise if there are no AZC modules or relay modules connected.

For the NDU, there is a programmable parameter that allows New Zealand mode to be selected. The default is Australian mode. New Zealand mode operation is described in Chapter 5.

An NDU without a MAF board is physically quite small, convenient to use, and is powered from an external source. An NDU with a MAF board can provide brigade signalling functions and also has ancillary relays.

Even though an NDU does not have any 8 zone or 8 relay modules, it does have 16 alarm zones. The local MCP (or connected RDU MCP), if any, may be mapped to any one of these 16 zones. Each of the 16 zones may be isolated, de-isolated, or reset, but cannot be tested. Each zone can be programmed as latching/non-latching, MAF/non-MAF, etc. Even though an NDU zone which does not have an MCP mapped cannot go into alarm, it may be useful as an object which can be isolated or de-isolated. Otherwise, an NDU performs all the functions of an F3200 panel, including sending/receiving network zone commands, network event printing, FF alarm display and zone LED display board driving.

An NDU may be programmed with output logic, the same as an F3200, and may send and receive network logic variables on the network.

An NDU without a MAF board may still perform functions of External Bell, Warning System or Ancillary Relay Isolate/De-Isolate/Test, and the output logic tokens associated with these may be used so that these conditions can be accessed from other panels.

The keypad on a slim-line NDU is physically accessible all the time, but when the cabinet is locked the software disables the keypad.

If an NDU is programmed to use the totals sent by another device on the network, then the NDU will turn its buzzer on if a new MAF fault, Standby condition or System fault occurs on the remote device. The activation of the buzzer for alarm, zone fault or system fault can be disabled with programming.

Programming an NDU

All of the F3200 programmable parameters are relevant to an NDU, with the following exception and points to note.

Modules present/not present

The MAF board may be programmed as present or not present. Programming of 8 Zone and 8 Relay modules is not allowed.

AZC configuration

Although all fields are programmable, only the Instant Alarm Text is relevant (MCP alarms).

Module Relay configuration

Programming the configuration of the module relays is not permitted, but output logic may be used.

Network command config

An NDU can send and receive commands on the network such as system tests, zone tests, zone isolate/de-isolate etc. All of the commands described in the F3200 Operator's Manual apply to an NDU except that an NDU has no open collector outputs or module relays.

4.12 DEFAULT VALUES FOR PANEL-LINK VARIABLES

NOTE – not all items are present in all software versions. Refer to Fig 4.1.1 section 4.2 for version specific detail.

<u>Item</u>	<u>Parameters</u>	<u>Default</u>
Network Setup		
Network enabled	Yes/No	F3200(No),Others(Yes)
Point access	Yes/No	Yes
Local SID Number	1-254	0
Mode	Multidrop/Pnt to Pnt	Multidrop
NIC	Yes/No	No
RX Timeout	1-250 5 milliseconds	2
TX Delay	1-250 5 milliseconds	1
ACK Time	1-9999 milliseconds	800
DUP Time	1-9000 milliseconds	2000
Leading FF	0-250 characters	1
Trailing FF	0-250 seconds	1
Link TX	Yes/No	Yes
Link Tx Time	1-250 seconds	5
Link RX Time	1-250 seconds	50
Groups	Any combination of 1 to 8	[12345678]
ACK Broadcasts	Yes/No	No
Baud rate	300 up to 19200	9600
Retries	0-15	5
Slots	8, 16, 32	8
Mode B	0-7	3
ACK Bcasts Specific SID	0-254	0

Network SID Configuration (per SID)

Link RX	Yes/No	No
Log Events	Yes/No	No
RX FF	Yes/No	No
TX CMD	Yes/No	No
RX CMD	Yes/No	No
Use MAF data	Yes/No	No
Use MAF totals	Yes/No	No
Status search	Yes/No	No

Network MAF Config

Refresh TX Time	0-250 seconds	20
Max COS rate	0-250 seconds	2
Send Warning Sys Silence	Yes/No	No
Receive Warning Sys Sil	Yes/No	No
Send External Bell Silence	Yes/No	No
Receive External Bell silence	Yes/No	No

Network Command Config

ACK Time	1-250 seconds	10
Work Time	1-250 seconds	3
RX net time/date	Yes/No	Yes
TX net time/date	Yes/No	No

Item**Parameters****Default****FF Config**

TX Alarms	Yes/No	No
Dedicated TX SID	0-254 (0=all)	0

Network Event Config

Transmit events	Yes/No	No
Transmit event updates	Yes/No	No
Transmit relay operates	Yes/No	No
Zone/Relay cmd text tx	Yes/No	No
Zone/Rly event text tx	Yes/No	No
System event text tx	Yes/No	Yes

Network Variable Config

TX enabled	Yes/No	No
TX Refresh Rate	0-255 seconds	20
Max COS TX rate	0-250 seconds	5

Network Status Refresh Config

Refresh enabled	Yes/No	No
TX Refresh Rate	0-250 seconds	23 (31 for NDU)
Fast TX rate	0-250 seconds	7 (11 for NDU)

4.12.1 NETWORK PARAMETER AVAILABILITY

The following table shows which programmable parameters were included in which software version.

TABLE 4.12.1
PROGRAMMABLE NETWORK PARAMETER SOFTWARE VERSION DIFFERENCES

Option	Availability	
	F3200/NDU version	ADU version
RX Network ACK	V3.XX only	None
TX iso/reset commands	V3.XX only	None
TX ack commands	V3.XX only	None
Network operation enable/disable	V4.00 or later	All
Network point access	V4.00 or later	All

5 NEW ZEALAND OPERATION

5.1 GENERAL

New Zealand mode operation may be enabled on an NDU but not on an F3200 fire panel. An NDU in New Zealand mode is compliant with NZS4512:2003. An NDU may be used with or without a MAF board, and optionally with a NZ Display Extender board. The NDU may have RDUs connected to it and may also have up to 33 zone LED display boards (refer section 3.10).

If a MAF board is fitted, the NDU may be used as the main brigade connection point of the network. The MAF board has relays for signalling alarm (normally de-energised), fault (normally de-energised) and standby (normally energised and normally wire-ORed with fault). The MAF board also provides three supervised ancillary relays, and an "isolate" relay; all of which can be controlled by output logic if desired.

As described earlier in this manual, the Warning System is controlled with output logic. In NZ mode the default logic does not include Trial Evacuation operation, and the equation driving the Warning System output (Ancillary 3 relay) should be modified to include the TEV or RTE tokens as necessary.

When an NDU with AS4428.1 software is used on a network with panels running older "1603.4" type software, the NDU should have its "Legacy Bells" parameter set to "Warning System" to allow the Warning System on the NDU to interact with the Bells (Isolate) on the 1603.4 type panel.

5.2 NZ DISPLAY EXTENDER BOARD

The NZ Display Extender board, if fitted, is added to the end of the 16 zone LED display board chain (if any), and provides the common Normal, Defect, and Fire LEDs, as well as other New Zealand specific inputs and outputs.

The last 16 zone LED Display board must have link Lk1 not fitted. If there are no 16 zone LED Display boards then the NZ Display Extender board is connected directly to J13 on the Controller.

The NZ Display Extender board has the following inputs and outputs.

Inputs (all active low)

- Trial Evac/Sprinkler operated (shared)
- Silence alarms
- External defect
- Lamp test
- Services restore
- Brigade test/brigade isolate (shared)
- Evac defect

Outputs

- Fire LED
- Defect LED
- Normal LED
- Ancil defect
- Ancil fire
- Lamp

Evac Defect/External Defect

The Evac Defect and External Defect inputs may be programmed as to whether a defect is signalled for them or not. If defect is not signalled then they can be used as general purpose inputs accessible in output logic.

Services Restore

When the Services Restore input is activated, the BSR logic token is set true, and this can be used in output logic to turn outputs off or on if necessary.

Trial Evac

When the Trial Evac input is activated, the TEV logic token is set true regardless of any silence alarms or Warning System isolate condition, and Trial Evac is signalled to other panels on the network.

Silence Alarms

When the silence alarms input is activated, the WSS token is set true, the WSO token is set false and Warning System silence is signalled to other panels on the network.

Brigade Test/Brigade Isolate

These conditions share the same input and when true, result in an “abnormal” system state (but defect is not signalled) that can be recalled with a system fault recall.

Lamp Test

This input can be used to test all the LEDs including the front panel LEDs, the LEDs on the New Zealand Display Extender board, the index lamp and any 16 zone LED display boards.

5.3 PROGRAMMABLE OPTIONS

There are a number of parameters that need to be set for New Zealand operation according to the installation requirements. These are detailed below.

A database re-initialise will select New Zealand mode by default if an NZ Display Extender board is fitted. If an NZ Display Extender board is not fitted, New Zealand mode must be programmed manually.

New Zealand Mode Programmable Parameters

1. New Zealand mode – enable/disable
When this parameter is enabled, the user is asked whether a number of other parameters (detailed below) should automatically be set to their New Zealand mode settings. When this parameter is changed from enabled to disabled, the values of a number of parameters are set back to non-New Zealand mode settings.
2. New Zealand Display Extender board fitted – Y/N
If an NZ Display Extender board is fitted, this should be set to Y.
3. Evac Defect is fault – Y/N
External defect is fault – Y/N
These two parameters select whether the corresponding input on the New Zealand Display Extender will result in a defect (fault) being signalled when the input is asserted. If sent to N then the input is available as a general purpose input, the state of which can be accessed using the logic tokens NEV and NED respectively.
4. Battery testing & monitoring
There are four parameters, that for an NDU with no MAF board only the battery low monitor parameter needs to be set – the others are “don’t care”.

- (a) Battery low monitor – enable/disable
For an NDU with a MAF board, this should be enabled. If enabled, then when the supply voltage falls below the battery low threshold a defect will be signalled.

For an NDU with no MAF board, if this option is enabled then a defect is signalled when the supply voltage falls to the battery very low threshold.
- (b) Battery connection check – enable/disable
This is enabled by default. When enabled, the battery connection is checked every 28 seconds by reducing the charger voltage for 500 milliseconds and monitoring the battery voltage.
- (c) Hourly battery test
This is disabled by default and is not required for New Zealand operation. When enabled, every hour the charger voltage is reduced for 60 seconds to check the battery voltage.
- (d) Daily battery test
This is enabled by default so that every 24 hours (beginning at the auto test start time) the charger voltage is reduced for 40 minutes and the battery voltage is monitored.

6. Keypad type and Legacy Bells parameters.

Section 2.4.2 describes these parameters. For New Zealand operation the Legacy Bells option is normally set to Warning System. The keypad type should be set according to which version of keypad is being used.

Parameter Defaults for New Zealand Mode

The following is a list of the values set when New Zealand mode is enabled by a database re-initialise or when New Zealand mode is manually enabled.

New Zealand Display Extender fitted	- as appropriate
Battery very low alarm	- disabled
Evac defect is fault	- enabled
External defect is fault	- enabled
Battery low monitor	- enabled
Battery connection test	- enabled
Hourly battery test	- disabled
Daily battery test	- enabled
Charger fault monitoring	- disabled
Mains fail = fault after 8 hours	- disabled
MCP	- disabled
Alarm buzzer	- enabled
Zone and system fault buzzer	- disabled
Daylight saving start and end time	- enabled

The daylight saving start time for New Zealand is set to 2am on the last Sunday in September and the end time is set to 2am on the first Sunday in April.

Warning System Output Logic

If the NDU has a MAF board and its own Warning System outputs then it is necessary to modify the default equation to include local and network Trial Evac as follows.

$AR3 = WSO + TEV + RTE$

The Ancillary 3 relay should also be programmed as non-isolatable so that isolate cannot inhibit Trial Evac.

Network Programming

For an NDU that is not the main brigade connection point of the system it may still need to have the "use MAF relay data" option enabled for SIDs in its SID list for the following reasons.

1. To signal alarm and defect on the New Zealand Display Extender board LEDs and outputs when an alarm or defect occurs on another panel.
2. To control the NDU Warning System, if any, for an alarm or Trial Evac condition on another panel.
3. To display the network Warning System silence state by flashing the Warning System Isolate LED.

In most situations the NDU should have "use MAF totals" enabled for each panel in the SID list that it has "use MAF relay data" enabled.

5.4 SYSTEM STATES & INDICATIONS

Faults, alarms and system faults can be recalled using the Recall key.

A recall of system faults will display in addition to system faults, any system states (such as Trial Evac) that are present.

The Warning System Isolate LED flashes at 2Hz when the local silence alarms switch is activated, flashes at 1Hz when the Warning System is silenced by a Warning System isolate or silence alarms at some other panel, and is on steady when the Warning System is isolated.

Door Interlock Buzzer

If the door is closed when any of the brigade isolate/test, services restore, Trial Evac, silence alarms inputs are asserted, or the Warning System isolated, or the database is write enabled, then the buzzer sounds a unique cadence to warn the user.

Abnormal Conditions

The NDU sends a state of "abnormal" on the network when it has any local off normal condition.

The common normal LED on the NZ Display Extender Board is off and the NML logic token is false whenever any of the following are true.

1. There is any local abnormal condition (refer below).

2. There is a "local" abnormal condition at any panel on the network that the NDU is programmed to "indicate for", i.e. any panel in the SID list of the NDU with the "use MAF relay data" option enabled.
3. There is any off normal total in the list of totals shown on the base display of the NDU. This includes any off normal totals that come from other panels on the network that the NDU is programmed to show totals for, i.e. any panel in the NDU SID list that has the "use MAF totals" option enabled.

Local Abnormal Conditions

The conditions that generate local abnormal are:

1. Any alarm, fault or isolate state on any of the NDUs 16 zones that are not "Status Only".
2. Any fault or isolate state on any of ancillary 1, ancillary 2 or ancillary 3 relays on the MAF/PSU board, or the Warning System.
3. When the "plant" is isolated i.e. when the logic token PLI is true.
4. When there is a latched battery very low alarm state.
5. When the panel is in program mode or the database is write enabled.
6. When any of silence alarms, Trial Evac, services restore, brigade isolate or brigade test are locally operated.
7. When there is any battery, mains or charger fault. Battery faults include battery low, battery connection and battery capacity faults. This does not include failure of a manual battery test.
8. Evac defect or external defect true and enabled to be fault.
9. When there is a "link integrity" fail for any network SID that this panel is monitoring or when the NDU does not receive an acknowledge to a message it transmits on the network to a SID that is supposed to be responding.
10. When there is a shift register bus fault.
11. When there is a fault with the "LCD".
12. When there is a fault with the non volatile RAM on the clock chip.
13. When there is a database (EEPROM/FLASH) checksum error.
14. When the MAF/PSU module is not connected if it is required or connected when not required.
15. When there is a fault with the keypad connection.
16. When there is a fault with the LED display board connection. E.g. NZ Display Extender board or 16 zone LED display board not present when required or connected when not required.
17. When there is an EPROM checksum error.
18. When the Controller RAM fails.
19. When all 16 zones on the NDU are isolated and "all zones isolated" is programmed as being a fault.
20. When an error occurs in the execution of output logic e.g. invalid logic token or accessing a network variable for a network panel whose SID number does not appear in the SID list of the NDU (this fault will occur immediately upon exit from program mode).
21. When a fuse on the MAF/PSU board is blown.
22. When the IC that drives the network serial port does not store its programmed settings correctly. This could occur if the IC was not installed.
23. When an RZDU is connected that is not required.
24. When the panel is not powered up or is continually restarting or not executing its ROM program correctly.

6 ADU CONFIGURATION

6.1

ADU GENERAL

The ADU (Alarm Display Unit) is a dedicated display unit that connects to either a Panel-Link network or an RZDU bus. An ADU is a smaller format version of an NDU, with a simplified keypad to suit its particular application. The reason that ADU programming information is included in this programming manual is that ADU programming is almost the same as F3200/NDU for most things. Unlike F3200, the ADU does not have any alarm zone modules, relay modules, MAF board, LED display boards, nor RZDU output.

A set of forms for recording the configuration of an ADU are provided in Appendix B of this manual.

There are two types of ADU.

1. Nurse Station Annunciator (NSA)
2. Compact Firefighter Facility (Compact FF)

A Nurse Station Annunciator has three keys - ACK, SMOKE RESET and NEXT plus an alarm LED.

A Compact FF has seven keys as required by AS4428.1 for an FF interface - NEXT, PREV, RESET, ACK, ISOL, WARNING SYSTEM ISOLATE, and EXTERNAL BELL ISOLATE. A Compact FF also has five LEDs, alarm, fault, isolate, Warning System isolate and External Bell isolate.

The NSA and the Compact FF have the same software installed in them. A programmable parameter (Operating Mode) is used to select either NSA operation or Compact FF operation. Refer 6.5.3 below.

Similarities between ADU & NDU

- Alphanumeric display, 2 lines x 40 characters
- Surface and flush mount options.
- Compatible with other Panel-Link network products.
- Fully field-programmable.

Differences between ADU & NDU

- Smaller cabinet (40% area of NDU).
- History file is held in memory for at least three days during a power failure.
- Provides three general purpose supervised inputs for MCP or other controls.
- Cannot be used with a MAF board or 16 zone LED display boards.
- Simplified keypad
- An ADU does not display faults or totals, but these are accessible in Tandem LCD mode.
- A laptop/PC is required to program the ADU using the PC utility PanelX.

An ADU has 16 local alarm zones (the same as an NDU) although only one of these is actually needed (for the MCP). A local MCP may be mapped to any one of these 16 zones. Each of the 16 zones may be isolated, de-isolated, or reset, but cannot be tested. Each zone can be programmed as latching/non-latching, MAF/non-MAF, etc.

The ADU selectively displays zone alarm events received from the network (or RZDU bus), and selectively sends commands for these zones to the originating FIP when initiated by an operator from the FF alarm list. The ADU may be programmed with output logic, and a panel-link connected ADU may send and receive network logic variables. The keypad is physically accessible all the time, but the software may disable the keypad when the cabinet is locked, depending on the configuration settings (refer section 2.4.6.10).

General purpose input number one can optionally be used as an MCP (manual call-point) and meets AS4428.1 requirements for Australian operation. The MCP should not be used in New Zealand because it does not comply with NZS4512:2003 requirements. However, if New Zealand mode is selected (a programmable parameter) and the MCP is enabled, then general purpose input one has its "polarity" switched so that open circuit is alarm. For Australian operation, short circuit is the alarm state. Refer to sections 2.4.6.2 and 2.4.6.13.

The ADU continually checks the integrity of its database as a background task, and every 24 hours it checks the firmware checksums.

The PC utility PanelX is used to program the ADU using Tandem LCD mode and is also used for fault diagnosis and technician functions. For an ADU that is connected to Panel-Link, programming and technician functions can also be accessed using a tandem LCD mode connection at another network device. For an ADU that is connected to the RZDU bus, the tandem LCD connection must be to the local serial port of the ADU.

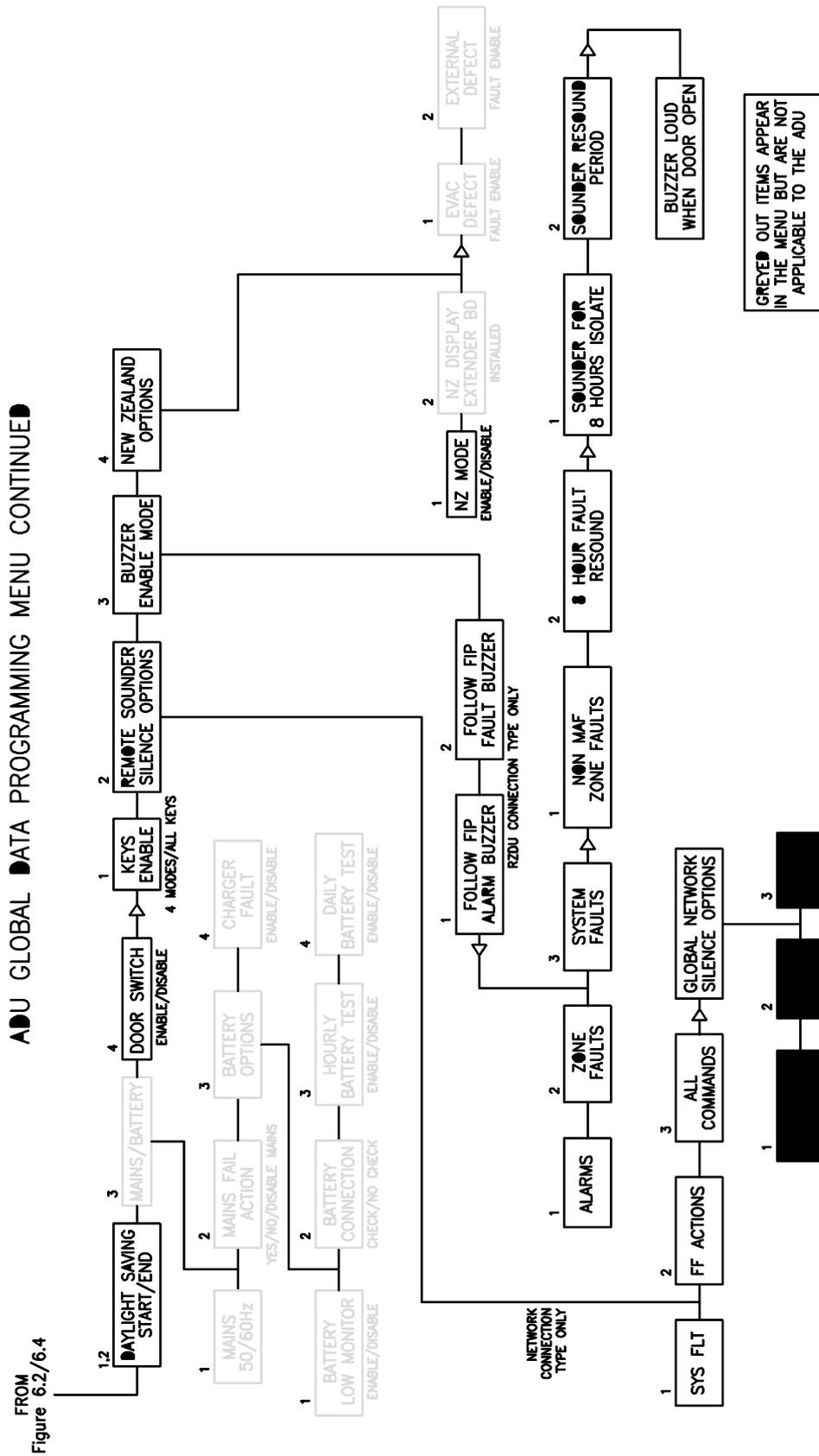


Figure 6.3 ADU GLOBAL DATA PROGRAMMING MENU CONTINUED

6.2 NURSE STATION ANNUNCIATOR (NSA)

The NSA version of the ADU is intended for use in hospitals or similar applications, to display alarms appropriate to the immediate location, and to allow staff to respond to these in accordance with local procedures.

The physical keypad has only three keys: ACK, NEXT, SMOKE RESET. These allow alarms to be acknowledged and reset (if enabled with programming).

This mode of operation is set in the Operating Mode option in the top-level programming menu (see Figure 6.1) as NSA. This is factory set, and should not require changing.

6.3 COMPACT FIREFIGHTER FACILITY (COMPACT FF)

This version of the ADU is intended for providing an AS4428.1 compliant fire brigade access point in locations where a full sized NDU or FIP cannot be installed, either because of space limitations, operational or aesthetic reasons.

The physical keypad has seven keys: WARNING SYSTEM ISOLATE, EXTERNAL BELLS ISOLATE, PREV, NEXT, ACK, RESET and ISOLATE. These provide the functionality of the Firefighter Facility (FF) of a full AS4428.1 keyboard.

This mode of operation is set in the Operating Mode option in the top-level programming menu (see Figure 6.1) as Compact FF. This is factory set, and should not require changing except when replacing the main circuit board.

6.4 CONNECTION TYPE & WIRING

The ADU can connect to either a Panel-link network or to an RZDU bus. The ADU installation document LT0321 describes how to install and connect an ADU. For an RZDU connection, the TX-RZDU, RX-RZDU terminals on the I/O board are used. For a Panel-link connection, either multi-drop mode or point to point mode can be used. For Panel-link multi-drop mode, the A+ A- B+ B- terminals on J25 of the I/O board are used. For point to point operation, the 10-way J2 connector of the main board is used.

WARNING : Do not connect RS485 or RS232 signals directly to the J2 port of the ADU as this will damage it.

Point to Point Mode

In point to point mode, the RTS pin of the J2 connector is toggled to perform channel selection, so that if a PA0878 Comms splitter board is connected to J2, link integrity messages will be sent on the appropriate port A or B. The J2 port is TTL level and has the same pin-out as the TTL port on an I-HUB (J4) or F3200 controller board. The types of boards/ connections that may be used with J2 of the ADU are the same as for the I-HUB TTL port. These are as follows.

6.4.1 POINT TO POINT WITH TTL TO TTL

The ADU J2 port can be connected to another TTL port with a maximum cable length of 1.5 metres to another compatible device. E.g. F4000/MX4428 Main Board using a loom LM0151, or an F3200/NDU Controller or F4000/MX4428 Main Board Issue C or higher using loom LM0152. The ADU must be connected to the same power supply as the FIP. RXD should be connected to TXD at the other end and vice versa, and zero volts must be connected to zero volts at the other end.

6.4.2 POINT TO POINT WITH RS485 BOARD

The ADU J2 port can be connected to a Tyco Safety Products RS485 board (PA0773) via loom LM0084, which in turn is connected to a single channel point-to-point RS485 connection. Refer below for the settings and wiring of the RS485 board for point to point operation. Additional information on the RS485 board can be found on the 1901-139 RS485 Board circuit diagram.

PA0773 RS485 Board Link settings

SWITCH SW1 (4-WIRE FULL DUPLEX WITH RT/RX ALWAYS)

A	B	C	D
ON	ON	OFF	OFF

Link settings (PA0712 only)

- Lk1 - 1-2 (fitted)
- Lk2 - 1-2 (fitted)
- Lk3 - 1-3 linked
2-4 linked
- Lk4 - 1-2 linked
3-4 linked

WIRING

When connecting to another RS485 board (PA0711, PA0712, or PA0773)

ADU RS485 Board	Remote RS485 Board
A+	B+
A-	B-
B+	A+
B-	A-

When connecting to an ECM9603 based device, RS485 Port 1 (e.g. QE90, I-HUB, PMB).

ADU RS485 Board	ECM Board Port 1
A+	TXA+
A-	TXA-
B+	RXA+
B-	RXA-

6.4.3 POINT TO POINT WITH CMOS TO RS232

The ADU J2 port can be connected to a PA0868 CMOS/RS232 interface board via loom LM0084 to convert the signals to RS232. This would normally be a connection to one other device.

The PA0868 allows the TXD and RXD signals to be interchanged and therefore act as a DTE or DCE device. Normally the PA0868 would be configured as a DTE device.

PA0868 LK1 & LK2 Settings**DTE**

LK1 Fit 1-2, 3-4

LK2 Fit 1-2, 3-4

DCE

LK1 Fit 1-3, 2-4

LK2 Fit 1-3, 2-4

6.5 PROGRAMMING AN ADU

6.5.1 GENERAL

The ADU keypad is too limited to be used for programming. The ADU is programmed using the PC utility PanelX and Tandem LCD mode, connected to either the local serial port (DB9) or to another Panel-Link device. This provides a "virtual" NDU-like keyboard and almost the same set of programming menus as the NDU. See chapter 7 for details of Tandem LCD connection, setup and operation.

It is recommended that configuration forms specifying all programmable parameters are filled out before programming commences. Blank master forms are included in Appendix B.

Almost all F3200/NDU programmable parameters appear in the ADU programming menus, but some are not applicable to the ADU and can be ignored, e.g., relay supervision and alarm zone circuit types.

Figures 6.1, 6.2 & 6.3 show the ADU programming menus. Options that do not apply to the ADU are greyed out. The FF zone configuration menu is shown in Figure 3.4.2 (section 3.4.2), and the network programming menu in Figure 4.1.1 (section 4.2).

Temporary Access Password (TAP)

Section 2.3.7 describes how to use the TAP mechanism using either the LCD/keypad or programming terminal to generate a recovery code and password. The TAP mechanism for the ADU is slightly different to F3200/NDU because the ADU doesn't have a full keypad of its own and requires PanelX and Tandem LCD mode to get into program mode. Hence, if both the Tandem LCD password and the programming six digit password have been lost, a recovery code is first obtained by connecting a terminal emulator to the ADU DB9 serial port and entering an invalid password. When a temporary password has been obtained (using the recovery code), it can be entered in PanelX as the Tandem LCD login password. This allows PanelX to access the ADU in Tandem LCD mode. The full NDU-like keypad then presented by PanelX can be used to enter program mode in the ADU using the same temporary password that was just used to get into Tandem LCD mode. New passwords can then be assigned etc.

6.5.2 DATABASE RE-INITIALIZE

The E²INIT link on the ADU controller board is used to reinitialise the database as described in section 2.3.1 of this manual. Note that the ADU has an internal manual RESET push-button that can be used to restart it instead of turning power off and on.

The default values set by a database re-initialise operation leave the ADU in a passive state with no mapped zones, network operation disabled (because the local SID number is initialised to zero), not transmitting or receiving network messages, and all zones isolated.

Following a database reinitialise, the following items in particular may need to be changed/selected. The connection type (Panel-Link or RZDU) should be assigned first because this

affects which options appear in the programming menus.

1. Operating Mode - NSA or Compact FF.
2. Connection type - RZDU or Panel-link.
3. FIP MCP – set to zero if not being used – refer section 2.4.6.2
4. FF alarm list configuration – refer section 2.4.6.3
5. The types of events which are logged to the history or the printer. Refer section 2.4.6.6. This may require programming the network SID list to select the SIDs for which events are logged.
6. Door-switch enable/disable. If the door-switch is enabled (refer section 2.4.6.9), the keys on the keypad can be programmed to function only when the door is open/unlocked, if desired (refer section 6.5.4).
7. New Zealand mode. When not in New Zealand mode, the MCP maps short circuit to alarm. With New Zealand mode enabled, open circuit is alarm and short circuit is a non-latching fault.
8. Configuring the zone used for a local MCP (if any) as MAF or non-MAF etc. Refer section 3.3.
9. Programming the FF zone configuration list. Refer section 3.4.
10. Programming output logic. For example, the status of any of the three local General Purpose inputs can be accessed in output logic and mapped to network variables for sending on the network.
11. If the ADU is connected to an RZDU bus, a number of "RZDU related" options need configuring. Refer to table 2.5.1 in section 2.5 for a list.
12. If the ADU is connected to a Panel-link network, there are several items which may need programming in the network configuration as follows.
 - A. NetConfig
 - Network operation – enable (default)
 - SID – assign a SID number to the ADU
 - NIC – usually set to enable (refer section 4.3.2)
 - Trailing FF – must be set to minimum of 2 (default)
 - LinkTX – enable if the ADU is being monitored by another device.
 - B. SID configuration
 - For some ADUs the SID list may be empty. Some possible reasons for adding SIDs to the SID list are :
 - to monitor the link integrity of a SID.
 - to log events for a SID.
 - to send and receive commands from particular SIDs, e.g., to allow another SID to isolate/ de-isolate or reset zones or system faults on this ADU or to initiate a system test on the ADU. (A system test on an ADU performs memory tests).
 - C. MAF configuration
 - enable or disable transmission of MAF status from this ADU. Normally this should be enabled so that any local faults such as keypad disconnection are annunciated elsewhere.
 - D. Command configuration
 - "Receive time/date" should be enabled (default) and "transmit time/date" should be disabled.
 - E. FF configuration
 - If the local MCP is connected to a local alarm zone then "TX alarms" should be enabled for this.
 - F. Event configuration
 - If local events such as faults are to be logged elsewhere (to an event printer or history) then "transmit events" should be enabled.
 - G. Network variable configuration
 - An ADU may need "TX Enabled" enabled, if it has logic equations affecting network variables used by other network devices.
 - H. Status configuration
 - This should normally be left disabled. If enabled, the refresh rate should be set to a slow rate e.g. 120 seconds.

NOTE : some of the programmable parameters available in the ADU are not meaningful for normal operation of the ADU, however, they may be meaningful when the ADU is being accessed in Tandem LCD mode using PanelX - for example, the settings in the network SID list select which network SIDs can be controlled from the ADU and for which SIDs the ADU accumulates totals, etc., but these capabilities can be used only in Tandem LCD mode.

6.5.3 OPERATING MODE

The following menu appears when program mode is entered.

1:Access code 2:Text 3:Global data 4:System config >

Pressing the right arrow key produces the following menu

1:Mode 2:Connection 3:Legacy bells >

Option 1 allows the operating mode to be set to either "NSA" or "Compact FF". When the operating mode is changed, some other parameters are automatically changed to select the default setting for the particular mode. The parameters which are automatically changed are:

1. Show isolated alarms in FF - refer section 2.4.6.3
NSA - disabled, Compact FF – enabled.
2. Show zone number in FF - refer section 2.4.6.3
NSA - disabled, Compact FF - enabled.
3. When the mode is changed to Compact FF, all seven keys the Compact FF has are automatically enabled for the "door open" modes. Refer to section 2.4.6.10. When the mode is changed to NSA, the keys ISOL, WARN SYS ISOL, EXT BELL ISOL are disabled for all modes and PREV, NEXT , RESET & ACK are enabled for all modes.

NOTE : After a database reinitialise, the operating mode parameter is set by default to NSA. For a Compact FF, this parameter must be set to Compact FF to get the keypad and LEDs to function correctly.

6.5.4 DOORSWITCH OPERATION

The door-switch is wired to General Purpose input 3 at manufacture time. There is a programmable option that allows the designation of input 3 as the door-switch to be enabled or disabled. This option appears in the third page of the "global data" menus as shown in section 2.4.6. If the door-switch is not connected to input 3 then the option should be disabled. If input 3 is not used for the door-switch then the ADU behaves as if the door is "always open" (or as if the keyswitch is "always operated"), except that the alarm buzzer is always operated in "loud" mode.

If input 3 is designated as the door-switch input then it is used as follows.

1. The set of key enable/disable settings (refer section 2.4.6.10) used to enable/disable particular keys is chosen according to whether the door is open (unlocked) or closed.
2. "Quiet" operation of the buzzer is selected when the door is open and "loud" operation when the door is closed. NOTE - when the service mode link LK3 on the ADU controller board is removed, the buzzer always operates in quiet mode, regardless of the door switch.
3. The ODR logic token is set true when the door is open. The GP3x logic tokens can also be used (see Section 6.5.5).

6.5.5 GENERAL PURPOSE INPUT LOGIC TOKENS

The ADU has three general purpose inputs. These are “three state” inputs – short circuit, normal and open circuit. The state of each of these inputs is accessible in output logic using the logic tokens GP_nx where n is the input number (1, 2 or 3), and x is the state (S = short circuit, N = normal, O = open circuit). These logic tokens can be selected by choosing the “GP” option from the main output logic operand menu – refer section 3.5.3. The inputs have a 900 millisecond transient debounce time delay applied to them, i.e., a condition must be continuously present for a minimum of 900 milliseconds before that condition is recognized.

Input 1 MCP / call-point

For New Zealand operation, an MCP should not be connected to an ADU. For Australian operation, input 1 can be dedicated to the MCP by assigning a zone number (1 to 16) as the MCP zone (refer section 2.4.6.2) when the connection type is Panel-link or by enabling the MCP when the connection type is RZDU (refer section 6.5.6.3). For Panel-link mode, the zone that the MCP maps to can be selected as MAF, non-MAF or status-only. If the MCP zone is selected as status-only or non-MAF, “activation” of input 1 does not produce a MAF alarm. If “New Zealand” mode is enabled (refer section 2.4.6.13) then open circuit is the active/alarm state for the MCP, otherwise, short circuit is the active/alarm state.

Input 3 can be dedicated as the door-switch. Refer section 6.5.4.

6.5.6 RZDU CONNECTION TYPE

The following menu appears when program mode is entered.

```
1:Access code 2:Text 3:Global data 4:System config >
```

Pressing the right arrow key produces the following menu

```
1:Mode 2:Connection 3:Legacy bells >
```

Option 2:Connection allows the connection type to be set to either Panel-Link or RZDU. The default setting is Panel-Link. When this parameter is changed, the following message appears on the display.

```
When the mode is changed, zone config should be reinitialized.
```

The option is then given to reinitialize zone config data.

```
Reinitialize zone config? (recommended) 1:Yes 2:No
```

Option 1:Yes should normally be selected so that all FF zone configuration data is cleared. FF zone configuration is described in section 3.4. The reason for clearing it is that when the connection type is RZDU, there is only a single SID (FIP) and the SID number is not selectable in the FF zone configuration menus, whereas in Panel-link mode, there are multiple SIDs. Normally, the connection type should be assigned before any FF zone configuration data is entered. When FF zone configuration data is being programmed, the delete key can be used to delete all FF zone data.

When the connection type is RZDU, there is a set of RZDU related parameters that can be configured. These are described in section 6.5.6. When the connection type is Panel-link, parameters associated with the Panel-link network are accessed from the system configuration menu and are described in Chapter 4.

The following sections describe where the RZDU related parameters are located in the programming menus and how they are used. Some RZDU related configuration parameters are accessed from the base program mode menu and some through the "Global data" programming menus.

6.5.6.1 RZDU MODE MAIN PROGRAM MODE MENU OPTIONS

The following menu appears when program mode is entered.

1:Access code 2:Text 3:Global data 4:System config >

Pressing the right arrow key produces the following menu

1:Mode 2:Connection 3:Legacy bells >

The legacy bells parameter is described below. If the connection type is RZDU, pressing the right arrow key produces the following menu. (This menu does not appear if the connection type is Panel-link).

1:FF mode 2:Mimic 3:Address 4:Protocol 5:More

Option 1 "FF mode" allows the mode to be set to AS4428 or AS1603.

Option 2 allows mimic operation to be enabled or disabled.

Option 3 is used to set the RZDU address 1 to 8. If mimic mode is enabled, the ADU never transmits on the RZDU bus and the address value is meaningless.

Option 4 is used to set the protocol type to LCD or non-LCD.

1. FF mode

For an NSA, FF mode would normally be set to AS4428, regardless of the type of FIP.

For a Compact FF, the FF mode parameter can be set to either AS4428.1 or AS1603.4. If the FIP type is AS4428.1 then the FF mode in the Compact FF should be set to AS4428. If the FIP type is AS1603.4 then the FF mode can be set to AS1603 if desired. If the FIP type is AS1603.4 (or is an MX1) then the Legacy Bells parameter can be used to map Bells isolate to one of the Warning System, External Bell or neither.

The two main differences between AS4428.1 mode and AS1603.4 mode are as follows.

A. AS4428.1 has a Warning System and External Bell; AS1603.4 has Bells.

B. Reset and isolate commands in the FF alarm list behave differently. In AS1603.4 mode, a reset command resets all acknowledged alarms/zones and an isolate command isolates all acknowledged alarms/zones. In AS4428.1 mode, a reset command resets only the alarm/zone being displayed on the LCD and an isolate command isolates only the alarm/zone being displayed on the LCD.

NOTE : When the FF mode parameter is changed, some other parameters are changed automatically, to match the FF mode. For example, when AS4428.1 mode is selected, the "FF show isolated alarms" parameter is enabled and the global ack, reset and isolate parameters are set false (refer section 6.5.6.2). When AS1603.4 mode is selected, the reverse changes happen - "FF show isolated alarms" is set false, the global ack, reset and isolate parameters are set true.

2. Legacy bells

RZDU Connection type

For an ADU connected to an RZDU bus, the legacy bells parameter is relevant when the FIP type is AS1603.4 (**or is an MX1**). The legacy bells parameter should be set

according to whether the Warning System, External Bell or neither, correspond to the Bells, since an AS1603.4 FIP has "Bells" and does not have Warning system/ External bell. If the legacy bells parameter is set to "Warning System" then the Warning System isolate LED on the ADU indicates Bells isolate and the Warning System Isolate key is used to isolate and de-isolate the Bells. If the legacy bells parameter is set to "External Bell" then the External Bells isolate LED on the ADU indicates Bells isolate and the External Bell Isolate key is used to isolate and de-isolate the Bells. The legacy bells parameter should be set to "neither" if neither the Warning System nor External Bell correspond to the FIP Bells.

NOTE for the purposes of the Legacy Bells setting at the RDU, an MX1 FIP behaves like an AS1603.4 FIP and effectively sends and receives "Bells isolate" states to the RDU. MX1 maps "Bells isolate" to its "Alarm Devices" disable state.

3. Mimic mode

When mimic mode is enabled, the ADU will not transmit on the RZDU bus and the RZDU address assigned to it is "don't care". This might be useful if there are more than eight devices connected to the RZDU bus. When mimic mode is enabled, the ADU cannot send zone commands to the FIP, nor does it send fault indications to the FIP and the FIP does not monitor the ADU. If the ADU is powered off or communication with the FIP is not working, there is NO fault indication at the FIP. If the ADU loses communication with the FIP, it indicates a system fault and turn its buzzer on (if programmed to).

When mimic mode is disabled, the ADU must be assigned a unique address which it uses to send commands and status to the FIP. The FIP monitors responses from the ADU and If the ADU stops responding, a fault is signalled.

4. Address

If mimic mode is disabled, the ADU address should be set to a value from 1 to 8 and this should be a unique address.

5. Protocol

The protocol type can be set to one of the following : 1 non-LCD, 2 LCD-A, 3 LCD-B. LCD-A protocol is normally used. Non-LCD protocol type is used only with very old FIPs that don't support the LCD protocol type.

6.5.6.2 RZDU MODE FF OPTIONS

The following menu appears when program mode is entered.

1:Access code 2:Text 3:Global data 4:System config >

When option 3 Global data is selected and the ADU connection type has been previously set to 'RZDU', the following menu appears.

1:FF options 2:Capture FIP options 3:Control/Follow FIP options 4:MCP

Option 1 "FF options" produces the following series of menus.

FF Pg 1 1:FF alarm source 2:FF Auto ack
FF Pg 2 1:Global commands
FF Pg 3 1:Show FIP zone names in FF 2:FF display cause by default
FF Pg 4 1:New cause new alarm 2:Multiple cause updates
FF Pg 5 1:Switch to newest alarm 2:Show zone number on FF display
FF Pg 6 1:Show isol alarms in FF 2:Show point text in FF for zone

The options available in the above menus are described below. Some of these options are also described in section 2.4.6.3 and are the same as for Panel-link connection mode, with the exception of the page 1 option "FF alarm source", the page 2 options "FF type" and

"Global commands" and the page 3 option "Show FIP zone names in FF".

1. FF alarm source

This can be set to one of three options 1:LCD messages 2:LED messages 3:Both LCD & LED messages. This option is normally set to "LCD messages". For panels which don't send LCD messages, this option can be set to "LED messages".

There are two types of messages that can be sent on the RZDU bus by a fire panel - "LED messages" and "LCD messages". LED messages contain zone status (alarm, fault, isolate) for up to 528 zones. LCD messages contain "new FF alarm" information and are sent by the FIP when a zone goes into alarm. LCD messages contain zone text and point text associated with the zone/point that caused the alarm. If "LCD messages" are enabled as an FF alarm source, then when an LCD FF alarm message is received from the FIP, an entry is added to the FF alarm list. If "LED messages" are enabled as an FF alarm source, then when the zone status in an LED message received from the FIP indicates a new alarm on a zone, an entry is added to the FF alarm list for the zone. For an FF alarm generated from an "LED message", the zone text shown is taken from the zone names programmed in the ADU.

2. FF auto ack

If enabled, alarms entered into the local FF alarm list are acknowledged automatically.

3. Global commands.

When the Global commands option from FF page 2 is selected, the following menu appears.

1:Global reset 2:Global isol 3:Global ack

There are three parameters that can be enabled and disabled - global reset, global isol, and global ack. These options determine whether the ADU can send a "global command" (ack, reset or isolate) to the FIP. When the FIP receives the global command, it applies it to all zones that are in alarm and are associated with the ADU/RZDU. (F4000/ MX4428 have the ability to associate specific zones with a particular RZDU device).

The term "global command" is used because the command is actioned by the FIP (rather than the ADU) and affects the entire system. "Global commands" are really a legacy facility because they are applied to "all zones in alarm" whereas AS4428.1 requires that zones be individually acknowledged, reset or isolate.

Global reset, global isolate.

When the reset or isolate keys are pressed and the respective global option is enabled, the ADU will send a global command to the FIP if the protocol type is non-LCD. The non-LCD protocol doesn't allow individual zone reset or zone isolate commands to be sent to a FIP.

Global ack

If the global ack option is enabled, then when the ack key is pressed at the ADU and there is at least one unacknowledged alarm, a "global ack" command is sent to the FIP. This parameter is normally disabled because with AS4428.1, zones must be acknowledged, reset and isolated individually, not as a group. This option applies to both LCD and non-LCD protocol types.

NOTE : The ADU does not support type 2 FF operation that is used by some older systems. The ADU always uses type 3 FF operation.

4. FF Show FIP zone names

If enabled, the ADU will show the zone name sent by the FIP with an FF alarm event instead of showing the zone name assigned in its database.

5. FF Display Cause by Default

By default, the first line of the F3200 FF Alarm display shows:
Alarm Time, Alarm Type, Acknowledge State, Number of Alarms

When the "AND" key is pressed, the first line changes to:
Cause, Number of Alarms

If the "Display Cause by Default" option is enabled, the first line is shown as:
Cause Preview, Alarm Type, Acknowledge State, Number of Alarms

and when the "AND" key is pressed, the first line changes to:
Full Cause, Alarm Time, Number of Alarms

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

6. New cause new alarm

When a zone goes into alarm, the alarm is initially displayed without any point information. When the specific point or points that caused the alarm become known, the alarm entry is updated with the point information (if programmed to be), and if "new cause new alarm" is enabled, the alarm entry will be made unacknowledged (even if it was previously acknowledged) and the alarm buzzer will resound (if programmed to for that zone).

7. Multiple cause updates

If a zone is configured with MultiAlm disabled (see FF Zone configuration, Section 3.4) then the alarm list will never have more than one entry for that zone, even if there are multiple points in alarm on that zone. If Multiple Cause Updates is enabled, then the alarm list entry for a zone configured with MultiAlm disabled, will be updated as each point in alarm becomes known, i.e., the alarm entry will show the latest point that has gone into alarm on that zone. If Multiple Cause Updates is disabled, then the alarm entry shows only the first point that goes into alarm on the zone. For zones with MultiAlm enabled, this parameter has no effect, since each point has its own entry in the alarm list.

8. Switch to newest alarm

If this parameter is enabled, then, whenever a new alarm is added to the FF alarm list, the display will automatically switch from wherever it currently is, to show the new alarm entry.

9. Show zone number on FF display

If this parameter is enabled, then the zone number will appear on the bottom line of the FF alarm list display of a zone alarm, followed by the name of the zone or point. When the RESET command is used, the zone number briefly appears on the top left of the display, regardless of this parameter.

10. Show isol alarms in FF

This parameter selects whether the display shows isolated alarms. If enabled, isolated alarms are displayed as part of the alarm list if there are no unacknowledged alarms. This is a requirement of AS4428.1.

11. Show point text in FF for zone

For a zone configured with MultiAlm disabled (see FF Zone configuration, Section 3.4), this parameter selects whether the alarm entry for the zone shows the point name(s), (when available), or just the zone name. If this parameter is enabled, point names are shown. For a zone with MultiAlm enabled, this parameter has no effect.

6.5.6.3 RZDU MODE MCP, CAPTURE & PASS-ON/ FOLLOW FIP OPTIONS

The following menu appears when program mode is entered.

1:Access code 2:Text 3:Global data 4:System config >

When option 3 Global data is selected and the ADU connection type has been previously set to 'RZDU', the following menu appears.

1:FF options 2:Capture FIP options 3:Pass-on/Follow FIP options 4:MCP >

Option 4 MCP allows the MCP to be enabled or disabled. The MCP should not be used in New Zealand mode. For Australian operation, if the MCP is enabled then the manual call-point will be monitored for fault and alarm and these will be sent to the FIP if they occur. Pressing the right arrow key from the above menu produces the following menu.

1:Brigade test 2:Printer setup 3:Common LEDs

The printer setup options are described in section 2.4.6.6. The common LEDs option is described below.

Capture FIP options

Option 2 "Capture FIP options" from the previous menu allows the following two parameters to be set.

1. Capture FIP zone names from alarms

If this option is enabled, and the database is physically write enabled (with link LK1), when an FF zone alarm event is received from the FIP, the zone text that comes with the alarm will be saved into the database of the ADU. This means the ADU doesn't have to be programmed with a full set of up to date zone names. In some situations, the ADU might need its own zone names independent of the FIP.

NOTE : When the ADU writes the zone names to flash memory, it stops responding on the RZDU bus for a few seconds, during which time it may miss messages sent by the FIP. Refer to section 6.5.6.4.

2. Capture FIP time/date

If this option is enabled, then when a time/date update message is received from the FIP, the ADU will update its own time and date. This option is enabled by default and should be left enabled because an ADU does not have a real time battery backed clock of its own.

Common LEDs options

When this option is selected, the following menu appears

Local status [Y/N] FIP status [Y/N]

For the Compact FF in RZDU mode, these options affect the common LEDs as follows.

Alarm LED

If the "Local status" option is enabled, then the common alarm LED flashes if there are any unacknowledged alarms. Otherwise, if "Local status" is enabled and there is at least one non-isolated alarm, the alarm LED is on steady. Otherwise, if "FIP status" is enabled and the FIP alarm LED is on, then the ADU alarm LED will be on, otherwise, the alarm LED will be off.

Fault LED

The common fault LED is not affected by the "Local status" or "FIP status" parameters and is on if there is a fault on any zone of interest to the ADU. Zones of interest to the ADU are those configured with FF zone programming (see section 3.4) as mapped to the MAF or mapped to the totals.

Isolate LED

If the "Local status" option is disabled then the common isolate LED is always off, otherwise it is on if there are any totals-mapped isolated zones.

Pass-on, follow FIP options

Option 3 "Pass-on/Follow FIP options" provides access to a sequence of menus where the following items appear. The Warning System and External Bell items appear only when the FF mode is AS4428.1 and the "Bells" items appear only when the FF mode is AS1603.4. (This is relevant only to the Compact FF. For an NSA, these options are not used.)

- 1: Ancil 1 isol
- 2: WarnSys isolate
- 3: WarnSys operate
- 4: ExtBell isolate
- 5: ExtBell operate
- 6: Bells isolate
- 7: Bells operate

For each of the above items, there are 3 options that can be set -

1. Pass-on FIP
2. Follow FIP
3. Local control

For a Compact FF, the only items which might need changing from defaults are Warning System isolate, External Bell isolate and Bells isolate. For these, if the "pass-on FIP" option is set true then the Compact FF will send isolate/ de-isolate commands to the FIP when the Warning System isolate or External Bell isolate keys are pressed. If the "follow FIP" option is set true then the Warning System isolate or External Bell isolate LEDs on the Compact FF indicate the isolate state received from the FIP. If "pass-on FIP" is enabled then "follow FIP" is automatically enabled. The "Local Control" option should be left disabled as the compact FF has no outputs.

Note : if the FF mode is AS1603.4 then the Legacy Bells parameter determines whether the Warning System or External Bell (or neither) correspond to the Bells. (refer section 6.5.6.1).

6.5.6.4 PROGRAMMING ZONE NAMES

Zone names in the ADU can be programmed using the keypad (via Panel X) or they can be loaded from a PC as described in section 2.4.5.2.

Zone names can also be down-loaded from the FIP via the RZDU comms link, if the FIP supports this. Zone names can be sent from the FIP in two ways.

1. With an FF alarm event.
2. With a manually initiated command at the FIP.

For case 1 (FF alarm events), there is a programmable parameter in the ADU (refer section 6.5.6.3) that can be enabled to get the RDU to capture zone names from FF alarms. The database must also be write enabled (LK7).

For case 2, when the command is initiated at the FIP, the FIP will begin sending all of its zone names (up to 528) to the ADU. This can take several minutes. The ADU must have its database write enabled (Link LK7) or it won't attempt to save the zone names into its database.

For both case 1 and case 2, the ADU does not have to be in program mode. For case 1 (FF alarms) the ADU must NOT be in program mode.

The ADU stores zone names in RAM as they are received and writes them all to flash memory approximately 30 seconds after the last zone name is received. The purpose of the 30 second delay is to minimise the number of flash write operations, because, during the time the ADU is updating the flash memory, it does not respond on the RZDU bus.

NOTE : When the ADU writes the zone names to flash memory, it stops responding on the RZDU bus for a few seconds, during which time it may miss messages sent by the FIP.

If the zone name received from the FIP is the same as the name already in the ADU database then the ADU won't initiate a flash write operation. The ADU database write protect link LK7 should be set to the write protect position once the ADU has been updated with all the zone names.

The ADU logs an event when it has zone names waiting to be written to flash memory and logs a second event after it finishes writing the zone names to flash.

6.5.6.5 RZDU MODE BUZZER OPTIONS

Section 2.4.6.12 shows how to access the buzzer options through the "global data" program mode menus. When the ADU connection type is RZDU, the "remote sounder silence" menu options do not appear (see Section 2.4.6.11), and as well as the buzzer options described in section 2.4.6.12, there are two additional buzzer options as follows.

1. Follow FIP alarm buzzer.

If this option is enabled, the alarm buzzer at the ADU will be on if the FIP alarm buzzer is on. The alarm buzzer may also be on if it is programmed to activate for zone alarms (see Section 2.4.6.12).

2. Follow FIP fault buzzer

If this option is enabled, the fault buzzer at the ADU will be on if the FIP fault buzzer is on. The fault buzzer may also be on if it is programmed to activate for zone faults or system faults (see Section 2.4.6.12).

6.5.6.6 CONNECTING AN ADU TO AN MX1 FIRE PANEL

When an ADU in RZDU mode is connected to an MX1 Fire Panel, the Legacy Bells (refer section 6.5.6.1) and FF Mode parameters may need to be changed from the defaults. As described in section 6.5.6.1, with regard to "Bells Isolate", an MX1 panel behaves like an AS1603.4 panel and can send and receive Bells isolate states/ commands to an ADU. The MX1 panel maps these to its "Alarm Devices disable" status. This means that with a Compact FF, it is necessary to map one of Warning System or External Bell to Bells Isolate (using the Legacy Bells parameter) if the MX1 Alarm Devices disable status is to be displayed and controlled at the Compact FF.

6.6 NON-VOLATILE MEMORY

The ADU uses Flash memory to store the configuration database. This retains information for more than 20 years.

Other information such as isolate states and event history is stored in RAM. The ADU provides a backup supply for this memory, which will retain the stored information for at least 3 days, and typically for more than a week with the power off. Hence, important fault-finding information in the event history log can be recovered even after a failure such as an extended power failure over a weekend.

6.7 ADU OPERATION

The primary function of the ADU is to display alarms. The Compact FF has an AS4428.1 compliant FF interface that can be used by fire-fighters to acknowledge, reset and isolate alarms. The NSA has a simpler keypad that allows viewing, acknowledging and resetting alarms, but not isolating them. The ADU can display faults as well as alarms. If any alarms are present, the alarms list is shown on the display. If faults are present and no alarms, the history event log can be viewed to check what faults have occurred.

For a Panel-link connected ADU, if the ADU is to annunciate faults for other SIDs on the network, then the ADU must be programmed to log events for those SIDs so that they appear in the history event log of the ADU. Refer to section 4.4.1.

6.7.1 ADU DISPLAY MODES

The ADU display can be in one of four modes as follows.

- 1. All Normal.**
When everything is normal, the base display shows the programmed site name, the text "Alarms Display" and the current time and date. The base display never shows "totals". When the NEXT key is pressed, a list of options is presented on the display. Refer to section 6.7.2 ADU operator menu below.
- 2. Alarms Display.**
When there are one or more alarms in the alarms list, the display shows the alarms list, and does not indicate faults. The NEXT/ PREV keys can be used to step around the alarms list; the ACK key can be used to acknowledge alarms and the RESET key can be used to reset alarms (if enabled). There is no way to exit the alarms display mode when there is an alarm in the list. Whether or not an alarm can be acknowledged, reset or isolated is determined by the programming for each zone (refer to section 3.4.1.1).
- 3. Fault Display.**
Depending on programming, when a fault is present, and there are no alarms, the display shows
"A fault is present. Press NEXT to view"
plus the programmed fault action text. This message appears only for faults which are programmed to operate the local buzzer. (Refer to section 6.7.5 fault buzzer below).

When the NEXT key is pressed, the history event log is shown and the NEXT, PREV keys can be used to step through the history. Each history event shown on the display indicates the time and date the event occurred plus the location and the type of event. Any key other than NEXT / PREV will exit from the history recall. Refer to section 6.7.4 below for a list of event types that can appear.

4. **Critical Fault Display.**

When a critical fault is present, the display will directly indicate the type of fault as follows. In this mode, the NEXT key can be used to select the "ADU operator menu". The critical faults that can be indicated are

- a. **"Database checksum error".**
This means the ADU is non-operational and needs a new database.
- b. **"Device SID number is unconfigured".**
In Panel-link network mode, the ADU must be configured with a non zero SID number and is non-operational until this is programmed.
- c. **"Communications fault".**
For a panel-link connected ADU, this indicates there is a link integrity fault with a SID that the ADU is programmed to monitor. For an RZDU connected ADU, this indicates a loss of communications with the FIP.

6.7.2 ADU OPERATOR MENU

When either the all normal or critical fault display is showing (as described above), when the NEXT key is pressed, a menu of options appears as listed below. The NEXT key is used to step through the list of options and the ACK key is used to select an option. Any other key will exit back to the base display.

1. **Recall History**
This option allow the history event log to be recalled. When the ACK key is pressed to select this option, the newest event in the history is shown. The NEXT/ PREV keys can be used to step through the history. Any key other than NEXT/ PREV exits the history recall. Refer to section 6.7.4 below for a list of event types that can appear.
2. **Display Test**
This option allows a display test to be initiated. This tests the LCD and front panel LEDs.
3. **Firmware Version/CRC Recall**
This option displays the version of ADU firmware that is fitted, and also the firmware CRC (checksum).
4. **Database Checksum Recall**
This option initiates a database checksum check and displays the checksum plus the time and date that the database was last saved.

6.7.3 NSA/COMPACT FF OPERATIONAL DIFFERENCES

The Nurse Station Annunciator and Compact FF have almost the same behaviour except for the following.

1. The Compact FF has more keys and LEDs than the NSA.
2. In FF alarm display mode, by default, the Compact FF shows the zone number and includes the isolated alarms recall, which the NSA doesn't. These options are configurable with programming.

On the NSA, there is no PREV (previous) key shown on the front panel and it is not normally used, however, the PREV key is physically present and is immediately to the left of the NEXT key. The PREV key on the NSA but can be enabled/disabled with programming and behaves the same as the PREV key on the Compact FF. All keys can be enabled or disabled with programming - refer to section 2.4.6.10 keys enable.

6.7.4 HISTORY EVENT TYPES

Below is a list of some of the types of events that can appear in the ADU history log. Point events are logged for individual smoke and heat detectors. Zone alarm and zone fault events are logged when one or more points on a zone goes into alarm or fault.

Point Events

A point event includes the point number, the event type, and usually some location text identifying the location of the point. For example.

Pnt xxx:yyy/zzz Alarm Ward 15 Room 5

The numbers xxx:yyy/zzz indicate the SID number (xxx), the responder number (yyy) and the detector number (zzz) for the point. For an ADU with an RZDU connection type, the SID number does not appear.

Point Event Type	Meaning
Alarm	The detector has gone into alarm
Pre-alarm	The detector has a pre-alarm
Node fail	The detector is not responding or has been removed
Dirty alert	The detector needs cleaning ASAP
Fault	The detector is faulty
Point type mismatch	The detector is the wrong type
Alarm test fail	The detector is faulty
Isolate	The point has been isolated (disabled)
Normal	

Zone Events

A zone event includes the zone number, the event type and the location text for the zone.

Zon xxx:yyy Alarm Ground floor main entrance

The numbers xxx:yyy identify the SID number (xxx) and the zone number (yyy). For an ADU with an RZDU connection type, the SID number does not appear.

Zone Event Type	Meaning
Alarm	A point in the zone has gone into alarm
Fault	A point in the zone is in fault
Reset	The zone has been reset
Isolate	The zone has been isolated (disabled)
Normal	

Network SID System Events

A SID system event includes the SID number and the type of event, for example.

Local ADU Sys 5 SID 100 NET SCAN FAULT CHA

This event indicates that this ADU (with SID number of 5) has detected a channel A communications fault (link integrity failure) for SID 100. That is, the ADU cannot receive messages from the panel SID 100 on communications channel A (e.g., due to an open or short circuit).

System Network SID Event Type	Meaning
Net scan fault CHA	There is communications fault with channel A
Net scan fault CHB	There is communications fault with channel B
Net scan normal CHA	Communications normal on channel A
Net scan normal CHB	Communications normal on channel B
Net MAF fault	There is a MAF mapped zone fault on the panel/ SID
Net System fault	There is a system fault on the panel/ SID
System Event	Meaning
System Startup	The panel has been powered on or re-started
Auto test passed	The daily auto test has passed
Processing stopped	The panel is offline or in programming mode
Processing started	The panel is on-line and operational
Warn Sys Isolate	The warning system has been isolated (disabled)
Warn Sys Deisolate	The warning system has been de-isolated (enabled)

6.7.5 ADU BUZZER AND FAULT ANNUNCIATION

The ADU can be programmed to activate its fault buzzer and display the following message when specific faults occur: "A fault is present. Press NEXT to view".

The buzzer is silenced when any key is pressed, but the fault message remains on the display until the fault has been cleared. This message does not appear for faults which do not activate the fault buzzer.

When the fault message is displayed and the NEXT key is pressed, the history event log is shown. Hence it is necessary to have event logging enabled so that the appropriate event messages appear in the history.

Options that select which types of events to log (points, zones, etc) are described in section 2.4.6.6. For a Panel-link connected ADU, each SID in the SID list should be programmed to have event logging enabled. Refer to section 4.4. For an RZDU connected ADU, each zone can be programmed if events should be logged for it. Refer to section 3.4.1.1.

The activation of the buzzer on an ADU is controlled by a combination of buzzer settings (refer section 2.4.6.12) and network SID list settings (refer section 4.4 SID Configuration) for a Panel-link connected ADU. The "use MAF totals" option in the SID list programming determines whether the buzzer turns on for zone faults and system faults on that SID. A Panel-link connected ADU can also send and receive "buzzer silence" commands on the network, as described in section 2.4.6.11.

Buzzer Operation on a Panel-link Connected ADU

1. System fault buzzer.

If the system fault buzzer option is enabled, the buzzer turns on for local "non-zonal" faults such as locally generated network link integrity faults, LCD display fault, database checksum error or memory fault. It also turns on for system faults received from another network SID that has been programmed into the SID list of the ADU with "use totals" enabled. It also turns on for "Standby" conditions received from another network SID that has been programmed into the SID list of the ADU with "use MAF status" enabled. Refer to section 4.4. Network SID Configuration.

2. Zone alarm buzzer

If the zone alarm buzzer option is enabled, the alarm buzzer turns on for an alarm on a zone that is programmed to turn the buzzer on for an alarm (refer to section 3.4.1.1).

3. Zone fault buzzer

If the zone fault buzzer option is enabled, the fault buzzer turns on when a MAF fault is indicated on another network SID that has been programmed into the SID list of the ADU with "use totals" enabled. Refer to section 4.4.

4. Non-MAF zone fault buzzer

If the non-MAF zone fault buzzer option is enabled, the fault buzzer turns on when a MAF fault is indicated on another network SID that has been programmed into the SID list of the ADU with "use totals" enabled. Refer to section 4.4.

Buzzer Operation on an RZDU Connected ADU

1. System fault buzzer.

If the system fault buzzer option is enabled, the buzzer turns on for local "non-zonal" faults such as FIP communications fail, LCD display fault, database checksum error or memory fault. It does not turn on for system faults that occur on the FIP.

2. Zone alarm buzzer

If the zone alarm buzzer option is enabled, the alarm buzzer sounds for an alarm on a zone that is programmed to turn the buzzer on for an alarm (refer to section 3.4.1.1).

3. Zone fault buzzer

If the zone fault buzzer option is enabled, the fault buzzer turns on for a fault on a zone that is mapped to the MAF and to the totals.

4. Non-MAF zone fault buzzer

If both the zone fault buzzer and non-MAF zone fault buzzer options are enabled, the fault buzzer turns on for a fault on either a MAF or non-MAF zone that is mapped to the totals.

5. Follow FIP alarm buzzer. Follow FIP fault buzzer.

These options are described in section 6.5.6.5.

6. Fault sounder after 8 hours fault. Fault sounder after 8 hours isolate.

These options are described in section 2.4.6.12.

6.7.6 ADU FRONT PANEL LEDES

The LEDs on the ADU front panel have the following behaviour. For an NSA, only the alarm LED is present and operational.

LED / state	Meaning
Alarm LED flash	There are one or more unacknowledged alarms
Alarm LED steady	There are one or more alarms
Fault LED steady	There are one or more zone faults
Isolate LED steady	There are one or more isolated zones

For a network connected ADU, the Fault and Isolate LEDs turn on for zone faults/ isolates on other network panels that appear in the local ADU programmed SID list with "use totals" enabled.

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7 TANDEM LCD MODE

7.1 TANDEM LCD OPERATION

Tandem mode allows the LCD and keyboard of an F3200/NDU/ADU to be operated from a terminal/PC connected to the printer/programmer port of the panel or from another device on the network. PanelX is a software program which runs on a PC and uses Tandem LCD mode to interact with the panel allowing the keypad/LCD to be driven from the PC. PanelX presents an F3200 like keyboard on the computer screen. PanelX provides the "send file" and "capture to file" commands for uploading and downloading databases.

Refer to section 2.3.8 for information on connecting a PC to the controller. With a plain terminal or terminal emulator connected to the printer/programmer port, tandem mode can be initiated by "pressing" the ENTER key and entering the Tandem LCD password. The default password is FIRES. A password of up to 12 characters can be programmed using option 7 from the text programming menu.

NOTE : When a terminal emulator is used to run tandem mode (instead of using PanelX), the "C" (upper case C) key is used to exit tandem mode.

There are three modes of operation and only one mode may be active at any one time.

1. Local Tandem mode.

A terminal or computer connected to the printer/programmer port of the panel can initiate local Tandem mode by "pressing" the ENTER key, entering the password and selecting the "L" option. After tandem mode is active, the "C" key can be used to exit tandem mode. Local Tandem mode allows full programming of the Controller to be done including database load, save and verify, and "remote text entry". "Remote text entry" refers to the entering of text names for zones and relays etc on the programming terminal. Refer to section 2.4.5.2. To initiate remote text entry mode, enter program mode and select the text programming option. The following text entry menu will appear.

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

Remote text entry mode can then be initiated by pressing the EDIT key on the keypad. The remote text entry prompt will then be output as follows and text can then be entered.

Enter Znnn,Rnn,An,S,Tn,ln,F,P,Q :

2. "Controlled" Tandem LCD mode.

A networked F3200/NDU/ADU can have its LCD accessed from across the network and be remotely "controlled" via a Tandem connection to another panel on the network. In this mode, database save, load, verify and text load operations cannot be done.

3. "Controlling" Tandem LCD mode.

A networked F3200/NDU/ADU allows a Tandem connection on its printer/programmer port to access another panel on the network. This mode is initiated by entering the SID of the panel to take control of after entering the Tandem LCD password.

NOTE : F3200/NDU V5.00 software onwards allow the local LCD/ keypad to be used to control a remote panel using the Tandem LCD mechanism, i.e., without PanelX. This is initiated by pressing the SYSTEM key from the base display, selecting option 2 (network system), entering the desired SID number, then selecting option 3:Tandem. The local System Fault LED flashes at 2 Hz when the local LCD/ keypad are driving a remote panel. To exit this mode, the CLEAR key must be pressed and held down for approximately one second.

APPENDIX A

F3200/NDU CONFIGURATION FORMS

The following pages are suggested as master forms for programming. It is recommended that they be photocopied, and a complete set be filled out for each FIP before programming is started.

When programming is complete, the forms should be checked against a database printout.

A copy of the database printout, completed forms and database disk file should be kept in the contract file for each installation.

Refer to Appendix B for configuration forms for an ADU.

F3200/NDU SYSTEM CONFIGURATION PAGE 1

REF:.....

SITE NAME

FAULT ACTION TEXT

Operating mode (F3200 / NDU) : _____

Keypad Type AS4428.1 AS1603.4

Legacy Bells: Warning System/External Bell/None: _____

8 Zone modules : 0 – 8 _____ MAF module present Y/N _____

8 Relays modules : 0 – 8 _____ LED Display boards : 0 – 33 _____

ANCILLARY RELAY CONFIGURATION

	ENABLE SUPVSN.	LATCH	MAF	MODE	ISOL	TEST	SUP.ACT
ANC1							
ANC2							
ANC3							

MAF RELAY LOGIC EQUATIONS

	NAME	LOGIC EQUATION
ANC1		
ANC2		
ANC3		
STANDBY		
FAULT		
ISOLATED		
ALARM		

Warning System maps to MAF Y/N
External Bell maps to MAF Y/N

Equation for Warning System WSA =

WSF =

Equation for External Bell EBA =

EBF =

F3200/NDU SYSTEM CONFIGURATION PAGE 2

REF:.....

USER INITIALS, AUTO TEST OPTIONS

ACCESS CODES 0-9					USER INITIALS				
0	1	2	3	4	5	6	7	8	9
AUTO TEST		ALARM		TIME		DATES			

SYSTEM OPTIONS

FIP MCP Zone 0 – 64		
All zones isolated = standby	Y/N	
Activate relay for Brigade Test	Y/N	
FF zones: MAF only/all/none		
FF auto ack enable/disable	Y/N	
FF allow remote ack from RDU	Y/N	
FF display cause by default	Y/N	
FF flash non maf alarm LEDs	Y/N	
FF send non maf alarm to RDU	Y/N	
FF multiple cause updates	Y/N	
FF switch to newest alarm	Y/N	
FF show zone number	Y/N	
FF new cause new alarm	Y/N	
FF show isolated alarms	Y/N	
FF zone alarm shows point text	Y/N	

PSU/BATTERY OPTIONS

Mains enabled	Y/N	<input type="checkbox"/>	Mains Frequency	50/60	<input type="checkbox"/>
8 hours mains fail = fault	Y/N	<input type="checkbox"/>	Battery connection test enable	Y/N	<input type="checkbox"/>
Charger high/low = fault	Y/N	<input type="checkbox"/>	Hourly Battery test enable	Y/N	<input type="checkbox"/>
Battery low = fault	Y/N	<input type="checkbox"/>	Daily Battery test enable	Y/N	<input type="checkbox"/>

BUZZER OPTIONS

Zone alarm buzzer enable	Y/N	<input type="checkbox"/>	Remote sys fault reset silences	Y/N	<input type="checkbox"/>
Zone fault buzzer enable	Y/N	<input type="checkbox"/>	Remote FF action silences	Y/N	<input type="checkbox"/>
System fault buzzer enable	Y/N	<input type="checkbox"/>	Remote any command silences	Y/N	<input type="checkbox"/>
Non-MAF zone faults buzzer	Y/N	<input type="checkbox"/>	Receive network sounder silence	Y/N	<input type="checkbox"/>
Faults resound after 8 hours	Y/N	<input type="checkbox"/>	Any key TX sounder silence	Y/N	<input type="checkbox"/>
Sounder after 8 hours isolate	Y/N	<input type="checkbox"/>	Cmd TX sounder silence	Y/N	<input type="checkbox"/>
Sounder "8 hour" resound period		<input type="checkbox"/>			
Buzzer loud when door open	Y/N	<input type="checkbox"/>			

F3200/NDU SYSTEM CONFIGURATION PAGE 3

REF:.....

NEW ZEALAND MODE OPTIONS

New Zealand mode enabled Y/N Evac defect is fault Y/N
 NZ Display Extender bd present Y/N External defect is fault Y/N

KEY ENABLE/DISABLE SETTINGS

Key	Non-FF Mode Door Open Key Enabled Y/N	FF Mode Door Open Key Enabled Y/N	Non-FF Mode Door Closed Key Enabled Y/N	FF Mode Door Closed Key Enabled Y/N
Prev				
Next				
Ack				
Reset				
Isolate				
Relay				
External Bell Isol				
Warn Sys Isol				
AIF Mode				
Clear				
Recall				
Ancil Isol				
Zone				
System				
Numeric				
Enter				
Batt Test				
OR				
AND				
XOR				
NOT				
Print				
Set				
Test				
Alarm Test				
Fault Test				
Brigade Test				
	DEFAULT IS ALL ENABLED	DEFAULT IS ALL ENABLED	DEFAULT IS ALL DISABLED	DEFAULT IS ALL DISABLED

F3200/NDU SYSTEM CONFIGURATION PAGE 4

REF:.....

RZDU PARAMETERS

RZDU protocol Type: LCD Non-LCD

RZDU 1 – 8	Enabled Y/N	Protocol A/B	MCP Zone

ALARM TEXT NAMES

Text No	Default	Program	Text No	Default	Program
1	Smoke		6	PSW	
2	Heat		7	SPR	
3	FSW		8	SIP	
4	MCP		9	Flame	
5	VMD				

EVENT PRINTING OPTIONS

Event printing enable/disable Y/N

Printer lines per page 0 – 250

Printer baud rate 300 – 9600

Print relay activate/de-activate events Y/N

F3200/NDU SYSTEM CONFIGURATION PAGE 5

REF:.....

EVENT TYPES LOGGED TO PRINTER AND HISTORY

	PRINTER Y/N	HISTORY Y/N
ZONES		
SYSTEM		
SYS RUN		
CIRCUIT		
POINT		
RELAY		

DAYLIGHT SAVING

	START	END
MONTH		
HOUR		
MINUTE		
DAY: (one of next 1,2,3)		
1: LAST WEEKDAY OF (MON-SUN)		
2: Nth WEEKDAY OF (MON-SUN)		
3: DATE		
TIME DIFFERENCE:		
HOUR		
MINUTE		

LED OPERATION					
Local LEDs show any alarm	Y/N		RZDU output show any alarm	Y/N	
Local LEDs show any fault	Y/N		RZDU output show any fault	Y/N	
Local LEDs show any isolate	Y/N		RZDU output show any isolate	Y/N	
Local LEDs show partial isolate	Y/N		RZDU output data is zone status zone status (Y) , LED status (N)	Y/N	
Max LEDs on (0 - 240)					

F3200/NDU LED DISPLAY BOARD CONFIGURATION

REF:.....

ZONE LED DISPLAY BOARDS			
BOARD NUMBER	2 COLUMN / 3 COLUMN 2/3	SHARE ISOLATE/ FAULT LED Y/N	RELAY TYPE Y/N
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			

F3200 AZC CONFIGURATION

REF:.....

Number of Zone Modules Fitted

8ZM NO.	CCT NO.	AZC PROGRAMMING								FIELD WIRING	
		A L M T	M O D E	D L Y	B 1	B 3	D L Y 1	D L Y 2	I N S T		
		1	1	1	1	1	-	-	4		
1	1	1									
	2	2									
	3	3									
	4	4									
	5	5									
	6	6									
	7	7									
	8	8									
2	1	9									
	2	10									
	3	11									
	4	12									
	5	13									
	6	14									
	7	15									
	8	16									
3	1	17									
	2	18									
	3	19									
	4	20									
	5	21									
	6	22									
	7	23									
	8	24									
4	1	25									
	2	26									
	3	27									
	4	28									
	5	29									
	6	30									
	7	31									
	8	32									

F3200/NDU ZONE CONFIGURATION

REF:.....

ZONE NO	ZONE PROGRAMMING						LED	ZONE NAME
	L A T C H	M A F	A N C 1	W A R N S Y S	E X T B E L L			
Defaults	L	M	M	M	M	ZONE NO.		
1	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
2	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
3	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
4	25							
	26							
	27							
	28							
	29							
	30							
	31							
	32							

F3200/NDU OPEN COLLECTOR OUTPUT
 FUNCTION & LOGIC EQUATION

REF:.....

8ZM NO.	OUT PUT	FUNCTION NAME	LOGIC EQUATION
1	1	1	
	2	2	
	3	3	
	4	4	
	5	5	
	6	6	
	7	7	
	8	8	
2	1	9	
	2	10	
	3	11	
	4	12	
	5	13	
	6	14	
	7	15	
	8	16	
3	1	17	
	2	18	
	3	19	
	4	20	
	5	21	
	6	22	
	7	23	
	8	24	
4	1	25	
	2	26	
	3	27	
	4	28	
	5	29	
	6	30	
	7	31	
	8	32	

F3200 RELAY CONFIGURATION

REF:.....

8RM NO.	RLY NO.	PROGRAMMING							TEXT NAME (30 CHARACTERS)
		E N A B L E	L A T C H	M A F	I S O L	T E S T	S U P - A C		
DEFAULTS		E	N	M	Y	Y	Y		
1	1	1							
	2	2							
	3	3							
	4	4							
	5	5							
	6	6							
	7	7							
	8	8							
2	1	9							
	2	10							
	3	11							
	4	12							
	5	13							
	6	14							
	7	15							
	8	16							
3	1	17							
	2	18							
	3	19							
	4	20							
	5	21							
	6	22							
	7	23							
	8	24							
4	1	25							
	2	26							
	3	27							
	4	28							
	5	29							
	6	30							
	7	31							
	8	32							

**F3200/NDU RELAY FUNCTIONS
 & LOGIC EQUATIONS**

REF:.....

8RM NO.	RELAY NO.	NAME	LOGIC EQUATION
1	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
2	1	9	
	2	10	
	3	11	
	4	12	
	5	13	
	6	14	
	7	15	
	8	16	
3	1	17	
	2	18	
	3	19	
	4	20	
	5	21	
	6	22	
	7	23	
	8	24	
4	1	25	
	2	26	
	3	27	
	4	28	
	5	29	
	6	30	
	7	31	
	8	32	

F3200 RELAY FIELD WIRING

REF:.....

Number of Relay Modules fitted :.....

8RM NO.	RELAY NO.	NAME	FIELD WIRING
1	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
2	1	9	
	2	10	
	3	11	
	4	12	
	5	13	
	6	14	
	7	15	
	8	16	
3	1	17	
	2	18	
	3	19	
	4	20	
	5	21	
	6	22	
	7	23	
	8	24	
4	1	25	
	2	26	
	3	27	
	4	28	
	5	29	
	6	30	
	7	31	
	8	32	

F3200/NDU CONFIGURATION SHEETS

REF:.....

NETWORK PARAMETERS. FILL IN VALUES FOR ALL PARAMETERS THAT ARE BEING CHANGED FROM DEFAULT.

NETWORK SETUP					
NETWORK ENABLED (Y/N)		POINT ACCESS (Y/N)			
LOCAL SID NUMBER		NIC Y/N		RX TIMEOUT	
TX DELAY		ACK TIME		DUP TIME	
LEADING FF		TRAILING FF		LINK TX Y/N	
LINK TX TIME		LINK RX TIME		GROUPS	
ACK BROADCASTS Y/N		BAUD RATE		RETRIES	
SLOTS		MODE B 0 – 7		ACK BROADCASTS TO SPECIFIC SID	
MODE: MULTIDROP/POINT TO POINT M/P					
NETWORK MAF CONFIG					
REFRESH TX TIME		MAX COS RATE			
RECEIVE WARNING SYSTEM SILENCE Y/N		SEND WARN SYS SILENCE Y/N			
RECEIVE EXTERNAL BELL SILENCE Y/N		SEND EXT BELL SILENCE Y/N			
NETWORK COMMAND CONFIG					
ACK TIME		WORK TIME		RX NET TIME/DATE Y/N	
TX NET TIME/DATE Y/N					
NETWORK FF CONFIG (some options are not present, depending on the software version)					
TX ALARMS Y/N		DEDICATED TX SID		RX NET ACK Y/N	
TX ISO/RESET CMDS Y/N		TX ACK CMDS Y/N			
NETWORK EVENT CONFIG					
TRANSMIT EVENTS Y/N		TRANSMIT EVENT UPDATES Y/N			
TRANSMIT RELAY OPERATES Y/N		ZONE/RELAY CMD TEXT TX Y/N			
ZONE/RLY EVENT TEXT TX Y/N		SYSTEM EVENT TEXT TX Y/N			
NETWORK VARIABLE CONFIG					
TX ENABLED Y/N		TX REFRESH RATE		MAX COS TX RATE	
NETWORK STATUS REFRESH CONFIG					
REFRESH ENABLED Y/N		TX REFRESH RATE		FAST TX RATE	

APPENDIX B

ADU CONFIGURATION SHEETS

The following pages are suggested as master forms for programming the ADU. It is recommended that they be photocopied, and a complete set be filled out for each ADU before programming is started.

When programming is complete, the forms should be checked against a database printout.

A copy of the database printout, completed forms and database disk file should be kept in the contract file for each installation.

ADU SYSTEM CONFIGURATION PAGE 1

REF:.....

This set of configuration sheets contains all programmable parameters. Fill in values for all parameters that are being changed from the default settings.

System/project name

ADU site name
 (40 characters max.)

Fault action text
 (40 characters max.)

SYSTEM PARAMETERS		
Operating mode	NSA / Compact FF	
Connection type	Panel-link network / RZDU	
Door-switch is wired to input 3	Yes / No	
New Zealand mode	Enable / disable	
MCP Zone (Panel-link mode only). (zero is no MCP)	0 - 16	

FF OPTIONS		
FF auto ack enable/disable	Yes / No	
FF display cause by default	Yes / No	
FF multiple cause updates	Yes / No	
FF switch to newest alarm	Yes / No	
FF show zone number	Yes / No	
FF new cause new alarm	Yes / No	
FF show isolated alarms	Yes / No	
FF zone alarm shows point text	Yes / No	
FF OPTIONS FOR PANEL-LINK CONNECTION TYPE		
FF zones	MAF only/ all/ none	
FF OPTIONS FOR RZDU CONNECTION TYPE		
FF show FIP zone names	Yes / No	
FF alarm source messages	LED; LCD; Both	
Global ack command	Enable/disable	
Global reset command	Enable/disable	
Global isolate command	Enable/disable	

ADU SYSTEM CONFIGURATION PAGE 2

REF:.....

SYSTEM PARAMETERS FOR RZDU CONNECTION TYPE		
Address	1 - 8	
FF Mode	AS4428.1 / AS1603.4	
Legacy bells	WarnSys, ExtBell, None	
Mimic mode	Enable/disable	
Protocol type	LCD-A / Non-LCD	
MCP connected to input 1	Yes / No	
Capture remote time/date	Enable/disable	
Capture FIP zone names from alarms	Enable/disable	
Common LEDs show local status	Yes / No	
Common LEDs show FIP status	Yes / No	
Warning system isolate	Control/ follow/ local	
External bell isolate	Control/ follow/ local	
Follow FIP alarm buzzer	Yes / No	
Follow FIP fault buzzer	Yes / No	

BUZZER OPTIONS				
Zone alarm buzzer enable	Y/N		Remote sys fault reset silences	Y/N
Zone fault buzzer enable	Y/N		Remote FF action silences	Y/N
System fault buzzer enable	Y/N		Remote any command silences	Y/N
Non-MAF zone faults buzzer	Y/N		Receive network sounder silence	Y/N
Faults resound after 8 hours	Y/N		Any key TX sounder silence	Y/N
Sounder after 8 hours isolate	Y/N		Cmd TX sounder silence	Y/N
Sounder "8 hour" resound period				

ACCESS CODES 0 - 9									
USER INITIALS									
0	1	2	3	4	5	6	7	8	9
AUTO TEST	ALARM		TIME		DATES				

ADU SYSTEM CONFIGURATION PAGE 3

REF:.....

KEY ENABLE/DISABLE

Key	Non-FF Mode Door Open Key Enabled Y/N	FF Mode Door Open Key Enabled Y/N	Non-FF Mode Door Closed Key Enabled Y/N	FF Mode Door Closed Key Enabled Y/N
Prev				
Next				
Ack				
Reset				
Isolate				
External Bell Isol				
Warn Sys Isol				

EVENT LOGGING

Event printing enable/disable Y/N

Printer lines per page 0 – 250

Printer baud rate 300 – 9600

Print relay activate/de-activate events Y/N

EVENT TYPES LOGGED TO PRINTER AND HISTORY

	PRINTER Y/N	HISTORY Y/N
ZONES		
SYSTEM		
SYS RUN		
CIRCUIT		
POINT		
RELAY		

ADU SYSTEM CONFIGURATION PAGE 4

REF:.....

DAYLIGHT SAVING PARAMETERS

	START	END
MONTH		
HOUR		
MINUTE		
DAY: (one of next 1,2,3)		
1: LAST WEEKDAY OF (MON-SUN)		
2: Nth WEEKDAY OF (MON-SUN)		
3: DATE		
TIME DIFFERENCE:		
HOUR		
MINUTE		

FF ZONE GLOBAL OPTIONS

Map FF Y/N	Alm Sndr Y/N	Multi Alm Y/N	Ack Tx Y/N	Ack Rx Y/N	Loc Ack Y/N	Reset FF Y/N	Iso FF Y/N
Hide Y/N	Log Y/N	Total Y/N	Alarm test Y/N	Fault test Y/N	Output type Y/N		

**ADU CONFIGURATION
 FF ZONE OPTIONS**

REF:.....

SID											
Start Zone											
End Zone											
MapFF Y/N											
AlmSndr Y/N											
MultiAlm Y/N											
AckTx Y/N											
AckRx Y/N											
LocAck Y/N											
ResetFF Y/N											
IsoFF Y/N											
Hide Y/N											
Log Y/N											
Total Y/N											
Alarm test Y/N											
Fault test Y/N											
Output type Y/N											

**ADU ZONE CONFIGURATION
 PANEL-LINK MODE**

REF:.....

ZONE NO	ZONE PROGRAMMING						LED	ZONE NAME
	L A T C H	M A F	A N C 1	W A R N S Y S	E X T B E L L			
Defaults	L	M	M	M	M	ZONE NO.		
1	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
2	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							

ADU PANEL-LINK NETWORK CONFIGURATION REF:.....

FILL IN VALUES FOR ALL PARAMETERS THAT ARE BEING CHANGED FROM DEFAULT.

NETWORK SETUP					
NETWORK ENABLED (Y/N)		POINT ACCESS (Y/N)			
LOCAL SID NUMBER		NIC Y/N		RX TIMEOUT	
TX DELAY		ACK TIME		DUP TIME	
LEADING FF		TRAILING FF		LINK TX Y/N	
LINK TX TIME		LINK RX TIME		GROUPS	
ACK BROADCASTS Y/N		BAUD RATE		RETRIES	
SLOTS		MODE B 0 – 7		ACK BROADCASTS TO SPECIFIC SID	
MODE: MULTIDROP/POINT TO POINT M/P					
NETWORK COMMAND CONFIG					
ACK TIME		WORK TIME		RX NET TIME/DATE Y/N	
TX NET TIME/DATE Y/N					
NETWORK FF CONFIG					
TX ALARMS Y/N		DEDICATED TX SID			
NETWORK EVENT CONFIG					
TRANSMIT EVENTS Y/N				TRANSMIT EVENT UPDATES Y/N	
TRANSMIT RELAY OPERATES Y/N				ZONE/RELAY CMD TEXT TX Y/N	
ZONE/RLY EVENT TEXT TX Y/N				SYSTEM EVENT TEXT TX Y/N	
NETWORK VARIABLE CONFIG					
TX ENABLED Y/N		TX REFRESH RATE		MAX COS TX RATE	
NETWORK STATUS REFRESH CONFIG					
REFRESH ENABLED Y/N		TX REFRESH RATE		FAST TX RATE	

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