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F3200/NDU

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

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AMENDMENTS

ISSUE	DATE	COMMENTS	ECN
1.0	12/02/01	Original. Split from LT0122 and modified for AS4428.1	

CHAPTER 1

INTRODUCTION

1.1

SCOPE

This manual provides information on the programming of an F3200 Fire alarm panel or an NDU that is compliant with AS4428.1, or an F3200/NDU that has an AS1603.4-type keyboard and V3.XX software. It also covers programming of an NDU for use in New Zealand and compliant with NZS4512.

Detail of installation and wiring is in a separate manual – F3200 Installation and Configuration manual LT0255.

Programming and installation of F3200/NDU panels using V2.XX software is covered in the F3200 Programming and Installation manual LT0122.

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 Software Upgrade	Instructions on installing V3.XX F3200 software in an AS1603.4 Keyboard panel that previously had V2.XX software. Part Number LT0264.

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

<u>Part No.</u>	<u>Description</u>	<u>Revision</u>	<u>Date</u>	<u>Comments</u>
SF0221	F3200 AS4428	V3.00	Feb 2001	
SF0222	F3200 AS4428 Net	V3.00	Feb 2001	
SF0224	NDU AS4428	V3.00	Feb 2001	

1.4 GLOSSARY OF ABBREVIATIONS

The following abbreviations are used throughout this manual:

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)
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 throughout 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.

CHAPTER 2

PROGRAMMING GLOBAL DATA

2.1 INTRODUCTION

2.1.1 GENERAL

The F3200 has two main levels of programming. The first level is accessible to the Operator (via the keypad) and does not require entry of an access code. It allows the setting of parameters, such as time and date, which do not affect the basic structure of the system. Details are covered in the F3200 AS4428.1 Operator Manual.

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

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

It is recommended that 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.

NOTES

1. When filling out configuration sheets it is only necessary to record any non-default parameters.
2. It is necessary to install and configure the modules before the other programming, such as text entry, is performed.

The recommended order of configuration and programming is shown in Section 2.1.4.

2.1.2 MENU STRUCTURE & PARAMETER ENTRY

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

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

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

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

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

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

MENU STRUCTURE & PARAMETER ENTRY (CONTINUED)

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

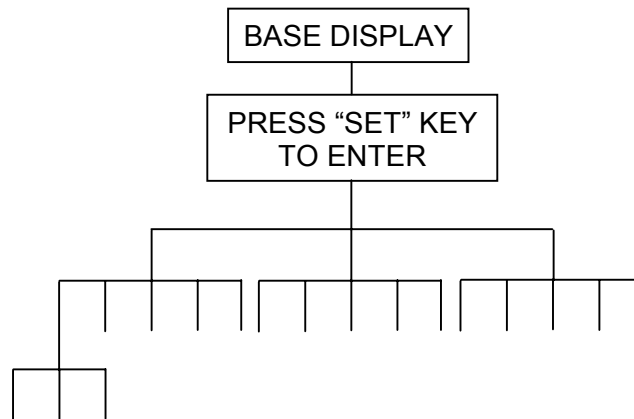


FIG 2.1.1
MENU STRUCTURE

Details of the programming menu are shown in Figure 2.1.2

2.1.3 PROGRAMMING KEYS

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

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

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

F3200 PROGRAMMING MENU STRUCTURE PAGE 1

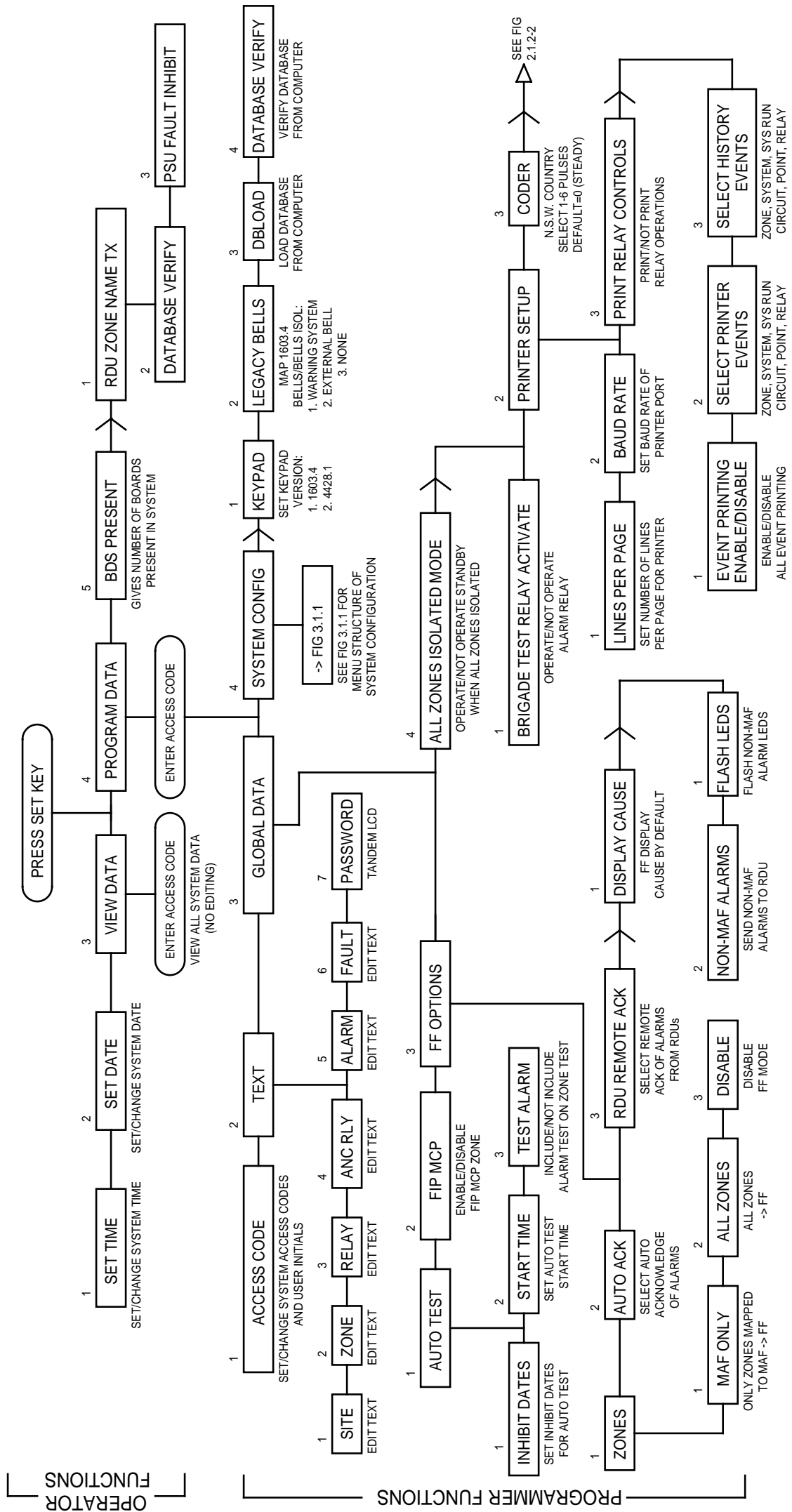


FIG 2.1.2-1 F3200 V3.00 OR LATER PROGRAMMING MENU STRUCTURE

→ = NEXT PAGE ON LCD

2.1.4 RECOMMENDED PROCEDURE FOR PROGRAMMING

1. System Design

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

2. Configure Hardware

Install panel, configure and fit modules and connect field wiring.

3. E2 Init

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 2.4.2. 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 2.4.3. 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.

10. Save Database

When satisfied that the programming is correct, save and verify (Section 2.3.7) the database onto a disk (if a computer is available). Keep it in case the database ever needs to be restored, or in case a future FIP has similar logic and the logic could be copied from this one and edited.

11. 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.

12. Testing

Thoroughly test the system. Make any corrections needed and save the database.

2.2 SET MENU & OPERATOR PROGRAMMING FUNCTIONS

2.2.1 GENERAL

From the base display, pressing the "SET" key enters the programming menu as shown in Fig 2.1.2. This gives the Operator programming options as follows:

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

Operator Accessible Options

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

Set Time and Set Date are self-explanatory (they are described in the Operator's Manual).

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

Database Options

Option 3:View data, and 4:Program data, require an access code to be entered.

View Data is described below. Program Data selects the database configuration menu and is described in Section 2.4.

Options to print and save the database are accessed using the PRINT key from the base display and allow the database to be printed or saved in a computer file. These are described in Section 2.3.4.

Pressing the right arrow key will select a second menu as follows.

1:RZDU zone name transmit 2:Database verify 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 3.6.

2.2.2 VIEW DATA PARAMETERS

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

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

NOTE

Access to the view menu can only be gained by entering a correct access code.
Refer to Section 2.3.2.

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

2.3.1 INITIALISING THE DATABASE

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

Steps

1. Fit the Minijump on the DATABASE link, Lk7 (top right of Controller/Display) in the WRITE PROTECT position, (i.e. NOT write enabled).
2. With the batteries disconnected, turn the FIP mains power off.
3. Short circuit pins SW1 (top centre of Controller/Display) with the Minijump, then turn the power on.
4. When the start up sequence is completed the LCD prompts you to write enable the database by moving Lk7 to the write enable position. Move Lk7 to the write enable position.

You will then be prompted on the LCD to remove SW1 and press "ACK". Remove the Minijump from SW1 (place it on one pin only), and press "ACK" to complete the sequence, or "CLEAR-ESC" to abort it.

2.3.2 ACCESSING THE DATABASE

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

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

When access has been granted, the Program data menu is displayed and a new access code can be entered (option 1, refer to Section 2.4.4). The access code for the FIP should be recorded in the FIP contract file to enable future reconfiguration. Where multiple users have individual codes then they should have a system for remembering their own code.

WARNINGS

1. When the database is accessed the Controller de-energises the Standby relay (i.e. transmits Standby) and stops processing. If this signals "Alarm" to the Brigade the appropriate arrangements should be made.
2. On a FIP that has been commissioned, if there is concern that changes made to the database (e.g. programming circuits) may cause a false alarm, then either the Brigade should be isolated or the appropriate zones should be isolated before entering "Program Mode".

2.3.3 DE-ACCESSING THE DATABASE

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

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

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

NOTES

1. Lk7 must be fitted to the WRITE PROTECT position after the database has been de-accessed.
2. If zones were de-isolated before programming commenced, they should be checked for status before being de-isolated after programming has finished. If any show "alarm" then these must be checked to see if the alarm is genuine.
3. All zones and relays associated with any new modules configured (including E2 Initialisation) will be automatically isolated when the database is de-accessed, and need to be checked and de-isolated as per note 2. above.

2.3.4 PRINTING & SAVING THE DATABASE

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

The printer or computer is connected to the PRINTER/PROGRAMMER connector (J1) at the bottom left corner of the Controller/Display. Suitable cables for connection are described in the F3200 AS4428.1 Installation and Configuration manual.

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

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

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

NOTE

Printing and saving the database do **not** require the DATABASE link (Lk7) to be fitted in the WRITE ENABLE position.

Saving the Database on a Computer

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

PRINTING & SAVING THE DATABASE (CONTINUED)

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

The FIP display will show:

"Print in Progress. Press RESET to Cancel"

while the database save is in progress.

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

NOTE

The F3200 FIP responds to XON (CTRL Q) and XOFF (CTRL S) handshake characters for both the save database and print database. If it receives an XOFF character it will suspend transmitting data until it receives an XON character.

If the print or save database operation does not appear to be working, try typing Control Q on the PC.

2.3.5 RESTORING THE DATABASE FROM A COMPUTER

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

Enter program mode as described in Section 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"

will appear.

Connect the computer to the FIP as described in Section 2.3.4. Press the "ACK" key on the FIP keypad and then initiate the transmission of the database file from the computer.

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

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

2.3.6 DATABASE CONVERSION

If the software finds that its database was programmed by an earlier version of software (e.g. the software has just been upgraded, or a database from an earlier version of software is downloaded) then a prompt is given to convert the database to the new version. This must be done, and any new features programmed.

2.3.7 VERIFYING A SAVED DATABASE

A database verify can be initiated without entering program mode – press the SET key from the base display, then press the SET key again to select the second menu and select Option 3 : Database Verify.

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

2.4 PROGRAM BASE MENU, TEXT & GLOBAL PARAMETERS

2.4.1 GENERAL

The Program base menu (refer to Fig 2.1.2) has the following options:

1:Access Codes 2:Text 3:Global Data 4:System Configuration.

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 further menu.

1:Keypad=4428.1 2:Legacy bells = None 3:Database load 4:Database verify

Keypad type and Legacy bells options are described in the following sections. Database load and database verify are described in the preceding section.

2.4.2 KEYPAD TYPE AND LEGACY BELLS OPTIONS

V3.XX software can be installed in a panel that has either an AS4428.1 or an AS1603.4 type keypad. The keypad type can be selected as 4428.1 or 1603.4 to match the installed keypad. On initialisation the keyboard 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.

2.4.3 LEGACY BELLS

The Legacy Bells option can be set to one of:

1:None 2:Warning System 3:External Bell

Sections 3.7 contains 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.

If the keypad type is 4428.1 and the panel/NDU is part of a network that contains 1603.4 panels, then the Legacy Bells option should be set at all 4428.1 panels on the network according to whether Bells/Bells Isolate on the 1603.4 panels corresponds to the Warning System, External Bell, or neither.





2.4.4 ACCESS CODES

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

ACCESS CODES (CONTINUED)

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

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

1. To enter a New Access Code, select Option 1. Enter the new six digits, and then re-enter them to confirm.
2. To enter The New Three initials, select Option 2.
The LCD will display the alphabet on the bottom line. Move the  cursor through the alphabet using the   cursor keys. Press "ENTER" when the desired letter is selected. Press "ACK" to save the entered initials.
"DELETE" will delete an entry. "EDIT" will toggle the  cursor between the top line (initials) and the bottom line (alphabet).
3. To Delete an Access Code, select Option 3 for that user. Press "ACK" to remove the code for that user. The initials remain but can be edited as in 2 above.

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


2.4.5 TEXT ENTRY

The Text option allows entry of the following:





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

Text can be programmed with the keypad or with a PC connected to the Printer/Programmer port as described in the following sections.



2.4.5.1 PROGRAMMING TEXT WITH THE KEYPAD

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

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

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

Holding the   keys down causes rapid movement.

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

PROGRAMMING TEXT WITH THE KEYPAD (CONTINUED)

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

Example of Entry of Site Name

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

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

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

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

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

Press "ENTER".

Repeat for the other letters in Penrose.

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

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

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

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

Alarm Text

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.

PROGRAMMING TEXT WITH THE KEYPAD (CONTINUED)

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

2.4.5.2 TEXT PROGRAMMING WITH A PC

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

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

When the LCD is showing the Text entry menu:

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

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

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

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

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

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

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

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

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

To enter the site name type: S ENTER

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

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

To enter Fault action text type: F ENTER

To enter the Tandem LCD password type: P ENTER

TEXT PROGRAMMING WITH A PC (CONTINUED)

If a valid selection is entered the message:

"Enter Text :"

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

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

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

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

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

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

```

S
40 character site name
                                                    (blank lines are allowed)

Z1
Example text name for zone 1
Z2
Name for zone 2
Z3
    This name has leading spaces
Z4
This name does not have leading spaces
.
.
.
Z23
This name will be cut at 30 characters as it is too long
Z24
Name for zone 24
R1
Name for module relay 1
.
.
.
R64
Name for module relay 64
A1
Name for ancillary 1 relay
A2

Name for ancillary 2 relay

```

TEXT PROGRAMMING WITH A PC (CONTINUED)

A3
Name for ancillary 3 relay
T1
Smoke
T4
Manual
T9
Therml (limited to six characters)
I0
JEH (three characters)
I1
MJS
.
.
I9
BAC
F
Phone VIGILANT FIRE 7903600 (40 characters max)

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

When the message:

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

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

2.4.6 GLOBAL DATA

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

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

3:FF options provides the following:

FF zones (MAF only, all, none)

Auto Ack enable/disable

RDU Remote Ack enable/disable

Display cause by default enable/disable

Always flash non-MAF alarm LEDs – enable/disable

Always send non-MAF FF alarm to RDU – enable/disable

Pressing > selects the following menu

1:Brigade test relay activate 2:Printer setup 3:Country coder;

Pressing > again selects the following menu

1:Daylight saving start 3:Mains/battery

2:Daylight saving end

3:Mains/battery provides the following

Mains frequency 50/60Hz

Mains fail action

Battery low monitor enable

Battery tests enable

Charger fault monitor

Pressing > again selects the following menu

1:Keys enable 2:Remote sounder silence

3:Buzzer mode 4:New Zealand mode options

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

Auto-Test

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

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 test memory and database checksums and initiates 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.

FIP MCP

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

GLOBAL DATA (CONTINUED)

FF options

The parameters which can be programmed to configure the FF operation are as follows.

FF zones

By default only zones which are mapped to the MAF are put into the FF alarm list. Alternatively, the FF alarm list can be programmed to accept all zones, or no zones (disabled).

An example of the use of this option is as follows.

There are two buildings, each with its own Brigade connected FIP. It is required that any alarm on one FIP must show as a single alarm on the other, but this repeat indication must not initiate a second alarm call to the Brigade. The zone on each FIP which indicates alarm for the other FIP is programmed as a non-MAF zone and the FF is programmed as "all zones". An alarm on the non-MAF zone will then go into the FF queue but will not call the Brigade at the second panel.

This assumes that there are no other non-MAF mapped zones for which alarms are not to be displayed in the FF.

FF RDU remote ack

If enabled this allows FF alarms to be acknowledged by RDUs. If disabled, acknowledgement commands from RDUs will not be accepted, but reset and isolate commands from RDUs will still be accepted. For network systems refer also to Chapter 4.

FF auto ack.

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

FF Display cause by default

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

GLOBAL DATA (CONTINUED)**FF option Always flash non-MAF alarm LEDs – enable/disable**

By default this is disabled. If enabled, the alarm LED (if any) for a non-MAF zone will flash when a new alarm occurs on the zone. This allows the alarm to appear as an unacknowledged alarm at an RDU so the alarm will be shown in its FF alarm list. At an RDU each zone can be programmed as to whether it should be entered into the RDU FF alarm list when the zone goes into alarm. This allows the choice of where particular zone alarms are displayed.

FF option Always send non-MAF FF alarms to RDU – enable/disable

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.

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.

Brigade Test Relay Activate

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

With a 1603.4 type keypad there is a dedicated Brigade Test key. With a 4428.1 type 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 but can be enabled if desired.

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 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).

Country Coder (alarm signalling)

This is only required for FIPs connected to Brigades with NSW Country Coder equipment.

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

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

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

Printer setup

The printer setup menu options are:

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

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

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

GLOBAL DATA (CONTINUED)

The > 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.

Options 2 and 3 allow the selection of which types of events are to be printed and which type are to be logged to history. There are six different types which can be individually enabled or disabled, and these are shown as
1:Zone 2:System 3:Sys run 4:Cct 5:Pnt 6:Relay.

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

Zone events include zone alarm, reset, isolate etc.

System events include "system test passed", "system power up" etc and all events which are not one of the other 5 types.

Sys run (system running) is for the daily "auto test passed" event (or for network systems the daily "system running" event).

Cct (circuit) and pnt (point) apply only to network systems.

Relay events include local ancillary and module relay events such as isolate, fault, operate test, and (de)activate. If relay events are enabled then local relay activate and relay deactivate events may be separately disabled (as described in the previous menu). For network systems, module relay and ancillary relay events are sent onto the network as zone events and hence the printing and history logging of them is controlled by the zone type option and not the relay event type option. However, it is possible to disable the transmission of relay activate and deactivate events onto the network - refer to the networking chapter.

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. There are two menus used, and to swap between the two menus the cursor right/left keys are used.

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

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

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

Option 4:day gives a menu which allows the setting of which day of the month the time is to be changed.

The menu gives options 1:last weekday of; 2:Nth weekday of; 3:date.

GLOBAL DATA (CONTINUED)

Only one of options 1,2,3 can be chosen, but the daylight saving start setting may be different to the end setting.

Option 1: last weekday of, will prompt for the entry of a weekday selection, 1 to 7 (1=Sunday, 7=Saturday) so that the day selected is then the last Sunday (say) of the month. This will mean that the daylight saving change will occur on the last Sunday (say) of the month regardless of the month or year.

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

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

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

Daylight saving will start and end on different dates and times, depending on the country 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	L	2	3	L	3
TAS (1)	Y	10	L	2	3	L	3
NZ	Y	10	1	2	3	3	2
WA, NT, QLD (2)	N	-	-	-	-	-	-

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

Mains/Battery Options

1. Mains Frequency
The mains can be set for 50Hz or 60Hz.
2. Mains fail = fault after 8 hours Y/N/mains disabled
If "fault after 8 hours" is enabled, then when mains has been failed continuously for 8 hours fault will be signalled. This option also allows mains to be selected as "disabled". **If the panel board is externally DC powered then mains disabled should be selected.**

GLOBAL DATA (CONTINUED)

3. Battery Options

1. Battery low monitoring – if enabled, a fault is signalled when a battery low occurs. For a slimline NDU with no MAF board, the battery very low threshold is used as the battery low threshold. Battery low monitoring and battery connection tests are not required for AS1603.4 but are required for AS4428.1.
 2. Battery connection test – if enabled, the battery connection will be checked every 30 seconds by reducing the charger voltage.
 3. Hourly battery capacity test – if enabled, a 60 second battery test will be done automatically on the hour.
 4. 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.

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 are :

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

"FF mode" refers to when the 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.

GLOBAL DATA (CONTINUED)

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.

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 will select a further 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.

Buzzer Mode

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

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

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

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

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

Pressing the right arrow key from this menu shows

1:Fault sounder after 8 hrs isolate [Y/N]
2:Set 8 hr period in 6 minute units

GLOBAL DATA (CONTINUED)

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

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

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

The option "Set 8 hr period in 6 minute units" allows a value from 0 to 255 to be set. A default value of 80 selects a time of 8 hours for the buzzer re-activation described above.

New Zealand Mode

This option is available only for an NDU.

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. Batt vlow = alarm Y/N
4. Evac defect is fault Y/N
5. External defect is fault Y/N

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

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

The Australian default settings are to comply with AS4428.1. Table 2.4.1 lists all of the programmable non-network parameters. The defaults listed are for Australian operation. The previous section lists items that have defaults specific to New Zealand operation.

<u>Item</u>	<u>Options</u>	<u>Default</u>
Keypad	AS4428.1/AS1603.4	AS4428.1
Legacy Bells	Warn Sys/Ext Bell/None	None
Access Codes	Qty 1-10	1 (User 0)
	6 Digits	000000 (User 0)
Autotest Time	Time	9:00am
Autotest Inhibit	Dates For No Test	Stat Holidays, weekends
Autotest Alarm	Alarm Test Yes/No	No alarm test
FIP MCP	Zone, Disable	Zone 1, Enabled
FF Mode	MAF Zones Only/ All Zones/Disabled	MAF Zones Only
FF RZDU Remote Ack	Enabled/Disabled	Enabled
FF Auto Ack	Enabled/Disabled	Disabled
FF Display Cause by default	Enabled/Disabled	Disabled
FF always flash non-maf alarm LEDs	Enabled/Disabled	Disabled
FF always send non-maf alarm to RDU	Enabled/Disabled	Disabled
All zones isolated = Standby	Standby Operate/Not Operate	Operates
Brig Test	Operate/MAF Alarm Relay	Disabled
Printer	Lines Per Page	60
	Baud Rate	9600
	Print Relay Control	Enabled
	Event printing	Enabled
Printer + History	Select event types to log: - zone, system, sys run, circuit, point, relay.	All types enabled
Coder (NSW Cty)	Disabled/1-6 Pulses	Disabled
Daylight saving start	Start time/date/diff	Last SUN, OCT, 2am, 1 hr
Daylight saving end	End time/date/diff	Last SUN, MAR, 3am, 1 hr
Mains 50/60Hz	50/60Hz	50Hz
Mains Fail is fault after 8 hours	Enable/Disable	Disabled
Mains disabled	Enable/Disable	Enabled
Battery low is fault	Enable/Disable	Enabled
Battery connection monitor	Enable/Disable	Enabled
Hourly battery test	Enable/Disable	Enabled
Daily 40 minute battery test	Enable/Disable	Enabled
Charger High/Low = Fault	Enable/Disable	Enabled
Alarm buzzer	Enable/Disable	Enabled
Zone fault buzzer	Enable/Disable	Enabled
System fault buzzer	Enable/Disable	Enabled
Buzzer for non-MAF zone faults	Enable/Disable	Disabled
Fault sounder after 8 hours fault	Enable/Disable	Enabled
Fault sounder after 8 hours isolate	Enable/Disable	Enabled
Keys enable	Enable/Disable keypad keys for: Door open/Door closed FF mode/non-FF mode	Door open – all enabled Door closed – all disabled
Remote sounder silence options	Enable/Disable sysflt reset, FF actions, all commands	Sysflt reset – enabled FF actions – enabled All commands - disabled
Global network sounder silence	Any key tx Cmd Tx Receive	Enabled Enabled Enabled

TABLE 2.4.1
PROGRAMMABLE PARAMETERS

Continued

<u>Item</u>	<u>Options</u>	<u>Default</u>
MAF board (NDU only)	Present/not present	As found
8 Zone Modules	Number Fitted 0-8	As found
8 Relay Modules	Number Fitted 0-8	As found
16 LED Display	Number Fitted 0-4	As found
Display LEDs	Zones/Relays to LEDs	1-1 in order
Alarm Text	1 Smoke	1 Smoke
(Detector Type)	2 Heat	All programmable
	3 FSW (Flowswitch)	
	4 MCP (callpoint)	
	5 VMD (valve)	
	6 PSW (Pressure Switch)	
	7 SPR (Sprinkler)	
	8 SIP	
	9 flame	
Inst Alarm Text	As per Alarm Text	4 MCP
AZC Mode	1 (Standard)	1 Std
	2 (Hi Current)	
	3 (Lo Current)	
	4 (Tamper)	
	5 (Disabled)	
AZC Time Delay	1 (Std)	1 Std (2.3 Sec)
	2 (AVF/RAD)	
	3 (SAD)	
	4 (Delay)	
Cct B1 (0-3V)	1 (Inst Alarm)	1 Inst Alarm
	2 (Alarm)	
	3 (Normal)	
	4 (Fault)	
Cct B3 (13-17.5V)	1 (Inst Alarm)	1 Inst alarm
	2 (Alarm)	
	3 (Normal)	
	4 (Fault)	
Delay (4)	T1 into Alarm	30 Seconds
	T2 out of Alarm	0 Seconds
Zones	Latch/Non Latch	Latch
	Mapped/Not Mapped to MAF/Status Only	Mapped
	Mapped/Not Mapped to ANC1, Ext Bell, Warn Sys	Mapped
MAF Brig Relays	Operation on Logic Function	As Named
O/C 1-64	Operation on Logic Function	Zone 1-64 Non Iso Alarm Respectively
Variables		
Timers	Type/Delay	No Operation
Module relays 1-64	Configuration and logic equation, Text name	Supervision: enabled Latching: No Map to MAF: Yes LED: Yes Isolatable: Yes Testable: Yes No logic equation

TABLE 2.4.1
PROGRAMMABLE PARAMETERS

Continued

<u>Item</u>	<u>Options</u>	<u>Default</u>
Anc 1 Relay	Configuration, logic equation Text name	Supervision: enabled Latching: No Map to MAF: Yes Doorholder mode Isolatable: Yes Testable: Yes No logic equation
Anc 2 Relay	Configuration, logic equation, Text name	Supervision: enabled Latching: No Map to MAF: Yes Load mode Isolatable: No Testable: No Logic AR2 = EBO
Anc 3 Relay	Configuration and logic equation, Text name	Supervision: enabled Latching: No Map to MAF: Yes Isolatable: No Testable: No Logic AR3 = WSO
Warning System	Map to MAF Logic equations,	Yes WSA = ZWA+WST+ITA WSF = AR3F
External Bell	Map to MAF Logic equations,	Yes EBA = ZBA+EBT EBF = AR2F
RDU Protocol RDU 1-8	LCD/non-LCD Enabled/Disabled Protocol A/B MCP Zone	LCD Disabled A 1

TABLE 2.4.1
PROGRAMMABLE VALUES

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

TABLE 2.4.2
PROGRAMMABLE PARAMETERS (NEW ZEALAND ONLY)

2.5 ERROR MESSAGES DURING FIP CONFIGURATION

Listed below are some error messages that can appear on the LCD during installation. Refer also to Section 6.6.3 System Faults in the Operator Manual LT0250.

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

"Shift reg clocking fault"

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

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

"Shift reg driver fault"

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

"Clock crystal timebase check fail"

This message indicates a hardware fault on the Controller.

"Clock chip ram write read fail"

"Clock register write read fail"

"Clock startup fault"

These messages indicate a hardware fault on the Controller.

"Eprom CRC fail"

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

Error messages that can occur on entry to program mode

"This database is invalid and should be reinitialised-net dbase in non net panel"

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

CHAPTER 3

PROGRAMMING SYSTEM CONFIGURATION

3.1 SYSTEM CONFIGURATION MENU

The System Configuration menu is Option 4 in the Program base menu (as shown in Fig 2.1.2). The menu includes the following:

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

The network option appears only for a networked panel and is described in Chapter 4. Fig 3.1.1 shows all of the other programmable items accessible from the System Configuration menu.

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.

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

CONFIGURING MODULES

Option 3: Modules allows the assignments of the number of zone and relay modules, 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.

Select:

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

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

WARNING

Changing the number of 8 zone or relay modules configured will automatically change the number of zones or relays allocated in the database. The mapping of zones/relays to LEDs will need to be manually adjusted.

F3200 PROGRAMMING MENU STRUCTURE SYSTEM CONFIGURATION

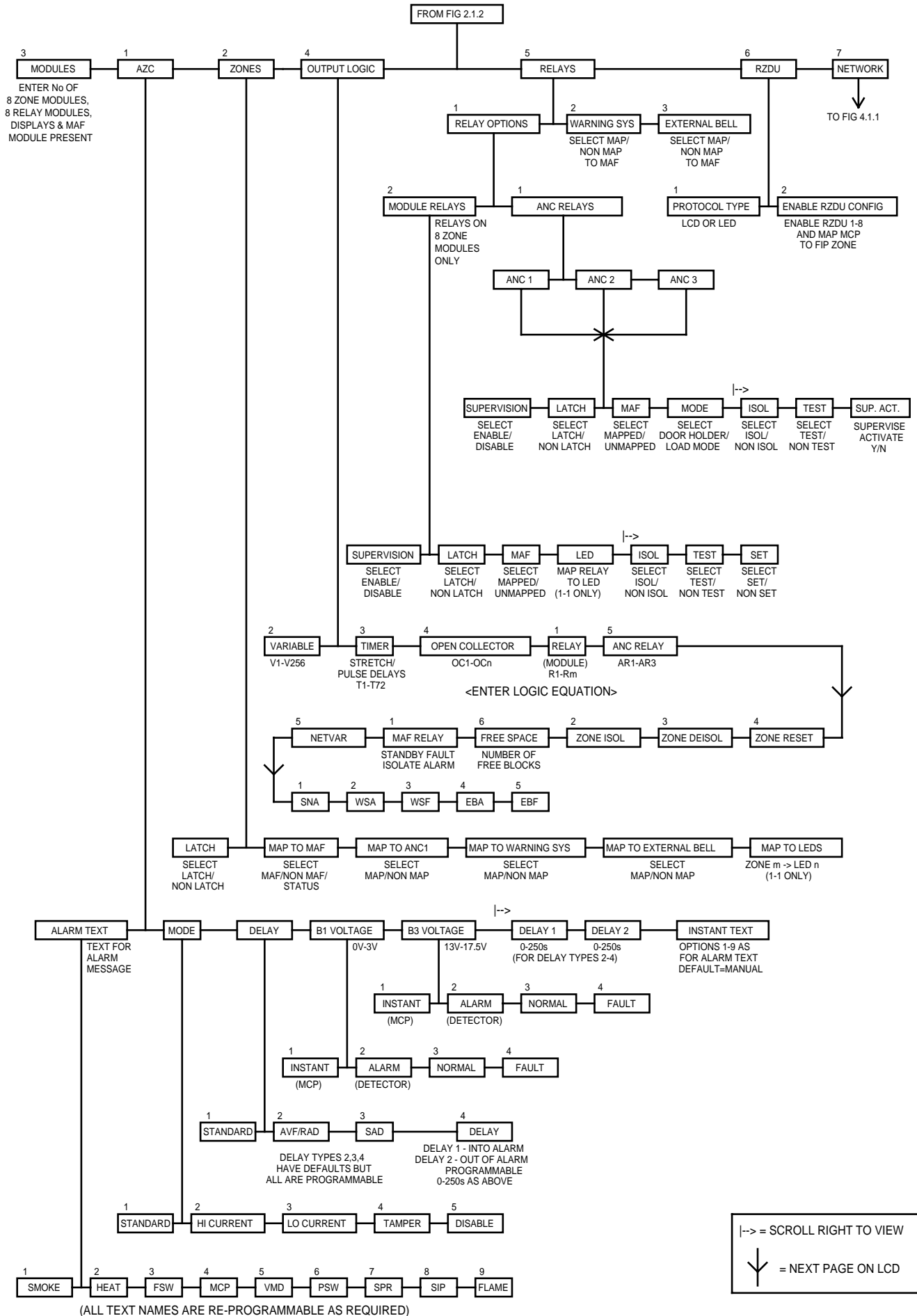


FIG 3.1.1 PROGRAMMING MENU STRUCTURE
FOR SYSTEM CONFIGURATION
V3.00

3.2 CONFIGURING CIRCUITS (AZCS)

3.2.1 GENERAL

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

Attributes include:

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

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

3.2.2 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 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 (CONTINUED)

- 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 TIME DELAYS

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

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

Note that the actual time delay also depends on the new condition (i.e. alarm or instant alarm).

<u>Delay Type</u>	<u>Delay To Alarm</u>	<u>Delay to Normal</u> (applies to Cct not zone)
1 Std	Inst Alarm 2.3 Alarm 2.3	2.3 2.3
2 AVF/RAD	Inst Alarm 2.3 Alarm (AVF/RAD sequence using D1)	2.3 2.3
3 SAD	Inst Alarm 2.3 If D1 is zero (default) the into Alarm time is 2.3 seconds. If D1 is non-zero, the delay into Alarm is AVF (using D1).	2.3 D2
4 Delay	Depends on D1 "into alarm time" For non-zero into alarm time Inst Alarm 2.3 Alarm 2.3 + D1 For into alarm time of zero Inst alarm .2-.8 seconds Alarm .2-.8 seconds	2.3 D2 .2-.8 seconds D2 + .2

Default Settings for Delays

<u>Delay Type</u>	<u>D1</u>	<u>D2</u>
2 AVF/RAD	11	-
3 SAD	0	65
4 DELAY	30	0 (2.3)

All times are in seconds.

TIME DELAYS (CONTINUED)

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

D1 and D2 are programmable to 0-250 seconds but if set to zero, a minimum delay of 2.3 seconds (or .4) is still applied.

Hence for a type 4 circuit with D1=0, D2=5, the into alarm delay is .2 to .8 seconds and the out of alarm delay is 5.2 - 5.8 seconds. For a type 4 circuit with D1=30 and D2=0, the into alarm delay is 32.3 seconds and the out of alarm delay is 2.3 seconds.

Type 4 circuit with into alarm delay of zero

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

Note that programming an AZC for any time delay type resets programming of voltage bands B1 and B3 for that AZC to the default options, but these can subsequently be re-programmed.

SAD & Delay Types

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

AVF/RAD Sequence

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

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

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

Reset Delay

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

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 B2 (13V to 17.5V) are programmable as to whether they generate Instant Alarm (MCP operated), Alarm (Detector Operated), Normal or Fault.

This allows:

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

VOLTAGE BANDS (CONTINUED)

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.

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 ZONES

3.3.1 GENERAL

The programmable options for each zone as shown in Fig 3.1.1 are (default in parenthesis):

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)

Mapping a zone to the Ancillary Relay 1 means the relay will operate when the zone goes into alarm, but the mapping is ignored if the relay is controlled by a logic equation.

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.

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

A non-latching zone will return to normal from Fault or Alarm if the AZC 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.

3.3.2 MAPPING TO MAF

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

- Mapped to MAF
- Not mapped to MAF
- Status Only

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

Zones not mapped to the MAF will not operate the brigade relays, but alarms will be put in the FF alarm list if it is programmed for "all zones".

Status Only Zone

A zone programmed as "Status Only" will NOT:

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

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

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

3.3.3 MAPPING ZONES TO LEDS

Where 16 Zone LED Displays are fitted, zones and relays have a default mapping to the LEDs. An LED can be mapped to by only one zone or one relay. Likewise, each zone or relay may map to only one LED. To disable the mapping of a zone or relay to an LED, an LED number of zero can be entered.

The LEDs on the 16 Zone LED display board may also be controlled by an output logic equation. This is described in Section 3.4.8. Any LEDs which are controlled by output logic should not be mapped to by zones or relays.

3.3.4 MAPPING TO WARNING SYSTEM/EXTERNAL BELL/ANCILLARY RELAY

Each zone can be programmed to map to each of Ancillary 1 Relay, Warning System or External Bell. A zone mapped to the Warning System will set the ZWA token (refer Section 3.4.3) when there is an alarm on the zone and the zone is non-isolated.

A zone mapped to the External Bell will set the ZBA token (refer Section 3.4.3) when there is an alarm on the zone and the zone is non-isolated.

For a zone mapped to the Ancillary 1 relay, the relay is operated when there is an alarm on the zone and the zone is non-isolated, UNLESS the Ancillary 1 relay is driven from a logic equation. If the Ancillary 1 relay is driven from a logic equation then the mapping of zones to the Ancillary 1 relay is ignored.

3.4 PROGRAMMING OUTPUTS

3.4.1 GENERAL

F3200 outputs (Ancillary Relays, MAF Brigade Relays, 8 Zone Module open collectors and 8 Relay Module relays) plus the Warning System and External Bell, may be programmed to operate on a logic equation of zone and FIP status. Zone LEDs may also be controlled by an output logic equation using a relay equation where the relay number is in the range 65 to 256. Output logic equations may also be used to isolate, de-isolate or reset zones.

The outputs which can be programmed are shown in the output logic menu part of Fig 3.1.1 and are described in Section 3.4.6.

EEPROM initialise creates some default mappings and equations as follows.

1. Open collectors. By default, open collector output n is active when zone n is in alarm and not isolated.
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. Warning System and External Bell. Refer Section 3.7.

Output Logic Equation Format

An output logic equation takes the form of:

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

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

Some examples of equations are shown in Section 3.4.4.

Output Logic Specifications

Number of "small" equations	289 maximum
Number of "(" per equation	14 maximum
Equation Size (note 1)	100 bytes max
Number of variables available	256
Number of network variables	128 per SID
Number of seconds timers available	64 (1-64)
Number of minutes timers available	8 (65-72)
Type of timer (see following)	Stretch/Pulse
Time range of timers	0-250 seconds/minutes
Error margin of seconds timers	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.

GENERAL (CONTINUED)

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.

3.4.2 LOGIC OPERATORS

The logic operators allowed are as follows:

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

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

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

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

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

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

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

TRUTH TABLE**Priorities & Evaluation**

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

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

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

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

LOGIC OPERATORS (CONTINUED)

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

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

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

3.4.3 LOGIC OPERANDS (TOKENS)

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 token 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. a token of Z12A returns true when zone 12 is in alarm and not isolated.

The operands that can be used are as follows:

<u>Abbr</u>	<u>Name</u>	<u>In Equation</u>	<u>Example (Token)</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

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 3.4.10.
- 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 3.4.10.
- 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.

LOGIC OPERANDS (TOKENS) (CONTINUED)**NOTES:**

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

Zone Range (ZR)

Zxx:yy(zz)q

where xx, yy, zz = 1 - 64, yy > xx, $(yy - xx) + 1 \geq zz$

q can be A,F,I,N,D,M,R as above.

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

Example

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

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

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

Z1:10(1)A = Z1A + Z2A + Z3A + Z4A + Z5A + Z6A + Z7A + Z8A + Z9A + Z10A

Z11:13(3)F = Z11F . Z12F . Z13F

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

Rxxq

where xx = 1 - 64

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

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

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

Ancillary Relay (AR)

ARxq

where x is 1,2,3 for Ancillary Relay 1,2,3

q can be A, F, I or N as for the module relays

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

LOGIC OPERANDS (TOKENS) (CONTINUED)

Open Collector (OC)

OCxx
where xx = 1-64

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

New Alarm (NA)

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

NA[r1,r2,...rn;s1,s2,...sm]
where r1-rn is the list of tokens which reset the latch and
s1-sm is the list of tokens which set the latch.

Entry of an NA token into an equation is described in Section 3.4.6.

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

Vxxx
where xxx = 1 - 256

A variable is a "label" operand which may be equated to a common block of logic that occurs in the equations of more than one output. Using a variable saves re-entering and repeating the execution of the identical portion of the logic equations.

Note that all variables are set to "false" on power up.

Network Variables

NVsss:nnn
where sss = SID number 1-254 and nnn = variable number 0-127.
A networked F3200 or NDU has 128 network variables of its own that it may assign values to with an equation, e.g. NV5=Z1A+Z2A.

The 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.

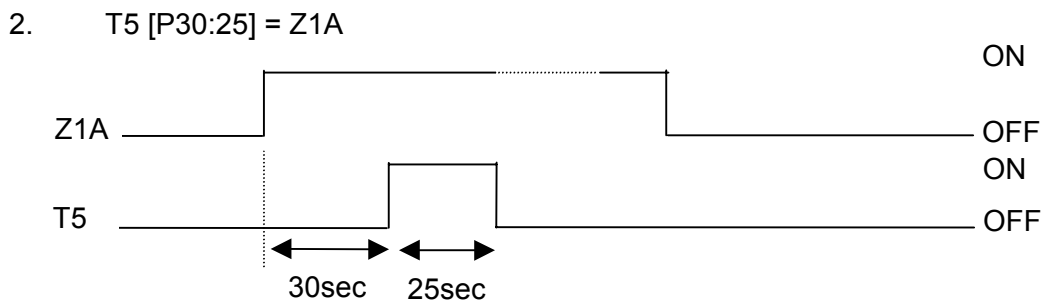
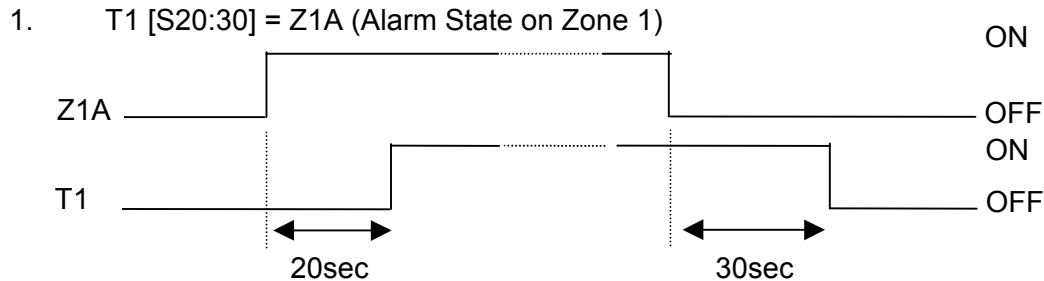
Timers allow outputs to be timed from inputs. They all have two time delays associated with them and can be "stretch" timers or "pulse" timers. The default configuration sets both delays to zero, and all timers are set to "false" on power up.

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.

LOGIC OPERANDS (TOKENS) (CONTINUED)

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 1 or more local MAF zones is in alarm, or true in New Zealand mode if a latched battery very low alarm is present.

BEL The BEL token was used in previous 1603.4 compliant software and is not valid in V3.XX 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.

THREE LETTER OPERANDS (CONTINUED)

- 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 software.
- BLO** If battery low fault monitoring is enabled BLO will be set true by a battery low fault.
- 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.
- 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.

THREE LETTER OPERANDS (CONTINUED)

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.

THREE LETTER OPERANDS (CONTINUED)

- 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, silenced by a Warning System silence state received from the network, or (for NZ operation) silenced by a local Silence Alarms keyswitch.
- 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.

3.4.4 EXAMPLES OF LOGIC EQUATIONS

Example 1 - Use of Variables

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

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

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.

EXAMPLES OF LOGIC EQUATIONS (CONTINUED)

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).

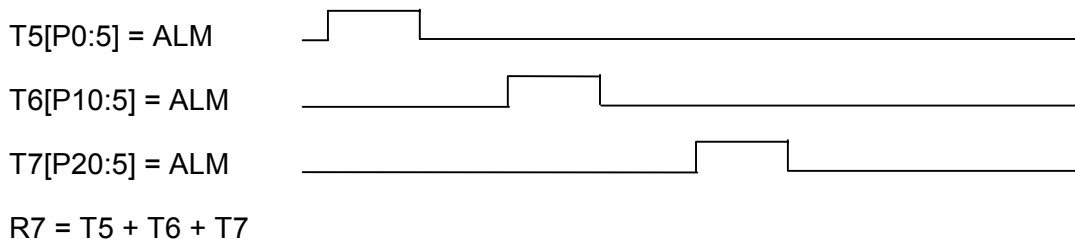
Example 3 - Use of Timers

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.



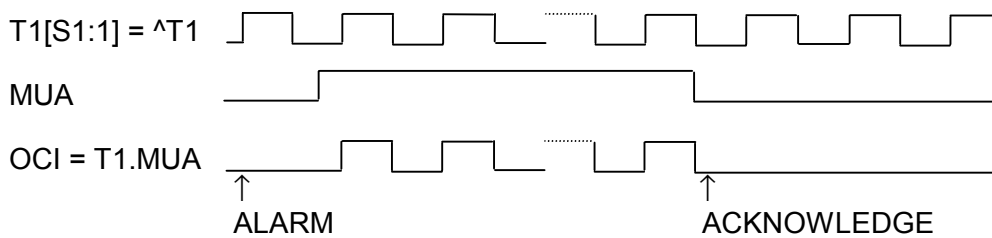
EXAMPLES OF LOGIC EQUATIONS (CONTINUED)

Example 4 - Use of Timer To Make Continuous Pulsing

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

Solution:

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



3.4.5 ENTERING EQUATIONS

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

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

Equation entry has two fields. The top field contains the equation which has been entered and the bottom field contains an array of operands which may be entered. "NOT" or "(" may also be entered directly from their keys.

Each field has one of two cursors. The active cursor \blacksquare may be moved through the field it is in by use of the \blacktriangleleft \blacktriangleright keys to select an operand or position in the equation. The inactive cursor \blacksquare shows where the active cursor would be if it was in that field.

There is a choice of 5 lines of operands in the bottom field. These may be scrolled by use of the \blacktriangleup and \blacktriangledown keys. Note that numbers and operators can be entered directly from the keypad.

"EDIT" toggles the cursor between the two fields.

"DELETE" acts as backspace for a token just entered, or deletes any token/operator in the equation selected by the cursor (active or inactive).

"ACK" saves the equation.

"NEXT" & "PREV" step through outputs (e.g. relays).

NOTES:

- 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.

ENTERING EQUATIONS (CONTINUED)

2. It is recommended that brackets be used when entering a string of operands to make checking easier.
3. When an equation has been entered, check it, and count the number of "(" and the number of ")" to ensure they are the same.
4. It is recommended that all equations be written on forms before they are entered, and then checked against the forms after they have been entered.

Example

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

The equation is:

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

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

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

<u>Press</u>	<u>LCD Shows</u>
"▶"	R5 = ■ (NOT AR RL VL ■ N TM OC ZR NA NV
"("	R5 = (■ (NOT AR RL VL ■ N TM OC ZR NA NV
"ENTER"	R5 = (Z ■
"9", "ENTER"	R5 = (Z9 ■
"1"	R5 = (Z9A ■
"OR"	R5 = (Z9A + ■ (NOT AR RL VL ■ N TM OC ZR NA NV
"ENTER"	R5 = (Z9A + Z ■
"1" "0" "ENTER"	R5 = (Z9A + Z10 ■
"1"	R5 = (Z9A + Z10A ■
")"	R5 = (Z9A + Z10A) ■
"AND" "NOT"	R5 = (Z9A + Z10A).^ ■ (NOT AR RL VL ■ N TM OC ZR NA NV
"▶" "▶"	(NOT AR RL VL ZN TM ■ C ZR NA NV
"ENTER"	R5 = (Z9A + Z10A).^OC ■
"4" "ENTER"	R5 = (Z9A + Z10A).^OC4 ■

ENTERING EQUATIONS (CONTINUED)

"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 into an NA operand. If they are required they must be entered as a variable (i.e. equate a variable to the desired equation).
2. Multiple NA tokens can be used, but each one must be qualified by listing the group of tokens as it is entered. Should the same latch be desired as an operand in various equations, it would be expedient to assign a variable as the NA, and then call up the variable in equations. This saves re-entering the NA with its lists of operands.

3.4.6 THE OUTPUT LOGIC MENU

There are three base menus in the output logic programming 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) and is also used to control the LEDs (relays numbers 65 to 256). Option 5 (Anc relay) applies to the three ancillary relays.

THE OUTPUT LOGIC MENU (CONTINUED)

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 3.4.9.

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 3.7.1.

3.4.7 PROGRAMMING RELAYS

When programming relays, the following points should be observed:

1. The default operation of the F3200 **MAF Brigade relays** conform to AS4428.1. Programming relays for operation other than default may contravene the standard.
2. If programming the **Alarm relay** with a logic equation and it is desired to have it operate during Brigade Test, then the equation 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. $R3 = (Z5A + Z6A) \cdot ^{PLI}$.
5. It is **not** recommended to program **normally energised relays** because **Global Isolate** and **Plant Isolate** de-energise them. Also, they increase FIP quiescent current. All relays have normally closed contacts (i.e. for relay de-energised).
6. Equations may be entered for relays 1-64 even though the corresponding 8 Relay Modules are not fitted. The resulting states may be used by an RDU or any device on the RZDU bus.

3.4.8 CONTROLLING ZONE LEDs

An output logic equation controlling a "module relay" where the relay number is in the range 65 to 256 is used to control a zone LED. F3200 allows a maximum of four 16 zone LED display boards corresponding to 64 zones. Relay equations for relay numbers 65-128 are used to control the alarm LEDs 1 to 64. Relay equations for relay numbers 129-192 are used to control the fault LEDs 1 to 64. Relay equations for relay numbers 193-256 are used to control the isolate LEDs 1 to 64. Relay numbers 65-256 cannot be used in the "right hand side" part of an equation as an operand. The LEDs being controlled will be either on steady or off - they cannot be selected to flash (unless the equation generates the flashing).

It is necessary to ensure that no zone or module relay is mapped to any LED being controlled by logic (mapping of zones to LEDs is described in Section 3.3.3).

For example, an equation of $R65=Z1:20(1)A$

will result in alarm LED 1 turning on steady whenever one or more zones in the range 1 to 20 has a non-isolated alarm.

CONTROLLING ZONE LEDS (CONTINUED)

An equation of $R256=PLI$ will result in isolate LED 64 turning on steady when PLANT is isolated.

An equation of $R129=SFT$ will result in fault LED 1 turning on steady whenever there is a system fault.

RDU Zones 129-192

If any output logic equations are used to control zone LEDs, then the status transmitted to on the RZDU bus will include data for "zones" 129 to 192 (otherwise zones 129 to 192 are not sent). The status of zones 129 to 192 sent is generated from the output logic equations which control the LEDs, where zones 129-192 correspond to LEDs 1 to 64.

For example, with equations

$$R65=Z1:20(1)A, R129=Z1:20(1)F \text{ and } R193=Z1:20(1)I$$

then the status of zone 129 at an RZDU would show alarm if any of zones 1 to 20 at the F3200 controller had an unisolated alarm, and similarly for fault and isolate.

NOTE At the F3200 controller, zones 129 to 192 actually correspond to open collector outputs and are NOT the same as zones 129 to 192 sent on the RZDU bus.

3.4.9 PROGRAMMING ZONE ISOLATE/DE-ISOLATE/RESET COMMANDS

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

3.4.9.1 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 deisolate zones n to m inclusive

ENTERING OUTPUT LOGIC ZONE COMMANDS (CONTINUED)

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

There may be only one equation of each type (reset/isolate/deisolate) with the same first zone/last zone. E.g. it is not possible to have both Z13:7=BLI and Z13:7=Z1I as two separate equations. The logic should be combined into one equation.

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

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

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.

3.4.9.2 OPERATION OF OUTPUT LOGIC ZONE COMMANDS

Reset Command

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

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

Isolate / Deisolate Commands

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

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

OPERATION OF OUTPUT LOGIC ZONE COMMANDS (CONTINUED)

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

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

3.4.9.3 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 deisolates 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 deisolate a group of zones. The equation $ZI5:8=Z16M$ will result in zones 5, 6, 7 and 8 being isolated when zone 16 (the switch) is in a short circuit state. If it is necessary to deisolate the zones again when zone 16 is taken out of short circuit then a second equation is needed, perhaps $ZD5:8=\text{^}Z16M$.

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

```
V1=NA(V1;Z16M)
V2=\text{^}Z16M
V3=NA(V3;V2)
ZI5:8=V1
ZD5:8=V3
```

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

- (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.

3.4.10 USING THE ZND AND ZNM TOKENS

Some applications require the use of a switch, where the state of the switch can be accessed in output logic. One of the zone output logic tokens listed in Section 3.4.3 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 milliseecs) 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 milliseecs (typically 400 milliseecs) which means that the ZnA and ZnF tokens become true within 200 to 800 milliseecs. 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 milliseecs) - 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.

3.5 RELAY OUTPUTS

3.5.1 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.

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

3.5.2 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 EEPROM initialise) is.

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

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

ANC 3: supervision enabled, non-latching, mapped to MAF, non-isolatable, non-testable.

3.5.3 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).

MODULE RELAY OUTPUT (CONTINUED)

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 3.3.3.

The default setup by EEPROM initialise is supervision enabled, non-latching, mapped to MAF, isolatable, testable.

3.6

RDU

An F3200 panel transmits the status of its alarm zones and module relay zones to an RDU. The F3200 panel may have up to 64 alarm zones and these zones are always mapped to zones 1 to 64 at the RDU. The F3200 panel may have from zero to 64 module relays and these are always mapped to zones 65 to 128 at the RDU. Even though the Relay Modules are not 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 to the RDU.

F3200 also transmits the status of "zones" 129-192 to the RDU if there are any output logic equations controlling a relay where the relay number is greater than 64. An output logic equation controlling a relay with a relay number in the range 65 to 192 is actually controlling one of the 64 zone LEDs and is mapped to zones 129-192 for transmission to an RDU. Refer to section 3.4.8 for further information.

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

Protocol Type

The two protocols available for communication between the F3200 FIP and RZDUs are:

LCD - the newer 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.

RDU (CONTINUED)Transmitting Zone Names to an RDU

The F3200 panel can transmit the programmed zone and module relay names to connected RDUs using the comms link to the RDUs. This is initiated from the SET menu described in Section 2.2.1. A password is required to initiate this command.

To save the zone names at an RDU, it must have its database write protect link in the write enable position.

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

The F3200 FIP (all software versions) will also send the name of a zone to an RDU whenever an 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.

Some RDUs support software write protection of their database, which allows them to have their database write protect link permanently left in the write enable position and thus receive the new zone names from the F3200.

3.7 OPERATION OF WARNING SYSTEM/EXTERNAL BELL

AS4428.1 introduces two new concepts – the Warning System and the External Bell. The previous standard AS1603.4 did not have these, but instead had “Bells” which usually corresponds to the External Bell in AS4428.1.

The purpose of the Warning System is to evacuate people from the building when an alarm occurs, and 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 usually the Ancillary 3 relay (Bells) is used for the Warning System and the Ancillary 2 relay is used for the External Bell. The Ancillary 3 relay has different supervision to the others and can supervise multiple connections, so it is used for the Warning System. The External Bell normally has only a single bell connected.

Two zones exist for the Warning System (Zone 198) and External Bell (Zone 199) so that their status may be displayed and controlled, locally or across a network.

3.7.1 OUTPUT LOGIC CONTROL OF WARNING SYSTEM/EXTERNAL BELL

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:

$EBA = ZBA + EBT$

$WSA = ZWA + WST + ITA$

$AR2 = EBO$

$AR3 = WSO$

$EBF = AR2F$

$WSF = AR3F$

OUTPUT LOGIC CONTROL OF WARNING SYSTEM/EXTERNAL BELL (CONTINUED)

These equations determine the operation of the Warning System and External Bell as follows (refer to Section 3.4.3 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 3.7.5 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 3.7.5 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.

OUTPUT LOGIC CONTROL OF WARNING SYSTEM/EXTERNAL BELL (CONTINUED)

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

WSF = AR3F

EBF = 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.

3.7.2 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.

3.7.3 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.

**MAPPING THE WARNING SYSTEM, EXTERNAL BELL AND RELAYS TO THE MAF
(CONTINUED)**

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.

3.7.4 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.

3.7.5 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.

3.7.5.1 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".

NETWORK WARNING SYSTEM/EXTERNAL BELL ISOLATION (CONTINUED)

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.

3.7.5.2 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.

3.7.5.3 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
```

OPERATION OF WARNING SYSTEM FOR IN-SITU TEST MODE (CONTINUED)

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.

$$T1S [0,2] = NV1:0. \wedge V1$$

$$V1 = NV1:0. (T1 + V1)$$

$$AR3 = WSO + T1. \wedge WSS$$

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

3.7.6 LEGACY BELLS

Legacy Bells is a concept introduced into V3.XX F3200 panels to allow them to inter-operate across a network with a panel with V2.XX software.

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

A panel with V3.XX 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 nothing.

A networked panel with V3.XX software (either 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 (e.g. F3200/NDU with V2.XX software).

If a Bells Isolate command is received from an AS1603.4 panel then this will be mapped by the V3.XX panel to the Warning System, the External Bell, or rejected, 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.

The V3.XX F3200/NDU will transmit a "MAF Alarm with no Bells" in its MAF status if any MAF-mapped zone is in alarm. It will also include "MAF Alarm" in its 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.

The V3.XX 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 token 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 V3.XX software in NZ mode will automatically map its Trial Evacuation and Silence Alarms states to the Warning System irrespective of the Legacy Bells setting.

3.8 INSTALLING V3.XX AS4428.1 COMPLIANT SOFTWARE IN AN AS1603.4 F3200/NDU

F3200/NDU V3.XX software can be installed in a panel that was previously running V2.XX or earlier software. 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. V3.XX software has some new features that V2.XX software does not have.

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 then these will need to be reprogrammed as these tokens have been deleted in V3.XX (a System Fault will occur if they are found by V3.XX 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 V2.XX and V3.XX F3200/NDU software are listed below.

1. When upgrading to V3.XX 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 (Menu 2 5).

**INSTALLING V3.XX AS4428.1 COMPLIANT SOFTWARE IN AN AS1603.4 F3200/NDU
(CONTINUED)**

3. An AS1603.4 keypad has a Brigade Test key, and when V3.XX software is installed this key may still be used to do a Brigade Test. V3.XX 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 V3.XX 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 no longer available.
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.

INSTALLING V3.XX AS4428.1 COMPLIANT SOFTWARE IN AN AS1603.4 F3200/NDU

Zones mapped to ANC 1, ANC 2, and ANC 3 become mapped to ANC 1, Warning System, and External Bell, respectively, when the 3.XX 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 V3.XX 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 V2.XX 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 V3.XX software, because a corresponding mechanism is provided with output logic equations where the RWA and RBA tokens can be used.

CHAPTER 4

NETWORK PROGRAMMING

4.1 INTRODUCTION

4.1.1 PANEL-LINK NETWORK

Networking enables up to 64 F3200 FIPs to be interconnected via single or duplicated 2 wire connections, and information to be exchanged between FIPs.

Alarms occurring on any FIP on the network may be displayed and acknowledged on the LCD 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 F3200 to reset, isolate, de-isolate, test and recall/search for status for zones on other networked FIPs.

Networked F3200s can also send and receive system commands 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 of printers, BMS systems and PCs using a PTM or PMB to receive data from panels on the network.
- (iii) Connection of a Fire Panel to an Evacuation System for network connection initiation of evacuation sequences.

To enable FIPs to be identified on the network, each FIP is configured with a System Identification Number (or SID) in the range 1 to 254. This number must be unique for each device on the network.

4.1.2 NETWORK APPLICATION OVERVIEW

The main benefits of networking F3200s are the sharing of zone, event and alarm information, the ability to remotely control other F3200s, and overall, to expand the size of an F3200 system beyond 64 zones.

F3200s are programmable in a number of ways to customise the type of information to be shared, how it is to be shared, and the extent to which remote control is permitted.

The Network Configuration menu is Option 7 in the Program/System Config menu (as is shown in Figure 2.1.2). It allows programming of the parameters which determine the way the F3200 networking operates.

Network Application Overview (Continued)

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.

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 4.4.3 "use MAF relay option"). This allows the brigade connection/signalling to be done at only one panel on the network if desired (although it may be done by more than one panel if necessary).

The totals received from other panels on the network may be added to the local totals of this panel and shown on the base display. If any of the totals (alarm, fault, isolate) shown on the base display of this panel are non zero then the corresponding front panel LED will be on.

The MAF status transmitted onto the network includes the following information. All of the states are normally false and become true for an off normal condition.

1. MAF alarm state.
True if any non isolated MAF mapped zone is in alarm.
When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to energise the MAF alarm relay.
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.

NETWORK MAF STATUS (CONTINUED)

5. System fault state.
True if any system fault is present. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel to energise the MAF fault relay, and (if the receiving panel is an F3200 panel) to turn its buzzer on when a new fault occurs.
6. Brigade test state.
True if a brigade test has been initiated (by holding down the brigade test key for 2 seconds) AND the local MAF alarm relay, (if any), is programmed to operate for a local brigade test. When true, this will cause any panel on the network which is programmed to use the MAF data from this panel, to energise the MAF alarm relay.
7. 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 4.4.3).

- NML This token is described in Section 3.4.3. 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).

PROGRAMMING METHODOLOGY (CONTINUED)

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 NET MAF Configuration

This allows a panel to send out its MAF status/totals to other panels, which may combine it with their own, and the status of other panels, to control a single brigade interface. MAF status is not controlled by network groups.

PROGRAMMING METHODOLOGY (CONTINUED)

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 F3200 communicates with other panels on the network. In general, most settings should be left at default values. However, there may be some settings that need to be customised for some installations.

The < and > keys allow movement between five menus NetPg1 through NetPg5.

4.3.1 NETPG1 OPTIONS

1. SID: (1-254)

This is the network address (SID number) of this F3200, allowing for the unique identification of zones, events, and for remote controls to be sent to this F3200. The SID for any device on the network must be a unique number between 1 and 254. It is 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)

In general, this must be left as Multidrop. Point to Point mode is usually used when the F3200/NDU connects to one other device and a full duplex data path is provided. No collision detection takes place in point to point mode.

3. NIC : (Yes/No)

Is set to "Yes" only if another device on the network is configured to acknowledge broadcasts. Acknowledgement of broadcasts provides extra confirmation that a message sent has been received. Panel throughput is reduced as the F3200 must wait for an acknowledgement before it can transmit further messages. It is recommended that acknowledgement of broadcasts is enabled on the network. This means that every panel has the NIC option set to yes except for the panel doing the acknowledging (See NetPg4 option 1, section 4.3.4).

4. RX Timeout : (1-250)

Number of 5 millisecond time periods of delay before a channel is assumed to be free.

5. TX Delay : (1-250)

Scaling factor for randomised delay before transmission. Measured in 5 millisecond time periods.

4.3.2 NETPG2 OPTIONS

1. Ack time : (1-9999)

Time to wait for Acknowledge before retransmission. Measured in 1 millisecond time periods.

2. DUP time : (1-9000)

Time during which duplicate messages are ignored. Measured in 1 millisecond periods.

3. Leading FF : (0-250)

Number of \$FF preamble characters transmitted after asserting RTS, before sending a message.

4. Trailing FF : (0-250)

Number of \$FF characters inserted after a message to ensure that the message is transmitted by the UART before RTS is deasserted.

4.3.3 NETPG3 OPTIONS

1. Link TX : (Yes/No)

This controls whether the F3200 sends Link Integrity messages. This should be enabled for every panel.

2. Link TX time : (1-250)

Time period (in seconds) between successive Link Integrity Transmissions from this SID.

3. Link RX time : (1-250)

Maximum time period (in seconds) permitted between the reception of successive Link Integrity messages from any SID, before generating Net Scan Fail events.

4. Groups : ([12345678])

This setting controls the usage of the following information types:

- 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.

4.3.4 NETPG4 OPTIONS

1. ACK broadcasts : (Yes/No)

This selects whether this panel does the acknowledging of broadcasts or not. Only one device on the entire network should be programmed to do acknowledging of broadcasts. Refer also to section 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 described in section 4.3.1.

It is recommended that if an F3200 panel is to acknowledge broadcasts then it should be the most lightly loaded FIP on the network, taking into consideration the number of circuits, amount of output logic and the number of display boards.

2. Baud rate.

This sets the baud rate for the network. The choices are 300, 600, 1200, 2400, 4800, 9600 and 19200 baud.

3. Retries (0-250)

This parameter sets the number of times a message will be retransmitted if an acknowledge is not received for it. After all attempts to transmit the message have been made, the message is discarded (and a Netmsg Discard Event is generated). If the device the message is being sent to has scan failed, then only one transmission of the message is done.

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.

NETPG4 OPTIONS (CONTINUED)

For 1-12 devices, select 8 slots

For 13-24 devices, select 16 slots

For 25 or more devices, select 32 slots

5. Mode B

This is a numeric value 0-7 which is used to control some of the network operations as follows. This value should be changed only under instruction from a systems engineer. For normal operation a value of 3 should be used.

Early Collision Detection

Values 0-3 enable early collision detection

Values 4-7 disable early collision detection

Message Combination

Values 0, 4 Combine no messages

Values 1, 5 Combine "ack" messages into a single network access with up to maximum of 10 ack messages combined.

Values 2, 6 Combine application messages when possible. This includes combining MAF status, MAF totals, Netvars and Link Integrity A and B.

Values 3, 7 Combine both ACK messages and application messages.

4.3.5 NETPG5 OPTIONS**1. Ack broadcasts to specific SID**

If this parameter is set to a non-zero SID number XYZ then this panel will send an acknowledge to a broadcast sent by SID XYZ. If this parameter is set to zero then this feature is disabled.

Only one device on a network (say SID XYZ) should be programmed to acknowledge all broadcasts, but it can have its own broadcasts acknowledged by another panel on the network that has "ACK broadcasts to specific SID" set to XYZ.

4.4 SID CONFIGURATION

Up to 64 panels may be configured on the Panel-Link network, and each panel must have a unique SID (System Identification) number.

In general, the SID number of every device on the network should be entered into the SID list of this panel and should have "Link RX" enabled (section 4.4.2). This allows this F3200 to monitor all other devices on the network. Any device on the network which is not in the SID list of this panel will be completely ignored, i.e. all messages received from it will be discarded and no messages will be sent to it.

Hence, if a panel is not in the SID list, its information cannot be used. It may be that some panels do not have every SID programmed into their SID list. For example, a system may have multiple slave devices which all appear in the SID list of a master panel but do not appear in the SID list of slave panels.

On entry to the programming of the SID list the total number of SIDs currently in the SID list will be displayed.

There are two ways of moving through the SID list. By pressing the 'NEXT' or 'PREV' keys you can step through the list of programmed SIDs, or by using the Up/Down arrow keys to move sequentially through the SID numbers 1-254. The number of a specific SID to be programmed may also be entered by selecting option 1 from either menu 1 or menu 2.

Each SID has two configuration menus which can be scrolled through using the < or > keys.

The DELETE key can be used to delete a SID from the list. The EDIT key can be used to display a menu which has options for setting or clearing all the settings for the current SID and for turning on or off the display of a full description of each item as it is being changed. Turning the full description display off allows faster programming.

4.4.1 SID MENU ONE

1. SID : (1-254)

Change the network SID number that is being viewed/modified.

2. Link RX : (Yes/No)

When enabled, the link integrity transmissions from the selected SID are monitored by this panel, and if no transmissions are received for a programmed length of time (section 4.3.3 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.

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.

SID MENU ONE (CONTINUED)

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 FF config).

5. TX CMD : (Yes/No)

If enabled this allows this panel to send commands to the selected SID. This includes zone reset/isolate/test commands, as well as system commands such as system test/battery test/bell test. If disabled, this panel is still allowed to recall the status of zones from the selected SID but not control them.

6. RX CMD : (Yes/No)

If enabled this allows this panel to receive and execute commands from the selected SID. If disabled, commands received from the selected SID will be ignored, but a recall of zone status will still be permitted. NOTE :- this option does not affect 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 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.

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 3.7.5 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 NEFMAF3 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 NET COMMANDS

The Network Command configuration provides some parameters involved in the sending and receiving of commands to/from other devices on the network.

When F3200 issues a command, it may take some time for the message to be sent on the network, processed by the receiver, and the response sent back. The length of time the F3200 will wait for the response is defined as the 'ACK time' (Net Command Acknowledge Delay Time). A device that is processing a command that cannot be replied to immediately will send a "response pending" message at a rate defined by the 'Work time'. This message indicates to the sender of the command that the command is still being processed, and the required response cannot yet be given. An F3200 receiving the response pending message will extend the time that it waits for the required response.

1. ACK time : (1-250 seconds)

Net Command ACK Delay Time. Length of time the F3200 will wait for a response before displaying an error message.

2. Work time : (1-250 seconds)

Command Work TX Time. If a message cannot be sent immediately a "response pending" message is sent at a rate determined by this. Work time should be less 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 NDU without a MAF board has a less accurate local time clock and, if possible, should not be configured to transmit time/date onto the network.

4.7 NET 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 4.3.3 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) 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 4.4.2 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 4.3.1 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.

FF CONFIGURATION (CONTINUED)

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 RDU devices. Acceptance of acknowledgement from local RDUs can be enabled or disabled with a separate parameter described in section 2.4.6 (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), 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.

NETWORK EVENT CONFIGURATION (CONTINUED)**Options under Events2****1. Zone/relay cmd text tx : (Yes/No)**

If enabled, the text name of the zone or relay will be transmitted onto the network along with the event for zone/relay command event types. "Command" type events include isolate, deisolate, reset, alarm test, fault test, operate test, auto reset test.

2. Zone/relay event text tx : (Yes/No)

If enabled, the text name of the zone or relay will be transmitted onto the network along with the event for zone/relay non-command event types. These include zone alarm, zone fault and zone normal.

3. Sys event text tx : (Yes/No)

If enabled, the text associated with a system event will be included when the event is transmitted onto the network.

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 4.3.4).

3. Max COS TX rate : (0-250 seconds)

Minimum time between transmission of network logic variables after each change of state.

4.10**NET STATUS REFRESH**

The Network Status Refresh application provides a continual refresh of zone status onto the network.

This information may be used, for example, by colour graphics systems to display zone status.

Enabling of the Network Status application is only necessary when there is a device on the network, e.g. some colour graphics systems, that requires this information. Otherwise, it should be left disabled to reduce network traffic. Note that F3200s generate network status, but do NOT use it. Check with the user manuals of the other devices on the network to see if they require status refresh data to be sent from this panel.

1. Status refresh enabled : (Yes/No)

Determines whether this F3200 sends zone status 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.

4.11

NDU OPERATION

An NDU can be thought of as an F3200 FIP without any alarm zone modules or relay modules. An NDU also has an option of MAF board present/not present.

An NDU can be programmed to operate in "New Zealand" mode rather than the default Australian mode. New Zealand mode operation is described in Chapter 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 may perform 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 will perform all the functions of an F3200 panel, including sending/receiving network zone commands, network event printing, and FF alarm display.

An NDU may be programmed with output logic, the same as F3200, and may send and receive network logic variables on the network.

An NDU without a MAF board may still perform functions of 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 slimline NDU is physically accessible all the time, but when the cabinet is locked the NDU 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 must 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 equation may be entered and will be executed.

Network command config

An NDU may send and receive commands on the network such as system tests, zone tests, zone isolate/deisolate etc. All of the commands described in the F3200 Operator's Manual apply to an NDU except that an NDU has no open collector outputs or module relays.

4.12 DEFAULT VALUES FOR PANEL-LINK VARIABLES

<u>Item</u>	<u>Parameters</u>	<u>Default</u>
Network Setup		
Local SID Number	1-254	0
Mode	Multidrop/Pnt to Pnt	Multidrop
NIC	Yes/No	No
RX Timeout	1-250 5 millisecs	2
TX Delay	1-250 5 millisecs	1
ACK Time	1-9999 millisecs	800
DUP Time	1-9000 millisecs	2000
Leading FF	0-250 characters	1
Trailing FF	0-250 seconds	1
Link TX	Yes/No	Yes
Link Tx Time	1-250 seconds	5
Link RX Time	1-250 seconds	50
Groups	Any combination of 1 to 8	[12345678]
ACK Broadcasts	Yes/No	No
Baud rate	300 up to 19200	9600
Retries	0-15	5
Slots	8, 16, 32	8
Mode B	0-7	3
ACK Bcasts Specific SID	0-254	0
Network SID Configuration (per SID)		
Link RX	Yes/No	No
Log Events	Yes/No	No
RX 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
FF Config		
TX Alarms	Yes/No	No
Dedicated TX SID	0-254 (0=all)	0
RX Net ACK	Yes/No	No
TX iso/reset cmds	Yes/No	No

<u>Item</u>	<u>Parameters</u>	<u>Default</u>
Network Event Config		
TX ack cmds	Yes/No	No
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)

CHAPTER 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.

An NDU with New Zealand mode enabled may be connected to a Panel-link network of panels which also have “New Zealand” mode enabled. The NDU may be used with or without a MAF board, and optionally with a NZ Display Extender board. The NDU may have RDUs connected to it.

If a MAF board is used, the NDU may be used as the main brigade connection point of the network. The MAF board has relays for signalling alarm (normally energised), fault (normally de-energised) and standby (normally energised and normally wire-ORed with fault). The MAF board also provides 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 Trail Evac operation, and the equation driving the Warning System output (Ancillary 3 relay) should be modified to include the TEV or RTE tokens as necessary.

Furthermore, when an NDU with V3.XX 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

DISPLAY EXTENDER BOARD (CONTINUED)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. Battery Very Low = Alarm – Y/N
If this is enabled, a brigade alarm will be signalled on power-up or whenever the supply voltage reaches the battery very low threshold. The bells (Warning System) are not activated for this alarm.
4. Evac Defect is fault – Y/N
External defect is fault – Y/N
These two parameters select whether the corresponding input on the New Zealand Display Extender will result in a defect (fault) being signalled when the input is asserted. If sent to N then the input is available as a general purpose input, the state of which can be accessed using the logic tokens NEV and NED respectively.
5. Battery testing & monitoring
There are four parameters, that for an NDU with no MAF board only the battery low monitor parameter needs to be set – the others are “don’t care”.
 - (a) Battery low monitor – enable/disable
For an NDU with a MAF board, this should be enabled. If enabled, then when the supply voltage falls below the battery low threshold a defect will be signalled.

For an NDU with no MAF board, if this option is enabled then a defect is signalled when the supply voltage falls to the battery very low threshold.
 - (b) Battery connection check – enable/disable
This is enabled by default. When enabled, the battery connection is checked every 28 seconds by reducing the charger voltage for 500 milliseconds and monitoring the battery voltage.
 - (c) Hourly battery test
This is disabled by default and is not required for New Zealand operation. When enabled, every hour the charger voltage is reduced for 60 seconds to check the battery voltage.
 - (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.

PROGRAMMABLE OPTIONS (CONTINUED)

6. Keypad type and Legacy Bells parameters.

Section 2.4.1 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 first Sunday in October and the end time is set to 2am on the third Sunday in March.

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 Trial Evac and network 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.

SYSTEM STATES & INDICATIONS (CONTINUED)

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) 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 main system 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.

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CHAPTER 6

TANDEM LCD MODE

6.1 TANDEM LCD MODE

Tandem mode allows the LCD and keyboard of an F3200 panel or NDU to be operated from a device on the printer/programmer port or from another device on the network.

There are three “modes” of Tandem 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 Controller can initiate local Tandem mode by “pressing” the RETURN/ENTER key, entering the password and selecting the “L” option.

Local Tandem mode allows full programming of the Controller to be done including database load, save and verify, and “text load”. “Text load” refers to the loading of text names for zones and relays. To initiate this select the main text programming menu “1:site, 2:zone, 3:relay” etc, and press the EDIT key on the remote device’s keypad. The remote text entry prompt will then be output.

2. “Controlled” Tandem LCD mode.

A networked F3200 or NDU can have its LCD accessed across the network and be “controlled” via a Tandem connection to the serial port of another panel on the network. In this mode, database save, load, verify and text load operations cannot be done.

3. “Controlling” Tandem LCD mode.

A networked F3200 and NDU allows a Tandem 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.

A password is required to enter Tandem mode. A password of up to 12 characters can be programmed using Option 7 from the F3200 text programming menu.

APPENDIX A

F3200 CONFIGURATION SHEETS

The following pages are suggested as master forms for programming. It is recommended that they be photocopied, and a complete set be filled out for each FIP before programming is started.

When programming is complete, the database printout should be checked against the sheets.

A copy of the database printout and completed sheets should be kept in the contract file for each installation.

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F3200/NDU SYSTEM CONFIGURATION PAGE 2

REF:.....

SYSTEM OPTIONS

FIP MCP Zone 0 – 64		<input type="checkbox"/>
All zones isolated = standby	Y/N	<input type="checkbox"/>
Activate relay for Brigade Test	Y/N	<input type="checkbox"/>
FF zones: MAF only/all/none		<input type="checkbox"/>
FF auto ack enable/disable	Y/N	<input type="checkbox"/>
FF allow remote ack from RDU	Y/N	<input type="checkbox"/>
FF display cause by default	Y/N	<input type="checkbox"/>
FF flash non maf alarm LEDs	Y/N	<input type="checkbox"/>
FF send non maf alarm to RDU	Y/N	<input type="checkbox"/>
Country coder 0 – 6		<input type="checkbox"/>

Fault action text

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"/>	Send any key net sounder silence	Y/N	<input type="checkbox"/>
Sounder after 8 hours isolate	Y/N	<input type="checkbox"/>	Allow cmd net sounder silence	Y/N	<input type="checkbox"/>
Sounder "8 hour" resound period		<input type="checkbox"/>			

NEW ZEALAND MODE OPTIONS

New Zealand mode enabled	Y/N	<input type="checkbox"/>	Evac defect is fault	Y/N	<input type="checkbox"/>
Battery very low is alarm	Y/N	<input type="checkbox"/>	External defect is fault	Y/N	<input type="checkbox"/>
NZ Display Extender bd present	Y/N	<input type="checkbox"/>			

F3200/NDU SYSTEM CONFIGURATION PAGE 3

REF:.....

Key	Non-FF Mode Door Open Key Enabled Y/N	FF Mode Door Open Key Enabled Y/N	Non-FF Mode Door Closed Key Enabled Y/N	FF Mode Door Closed Key Enabled Y/N
Prev				
Next				
Ack				
Reset				
Isolate				
Relay				
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:.....

RDU PARAMETERS

RZDU protocol Type: LCD Non-LCD

RZDU 1 – 8	Enabled Y/N	Protocol A/B	MCP Zone

ALARM TEXT NAMES					
Text No	Default	Program	Text No	Default	Program
1	Smoke		6	PSW	
2	Heat		7	SPR	
3	FSW		8	SIP	
4	MCP		9	Flame	
5	VMD				

F3200/NDU SYSTEM CONFIGURATION PAGE 5

REF:.....

Event printing enable/disable Y/N	<input type="checkbox"/>
Printer lines per page 0 – 250	<input type="text"/>
Printer baud rate 300 – 9600	<input type="text"/>
Print relay activate/de-activate events Y/N	<input type="checkbox"/>

EVENT TYPES LOGGED TO PRINTER AND HISTORY

	PRINTER Y/N	HISTORY Y/N
ZONES		
SYSTEM		
SYS RUN		
CIRCUIT		
POINT		
RELAY		

DAYLIGHT SAVING PARAMETERS

	START	END
MONTH		
HOUR		
MINUTE		
DAY: (one of next 1,2,3)		
1: LAST WEEKDAY OF (MON-SUN)		
2: Nth WEEKDAY OF (MON-SUN)		
3: DATE		
TIME DIFFERENCE:		
HOUR		
MINUTE		

F3200 AZC CONFIGURATION

REF:.....

Number of Zone Modules Fitted

8ZM NO.	CCT NO.	AZC PROGRAMMING								FIELD WIRING
		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						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	LED	
Defaults	L	M	M	M	M	ZONE NO.	
1	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
2	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
3	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
4	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						

F3200/NDU OPEN COLLECTOR OUTPUT
 FUNCTION & LOGIC EQUATION

REF:.....

8ZM NO.	OUT PUT	FUNCTION NAME	LOGIC EQUATION
1	1	1	
	2	2	
	3	3	
	4	4	
	5	5	
	6	6	
	7	7	
	8	8	
2	1	9	
	2	10	
	3	11	
	4	12	
	5	13	
	6	14	
	7	15	
	8	16	
3	1	17	
	2	18	
	3	19	
	4	20	
	5	21	
	6	22	
	7	23	
	8	24	
4	1	25	
	2	26	
	3	27	
	4	28	
	5	29	
	6	30	
	7	31	
	8	32	

F3200 RELAY CONFIGURATION

REF:.....

8RM NO.	RLY NO.	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 8RMs:.....

8RM NO.	RELAY NO.	NAME	FIELD WIRING
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 CONFIGURATION SHEETS

REF:.....

NETWORK PARAMETERS

FILL IN VALUES FOR ALL PARAMETERS THAT ARE BEING CHANGED FROM DEFAULT.

NETWORK SETUP					
LOCAL SID NUMBER		NIC Y/N		RX TIMEOUT	
TX DELAY		ACK TIME		DUP TIME	
LEADING FF		TRAILING FF		LINK TX Y/N	
LINK TX TIME		LINK RX TIME		GROUPS	
ACK BROADCASTS Y/N		BAUD RATE		RETRIES	
SLOTS		MODE B 0 – 7		ACK BROADCASTS TO SPECIFIC SID	
MODE: MULTIDROP/POINT TO POINT M/P					
NETWORK MAF CONFIG					
REFRESH TX TIME		MAX COS RATE			
RECEIVE 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					
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	

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