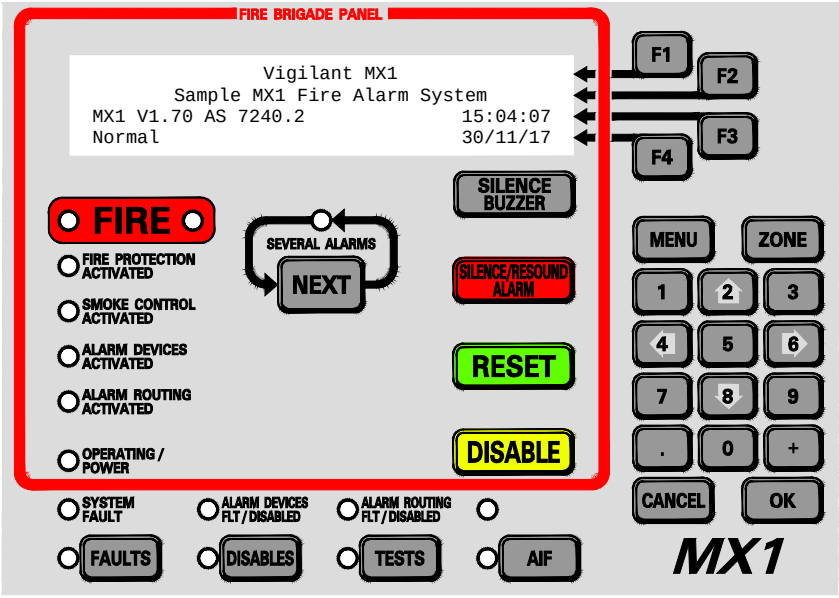
Vigilant *MX1*-Au

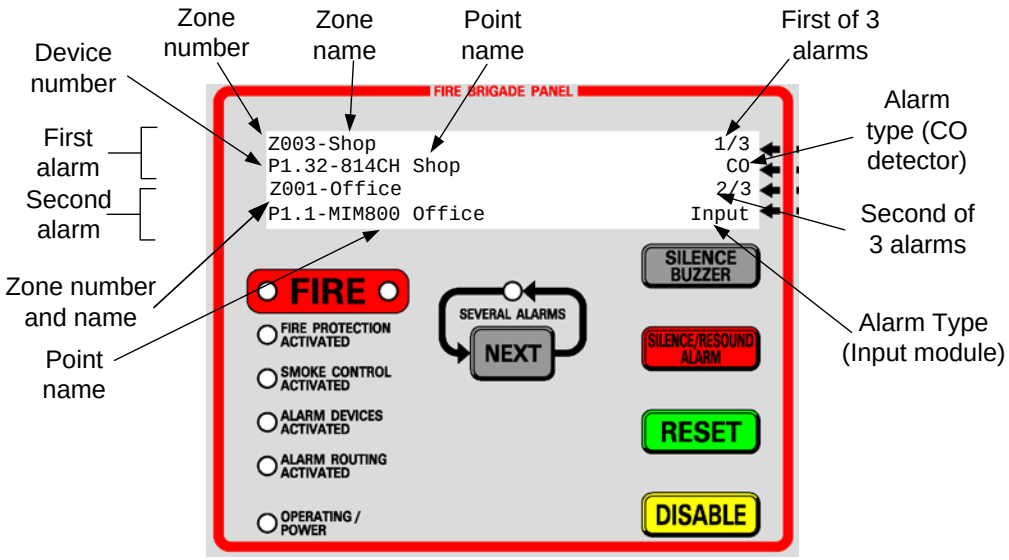
Fire Alarm System

Operator Manual



LT0439
Issue 1.81

Using the Fire Brigade Panel – Quick Reference



1. SILENCE BUZZER
Press to silence the internal sounder.

2. NEXT
If the SEVERAL ALARMS indicator is lit, there are more than two zones in alarm. Initially, the first two alarms are displayed. The first alarm is always shown on the top 2 lines. Press the **NEXT** key to scroll through any subsequent alarms on the bottom two lines.

3. SILENCE/RESOUND ALARM
Press this button to silence all alarm devices (occupant warning) including the external alarm (bell or strobe). The red ALARM DEVICES ACTIVATED LED will extinguish.

Pressing this button again will activate all alarm devices if alarms are present.

This key will not silence separate occupant warning systems such as EWIS.

4. RESET
Once all alarms are fully investigated and the alarm devices are silenced, press this key to reset all alarms. If any alarm does not clear it will be re-annunciated.

5. DISABLE
Press this key to disable all remaining alarms and if zone alarms remain in the list, press **RESET** to reset the zones and return the LCD to the base display. Use only after attempting to reset and clear the alarms first.

Do not use unless the previous reset was unsuccessful.

For more information refer to Section 2, "Handling Alarms using the Fire Brigade Panel".

Welcome

The VIGILANT *MX1* is an innovative multiple loop analogue addressable fire indicator panel incorporating the latest technology. It complies with Australian Standards including AS 7240.2-2004 and incorporates an integral Fire Brigade Panel to AS 4428.3:2010. It also complies with International Standard ISO 7240-2:2003. Its support for *MX* TECHNOLOGY, fuzzy-logic detection algorithms and powerful control functions make it suitable for a wide range of fire protection applications for small to large systems.

If your *MX1* Requires Service

Contact your service provider.

Maintenance Contractor (1) Job Reference # _____ Telephone	Name: Address: Office: Mobile:
Maintenance Contractor (2) Job Reference # _____ Telephone	Name: Address: Office: Mobile:
Maintenance Contractor (3) Job Reference # _____ Telephone	Name: Address: Office: Mobile:

Installation Data – to be completed by installer

Installation Location	Name: Date:
MX1 Serial Number	
Panel Installed by	Name: Date:
Telephone	Office: Mobile:

Manufacturer's Details

Manufacturer

The *MX1* is manufactured for:
Johnson Controls
Level 3, 95 Coventry Street
Melbourne
VIC 3006
AUSTRALIA
Phone: +61 3 9313 9700

Document

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Firmware Revision

1.81

Amendments

Added QE20

Warning Symbols Used in this Manual

Danger! Failure to comply may lead to serious injury and/or property damage.

Caution – failure to comply may result in incorrect, unpredictable or unstable operation.

Indicates useful or important information

Table of Contents

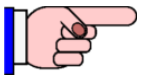
Cautions & Warnings

100V a.c. audio line wiring is defined as LV Telecommunications circuits and is subject to the Australian Standard AS/ACIF S009:2006.
Ensure that this wiring is appropriately separated and insulated from LV power wiring, ELV and other customer cabling such as detection and control circuits.

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

Some of the operation of the *MX1* as described in this manual is dependent on the site-specific configuration performed by the installer. If the configuration is non-standard, then operation may differ from this manual and compliance to local Standards may be invalidated.

The *MX1* has facilities to protect against unauthorised use of operator controls by means of Access Levels. The configuration of your system may result in Access Levels that differ in some respects from this manual.



Except where otherwise stated, this manual refers to *MX1* Controller firmware version 1.7.
Information provided in this manual may remain valid for subsequent versions of Controller firmware. However if a different version of firmware is installed, a more appropriate version of this manual may be required.

Chapter 1
Introduction

Introduction

This chapter provides an overview of the VIGILANT *MX1* system function and describes the normal appearance of the operator interface.

It also describes the concept of Access Levels for access to commands, and the conventions used in this manual to refer to parts of the display when describing these commands.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

How to Use this Manual

Intended Use

This manual covers the operations and displays available on the *MX1*'s front panel as well as basic installation and wiring information.

It also applies to users of the Remote Fire Brigade Panel connected to the *MX1*.

Organisation of Chapters

This manual is intended for use by firefighters, building owners and managers, and service staff. It assumes that the reader has a basic knowledge of automatic fire alarm systems.

The topics in this manual are generally arranged in decreasing order of urgency. Firefighter use of the Fire Brigade Panel (f.b.p.) is shown inside the front page, with a detailed section on dealing with alarms in Chapter 2.

This is followed by less urgent actions, dealing with Faults and Disables, Point and Zone Status Recalls, Testing, and System Status Recall, followed by a description of error messages, fault finding, and compatible devices, batteries etc.

Servicing and Maintenance

To obtain continued high-reliability operation from the *MX1* it is necessary to have it regularly tested and maintained by trained and qualified service-company personnel.

Australian Standard AS 1851 details the requirements for the testing and maintenance of fire alarm systems, and as a minimum specifies monthly, 6-monthly and 5-yearly test plans. It also specifies the procedures to be followed if critical or non-critical defects are discovered. The *MX1-Au* Service Manual (LT0440) contains a guide to the procedures for testing the *MX1* to AS 1851.

If changes are required to the site-specific configuration of the *MX1* (for example, if new detectors are required because of building alterations) then this work must be carried out by a suitably trained and qualified fire-alarm service person and the "as-installed" information updated including a record of the new site-specific configuration version. All system changes must be fully tested and commissioning sheets completed (refer AS 1670.1). The new site-specific configuration should be compared against the previous version to ensure that there have been no unintentional changes.

A description of nuisance alarms and actions that can be carried out to help reduce the incidence of them is given in "Nuisance Alarms" on page 1-17.

System Operation

Overview

The VIGILANT *MX1* is control and indicating equipment (c.i.e.) that forms the central part of a fire detection and alarm system using *MX* analogue addressable detectors.

It complies with the requirements of AS 7240.2-2004 “Fire Detection and Alarm Systems” and AS 4428.3-2010 “Fire Brigade Panel”.

Up to 250 *MX* devices (detectors and addressable input/ output modules) may be connected to the in-built detection loop. Some devices support multiple inputs and outputs which can be monitored and controlled separately. Additional loops of up to 250 *MX* devices may be added to the *MX1* by fitting *MX* Loop Cards. The *MX* DIGITAL communication protocol used on the detection loops provides high reliability and fault tolerance. The *MX1* uses software algorithms to evaluate the analogue values returned from the detectors.

MX FASTLOGIC is a fuzzy logic based algorithm applied to photoelectric smoke detectors. It is designed to discriminate between the smoke and temperature patterns of real fires and the typical causes of nuisance alarms. It supports three risk levels; High, Medium and Low.

SMARTSENSE is a field-proven, reliable detection algorithm, reducing nuisance alarms, compensating for ambient conditions, with a wide range of programmable sensitivity settings.

Both algorithms provide:

- Detector pre-alarm sensing for early warning of a potential alarm.
- Compensation for soiling and changes in ambient conditions.
- Logging of “detector dirty alert” when compensation limits are about to be exceeded, to allow service to be scheduled.

Physical

The *MX1* is supplied in a compact metal cabinet with an integrated Fire Brigade Panel and operator keypad and display. Space is provided for optional Zone Status indicators and AS 1668 fan controls with indications. The cabinet’s protective door includes a window to allow all indications to be seen, but physically protects the front panel and other optional controls. A physical 003 key is required to open the protective door and operate the panel.

One Remote Fire Brigade Panel (RFBP) may be connected to the *MX1* panel to provide a remote operator interface or fire brigade attendance point. This operates independently of the *MX1* panel’s user interface, but on the same internal data – zone and point status, buzzer on/off, silence/mute, etc. Note, the Remote FBP can be configured so that its keyboard cannot be used in alarm conditions (for example, when it is installed for non-fire brigade use and it is necessary to avoid the Remote FBP user interfering with the fire brigade’s alarm display). The Remote FBP does not include any zone LED displays as standard.

Easy Operation

Operation is straightforward using the *MX1*'s keypad and four line LCD. The display provides clear and uncluttered indication of the alarm location, including the zone and point numbers, and text description of the zone and point in alarm.

The display allows easy scrolling through the time and date-stamped 99 alarm event buffer.

Current alarms, faults and disabled zones and points can also be separately recalled and displayed. An internal history log stores the previous 900 events, and these can also be recalled to the display.

Basic System Function

Overview

The *MX1* has five general functions:

- It monitors fire detectors (smoke detectors, carbon monoxide detectors, flame detectors, heat detectors, manual call points, etc.). Note that some detectors may be multi-sensor, i.e., they contain multiple sensors – for example a heat sensor, a smoke sensor and a carbon monoxide sensor. The sensor values are processed according to the programmed algorithm and determine whether a fire condition exists.
- It activates alarm devices (evacuation systems, sounders, strobes) and alarm routing equipment (alarm signalling equipment) when a fire alarm condition is detected.
- It displays zone location descriptions and that of an affected device, and optionally activates zone status indicators.
- It monitors and controls ancillary building equipment (fan controls, relays, door holders, etc.)
- It supervises devices, transmission paths (circuits), and internal functions of the *MX1* to indicate a fault condition should there be a problem.

The *MX1* operator interface allows an operator to monitor and control the site-specific components connected to the *MX1*.

Most manual controls and menu functions require Access Level 2 unless otherwise noted. Access level 2 is entered by opening the outer door of the *MX1* panel with the 003 key, or enabling the Remote FBP's keypad using the 003 key. Those menu functions that could have an adverse effect if inappropriately used require Access Level 3. See Page 1-10 for a description of Access levels.

Multiple *MX1* fire panels along with other compatible panel-link devices, may be connected together to form a network. For details please refer to Chapter 9 Networking.

Normal Appearance of Operator Interface

Description

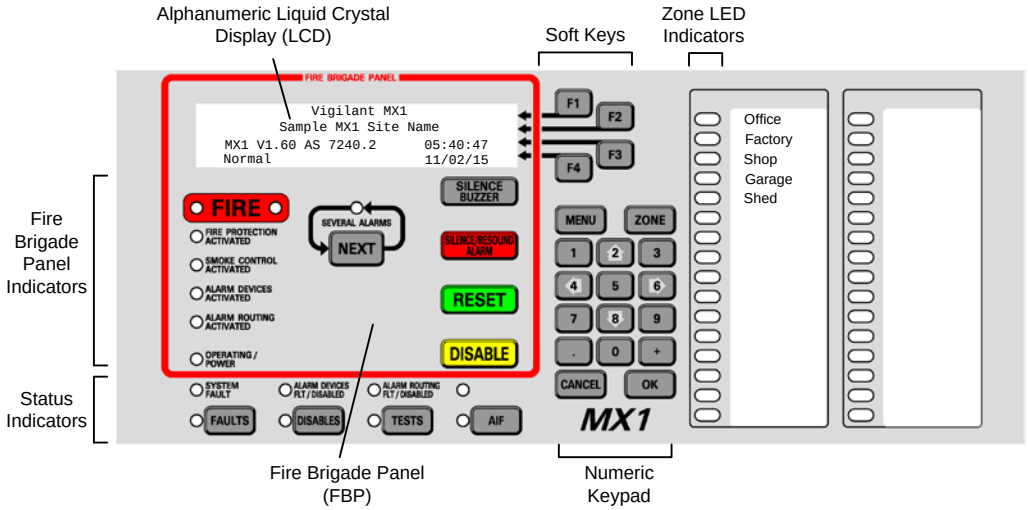


Fig 1-1 – Operator Interface

Table 1-1. Components of the Operator Interface	
Component	**Description**
Alphanumeric Liquid Crystal Display (LCD)	Displays details about alarms, faults, and other service-related system information, as well as menus of command options and messages. The information normally displayed in the LCD, without operator intervention, is called the “base display”.
Fire Brigade Panel (f.b.p.)	Controls and indicators within the red border are for use by fire brigade personnel during alarm attendance. See the quick reference guide at the front of the manual, or page 2-2 for Handling Alarms Using the Fire Brigade Panel
Soft Keys	These keys have different functions, depending on the current display. Each key’s function at any time is shown by the text displayed at the right side of the LCD.
Status Indicators	LED indicators showing the presence of faults, disabled items, tests in progress and power status. The associated keys provide a direct way to display this information.
Numeric Keypad	Numeric keys, plus commonly used keys: **OK** and **CANCEL**, to confirm or cancel commands, **MENU** to display the current possible actions on the item displayed, and **ZONE** to provide direct access to zone functions. Press **CANCEL** once to move back one display, or press and hold to return to the base display.
Zone LED Indicators (optional)	These show the state of individual zones or groups of zones. • A flashing red indicator is an alarm, • A steady red indicator shows operated, or if the zone is disabled a disabled alarm or operate state, • a flashing yellow indicator is a fault, • a steady yellow indicator shows a disabled zone. These indicators may also be configured to convey non-alarm statuses.
AS 1668 Fan Controls	Optional controls and indicators for AS 1668 smoke control system or other site-programmed operation.

Operator Interface

- Green OPERATING/POWER indicator is on – indicating that the *MX1* is receiving mains power, and is operating.
- All other LEDs are off.
- The LCD reports that the system is normal and shows the current time and date, as shown in Figure 1.1.

If the general state of the operator interface is not as shown in Figure 1.1, refer to the information in Chapters 2 and 3 for instructions on managing the alarm, fault, test or disable condition.

Description of Operator Interface

F.B.P. Visual Indicators

4-LINE ALPHANUMERIC DISPLAY
This backlit LCD is used for providing detailed Alarm, Fault and Disabled condition information and various service mode information and menus.

FIRE
The FIRE indicator is comprised of two LEDs. These light red to indicate the presence of an alarm. Information about the current alarms will normally be displayed on the LCD.

SEVERAL ALARMS
This indicator lights red to indicate that more alarms are present than are currently shown on the display. Press the associated **NEXT** key to scroll the bottom 2 lines of the LCD to more alarms.

FIRE PROTECTION ACTIVATED
This indicator lights red to indicate that fire protection systems associated with this *MX1* system have activated. Note that if fire protection systems are not installed, this indicator will not light.

SMOKE CONTROL ACTIVATED
This indicator lights red to indicate that smoke control systems associated with this *MX1* system have activated. Once all smoke control functions have been carried out for an alarm, pressing the RESET button on the Fan Control Panel will turn off this indicator. Note that if fire smoke controls are not installed, this indicator will not light.

ALARM DEVICES ACTIVATED
This indicator lights red to indicate that the alarm devices (occupant warning), for example sounders, sirens, strobes etc., have been activated.

ALARM ROUTING ACTIVATED
This indicator lights red to indicate that an alarm condition is being transmitted by alarm routing equipment to a fire alarm receiving centre (monitoring service provider or directly to a fire brigade).

OPERATING/POWER (GREEN LED)
This indicator has three states;
- on (mains power is on)
- flashing (mains power is off or disconnected, panel is running from battery power)
- off (panel is not receiving any power and is not operating).

Status Indicators

SYSTEM FAULT
Lights yellow to indicate an internal hardware or software fault.

ALARM DEVICES FLT/DISABLED
- Lights yellow to indicate that the alarm devices have been disabled.
- Flashes yellow to indicate that there is a fault with one or more alarm devices or transmission paths (circuits).
- Very slow flash off indicates alarm devices are silenced remotely.

Note that if a device in fault has been disabled this will override the fault indication and the indicator will be on steady.

ALARM ROUTING FLT/DISABLED
- Lights yellow to indicate that the alarm routing has been disabled (this is not usually permitted on most installations).
- Flashes yellow to indicate a fault with the alarm routing equipment or connection (if available).

Note that if an alarm routing fault has been disabled this will override the fault indication and the indicator will be on steady.

FAULTS
The general FAULTS indicator lights yellow to indicate the presence of faults in the system. Press the associated key to recall these.
A new fault will be accompanied by the sounding of the fault buzzer unless this has been muted or disabled.

DISABLES
The general DISABLES indicator lights yellow to indicate the presence of disabled items in the system. Press the associated key to recall these.

TESTS
The general TESTS indicator lights yellow to indicate the presence of active tests within the system, for example a zone alarm test. Press the associated key to recall these.

AIF
The AIF indicator lights to indicate that the *MX1* is operating in AIF "Attended Mode" (see page 2-7).

BUZZER
The internal buzzer pulses to indicate an alarm, and sounds continuously to indicate the presence of a fault. It is silenced by using the **SILENCE BUZZER** key.

Fire Brigade Panel Manual Controls

NEXT
Allows the display to be stepped to the next item, for example Alarm, Fault etc.

SILENCE BUZZER
Pressing the **SILENCE BUZZER** key will silence the *MX1*'s internal buzzer. If another alarm or fault occurs the sounder will sound again. When the protective door is closed or the keyboard is disabled by the 003 key, the buzzer can be silenced only if an optional external Silence Buzzer input is activated.

SILENCE/RESOUND ALARM
This function will silence the alarm devices that have been activated as a result of alarms. Pressing the **SILENCE/RESOUND ALARM** key again when alarms are present will re-sound or activate the alarm devices. Pressing this during a non-alarm state will not cause the alarm devices to activate.

After an alarm the alarm devices need to be silenced before the **RESET** or **DISABLE** controls can be used.

Note: If the *MX1* is connected to a separate occupant warning system with latching inputs, the *MX1*'s **SILENCE/RESOUND ALARM** control will not affect that system. The warning signal must be controlled from the sound system control panel.

RESET
When the Alarm List is being displayed, pressing this key will reset all alarms. When the Alarm List is not being shown it allows the operator to reset individual zones and points in alarm or fault states. The zone alarm and/or fault states are reset only if the field conditions causing the alarm or fault are cleared.

DISABLE
When the Alarm List is being displayed, pressing this key will disable all alarms in the list. If *MX1* is configured for AS 4428.3:2010 operation, a subsequent RESET may be required to take the panel out of the alarm condition. When the Alarm List is not being shown, it gives options to disable individual zones, points, alarm devices, etc.

For further information refer to the following sections; "Disabling Alarms in the Alarm List" (page 2-7) and "Disabling and Enabling Points or Zones" (page 6-5).

Operator Controls

F1- F4
These keys are assigned functions as required according to the menu being displayed on the LCD.

FAULTS
Pressing this key allows the operator to view zones and points in fault, and to reset or disable them.

The yellow **FAULTS** LED will illuminate when one or more faults are present. Refer to “Viewing Faults” (page 3-2) for more information.

DISABLES
Pressing this key allows the operator to view zones, points or alarm devices that are in the Disabled state, and to enable them.

This is not to be confused with the fire brigade panel **DISABLE** key.

The yellow DISABLES LED will turn on when one or more disabled zones or points are present.

Refer to “Viewing Disables” (page 3-4) for more information.

TESTS
Pressing the **TESTS** key allows the operator to search for active tests or initiate a test. When initiating a test the display will show menu options for testing zones, points, alarm devices etc.

The TESTS LED will illuminate when one or more tests are in progress.

For more information about tests refer to “Testing Zones” (page 6-11), Testing Points” (page 6-15) and “Power Supply Status and Battery Testing” (page 8-3).

AIF
This key allows the Alarm Investigation operation (if enabled) to be switched between attended and unattended modes. In the attended mode the adjacent yellow indicator is ON.

MENU
Press this key to access functional options from various displays. The options shown in any given display may vary according to the current Access Level.

ZONE
This key provides a convenient method to enter a zone or point function. Refer to “Displaying Zone or Point Command Menu” (page 6-1) for more information.

NUMERIC KEYPAD

For zone and point number, decimal point and other numeric value entries.

CANCEL

When used in menus requiring user confirmation this key permits an operator-initiated action to be cancelled without being processed. Press and hold this key to return the LCD to the base display.

OK

This key is used to confirm operator-initiated actions when prompted via the LCD.

Operator Commands

In nearly all cases, the operator commands described in this manual consist of a series of keypresses on the keyboard on the front of the *MX1* panel.

Some of the keys have fixed labels and meanings, for example, the key labelled “NEXT” immediately below the alphanumeric LCD. This key will be referred to as the **NEXT** key. Similarly, other keys with fixed labels will be referred to as **RESET**, **MENU**, **OK**, etc.

The four keys to the right of the LCD have meanings that change depending on what is being displayed. The current meaning of each key is displayed at the right hand end of the LCD, alongside each key.

For example, a common meaning for **F2** and **F3** is to step through a list, when they are labelled “**PREV**” and “**NEXT**”. This will be referred to in the command descriptions as **PREV**←**F2** and **NEXT**←**F3**.

The degree to which you can view and control the *MX1* depends on the current operator Access Level (see Operator Access Levels, Section 1).

CANCEL Option

Unless indicated otherwise, pressing the **CANCEL** key (or **F**-key option if applicable) will return the LCD to the previous display.

Manual Examples

This manual describes the keyboard of the *MX1* for recalling faults, disables, and generally operating the panel. All examples and menu instructions given assume that no alarm is present, as displaying the alarms will take priority.

Operator Access Levels

Description

The *MX1* operator interface uses the concept of Access Levels to manage access to front panel commands that display or affect the state of the system. These Access Levels are based on the descriptions found in AS 7240.2.

There are three Access Levels.

Access Level 1

At this level you can view alarms and faults displayed on the LCD.

Keyboard access is not available, therefore only the conditions that fit on the LCD will be shown.

Access Level 2

Access to this level at the *MX1* panel requires a physical 003 key to open the cabinet door and enable the user interface. The *MX1* will automatically return to Access Level 1 when the door is closed. At the Remote FBP use the 003 key to enable the keypad.

At Access Level 2, you can:

- Access all system status displays.
- View alarm conditions.
- Silence the buzzer.
- Silence or re-sound the alarm devices, and, depending on the configuration, silence the external alarm (strobe and/or bell)
- Reset, Disable and Test zones.
- View low level system status displays.
- Disable and test points.
- Carry out battery, display and PSU tests.
- Change the address of loop devices.
- Turn on/off Infrared mode for each *MX* loop.
- Perform all other functions not otherwise restricted to Level 3.

Access Level 3

Access to this level requires access to level 2 and a user code and PIN. Refer to Chapter 7 for instructions on how to log on to Access Level 3.

In the absence of manual input, Access Level 3 users will be logged out after approximately 10 minutes and the display returned to the base display. The *MX1* will return to Access Level 2.

At Access Level 3, you can:

- Use all the level 2 commands.
- Re-start the system.
- Switch between the two installed configuration data files.
- Place the system into Commission Mode.
- Disable the Buzzer.

Display Timeout

Certain user prompt displays will return to the previous display after approximately 15 seconds if the user makes no further entry. Access Level is unaffected by this.

Smoke Control/AS 1668 Fan Panel

The *MX1* may be fitted with optional AS 1668 fire fan controls to allow management of air conditioning equipment, dampers, fresh air entry and smoke exhaust, etc., during a fire.

The operation of this will be site-specific, but in general the Fire Mode Reset button will need to be pressed after the *MX1* is reset from alarm to clear the latching fire mode on the fan controls.

Terminology Used in this Manual

***MX* Devices** Addressable detectors, input modules and output modules connected to the *MX* loop.

Points A point is a representation of a component of a fire alarm. This component could be the heat sensor of a combined smoke and heat detector, or it may be a relay that controls alarm devices such as sounders, or it may be some internal part of the control equipment.

The point that represents this component has a state, which can be one or more of:

- **Normal** – the component is operational and no other condition is present.
- **Pre-Alarm** – the component is a detector that has reached a condition suggesting an impending alarm.
- **Alarm** – the component is a detector and has activated (see Chapter 2). Generally, this calls the fire brigade.
- **ActInput (Active Input)** – the component is an input device that is being driven out of its normal condition, but is not in alarm or fault.
- **Operate** – the component is an output device (relay, transistor etc.) and is activated (turned on).
- **Dirty** – A detector is in a state that requires maintenance/attention.
- **Fault** – the component is in a condition that may adversely affect its ability to function correctly and requires service.
- **Device Fail** – communication with this *MX* device has been lost (for example, because the detector or wiring is faulty, or because the detector has been removed from the loop). This will prevent the device from performing its intended function.
- **Type Mismatch** – the wrong type of *MX* device is installed/programmed at this address.
- **Disabled** – the point has been disabled by the operator to prevent it from operating, or affecting system operation.
- **TestOp (Test Operate)** – the component is under test and has been put into an operate state.
- **Auto-Reset –** the component is undergoing an Auto-Reset test.
- **AlarmTest –** the component is undergoing an alarm test.

- **AlTstFail (Alarm Test Fail) –** the component has previously undergone an alarm test and has failed. This state clears after a successful alarm test.

As well as having a state, some points can also have values. For a smoke detector, one point could have a value to represent the smoke level. For a heat detector, one of its points could have a value to represent the current temperature. For an internal system point for battery status, one value might represent the battery voltage.

MX1 uses points to represent most of its internal and external components. The system configuration controls the way these points interact to provide the required system operation. Point information can be accessed from the *MX1* front panel.

SID

Used when networking *MX1* panels. The SID is a unique number in the range 1-254 (address) allocated to each panel or device on the network.

Point Numbers

A point number has the form ***Eq.Dev.Sub*** which consists of three parts:

- ***Eq*** is the equipment number, which indicates which equipment part of the system is involved.
- ***Dev*** is the physical device number within the particular equipment part, which will usually relate to a specific part of the system such as a detector or power supply.
- ***Sub*** is the sub-point number, which indicates which part of the particular device is required. Some devices do not have more than one sub-point, which means that their only valid sub-point number is 0.

For example, point **241.25.2** refers to the Battery Connection point which registers the status of the battery connection. The parts of this point number are as follows:

241 is the equipment number of the controller in the *MX1*,
25 is the Power Supply device number,
2 is the sub-point for the Battery Connection.

This is displayed and entered as **2 4 1 . 2 5 . 2**

Point numbers for devices on the *MX* addressable loops can be readily constructed if you know their addresses. Entering a point number of **1.*A*** will show the state of sub-point 0, by default, of device A on the first in-built loop.

The inbuilt *MX* loop on the controller board is equipment number 1 and the optional loops start at equipment number 2.

Use **NEXT←F3** to step through any other sub-points of the device, for example, the photo and heat parts of a multi-sensor detector.

For *MX* loop devices, sub-point 0 represents the physical device, and is responsible for logging to the history and printer the Device Fail and Type Mismatch events. Note that when these events occur, all points for the device will enter the fault state, but only sub-point 0 will log these events. Disabling sub-point 0 will prevent the logging and signalling of fault by only sub-point 0, but will not prevent the fault being indicated on the other points.

For accessing a point on another *MX1* panel in a networked system, the SID of the other panel is multiplied by 1000 and added to the equipment number. For example, to access point 1.23.0 on an *MX1* panel with a SID of 12 you would use a point number of 12001.23.0.

When disabling an *MX* device that is in Device Fail or Type Mismatch, it will be necessary to disable all sub-points of the device to remove the fault indication.

To access a point on another *MX4428* panel in a networked system, the SID of the other panel is multiplied by 1000 and added to the responder number. Because *MX4428* doesn't have sub-points, the sub-point number is left off. For example, to access point 64.5 on MX4428 SID 13 you enter 13064.5.

Device Number

The device is represented by a number **Eq.Dev** and is used to perform operator actions on all sub-points of that device, without performing commands individually or requiring an operator to successfully enter the point range. For example, entering a point number 1.1 at the Disable Point command will disable all sub-points that can be disabled on device address 1 on the in-built addressable loop. Some devices have only one sub-point, thus commands to the device or its sub-point 0 have the same effect.

Note that the *MX1* treats entry of a device number as a range entry covering all points on the specified device, thus menus will behave as if a range had been entered and will not display point names.

Equipment Numbers

Equipment numbers are:

- 1 – *MX* loop 1
- 2 onwards for additional *MX* loops (if fitted)
- 241 – *MX* Controller board points
- 242 – pseudo points – these are virtual points whose state can be controlled by logic equations. These are usually used to produce special operations in some installations
- 243 – LCD/keyboard points
- 244 – RZDU/RDU points/equipment. If no RDUs have been enabled in the site-specific configuration, these points cannot be viewed
- 245 – points for additional *MX* loop cards (if fitted)
- 246 – Remote Fire Brigade Panel (FBP) points (if fitted)
- 247 – Network Status Points. Refer Chapter 9.

- 248 – Distributed Switch System (DSS) for AS 1668 fan controls. Points for each control are not provided.

In the absence of any other information, a point can be found by entering the first point in the particular equipment part (for example, entering 241 will bring up the first point on the controller board), and stepping through the list of points with **NEXT**. The information displayed will assist in identifying the desired point. For example;

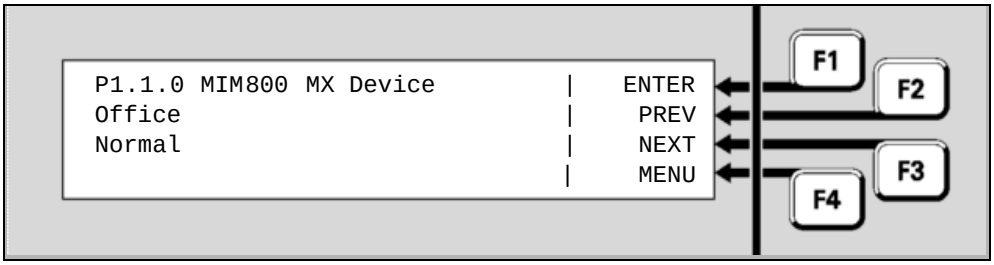


Fig 1-3 – Example of Point Display

Zones

A zone is a search area of a building or facility protected by the *MX1* fire alarm system. The limits of a zone are defined in AS 1670.1. The zone description is used by fire-fighters to quickly locate and respond to alarms.

A zone represents one or more devices located within the zone area, and the *MX1* combines the states of the points representing these devices to produce a common zone status indication for use by fire-fighters and other emergency personnel.

A zone can have one or more of the following states:

- **Normal** – this is the usual zone state, when all field devices are operating normally, no tests are in progress and no other state is present.
- **Pre-alarm** – a detector mapped to the zone has gone into the pre-alarm state.
- **FirstAlrm** – for an AIF or AAF zone (or dual-hit zone). A device in the zone is in alarm, but the zone itself is not yet in alarm.
- **Alarm** – a device mapped to the zone has activated. Generally, this calls the fire brigade.
- **Resetting** – the zone is being reset.
- **Operate** – output points mapped to the zone will be operated.
- **Fault** – a device mapped to the zone is in the Fault state, or Device Fail or Type Mismatch.
- **Disabled** – the zone itself has been disabled by the operator to prevent it from affecting system operation. **Note** that disabling all points that map to the zone will automatically disable the zone as well. In this case, at least one point must be enabled to allow the zone to be enabled.
- **Test Operate** – all outputs mapped to the zone will be operated for testing purposes.
- **Auto-Reset** –the zone is in Auto-Reset test mode.

- **AlarmTst** – the zone is undergoing an alarm test.
- **AlTstFail** – there has been an alarm test run on the zone that failed. This state will clear after the next successful alarm test.
- **FltTest** – the zone is undergoing a fault test.

For accessing a zone on another *MX1* panel in a networked system, the SID of the other panel is multiplied by 1000 and added to the zone number. For example, to access zone 37 on an *MX1* panel with a SID of 9 you would use the zone number 9037.

ISO Terms Compared

In general, this manual uses terminology taken from AS 7240.1 and AS 7240.2. This table matches these with other common industry terminology.

ISO Term	Equivalent industry term
Alarm	Alarm
Fault	Fault
Disable/Enable	Isolate/De-isolate
c.i.e	Fire Indicator Panel (FIP)

Note that when referring to the control of points and zones, “isolate” is the term traditionally used in Australia, while the ISO-standard term “disable” is becoming more widely used.

General Terminology

AAF	Alarm Acknowledgement Facility – a configuration where the occupant can delay a smoke alarm by pressing an acknowledge button to try to clear the smoke, before the fire brigade is called.
ADF	Alarm Delay Facility – a configuration where the calling of the fire brigade is delayed after a smoke alarm. This is to allow the occupant to try to clear the smoke. No acknowledgement of the alarm is required.
AIF	Alarm Investigation Facility - a configuration that enables a designated responsible person to acknowledge certain alarms and delay calling the fire brigade to allow the alarm to be investigated to see if it’s a nuisance alarm.
AVF	Alarm Verification Facility. A means by which the c.i.e. re-samples the smoke detector to confirm smoke is still present.
Acknowledge	An operator action to record the indicated zone alarm has been seen, for example, when handling AIF alarms.
Activated	This is the state of a point which is not in its "normal" or idle condition, nor in fault. Examples are: a detector in alarm, a relay or LED turned on, an input switch being closed.
Alarm Devices	The devices used to warn the occupants within the protected premises of an alarm. These include sounders, hooters, sirens, occupant warning systems with speech, and may also include visual indicating devices such as beacons or strobe lights.
Alarm List	The Alarm List is the list of current alarm conditions. When the Alarm List is shown (as in the Quick Reference at the front of this manual) the fire brigade panel controls function in accordance with the fire brigade panel Standard AS 4428.3.
Alarm Routing	The transmission of an alarm condition to a remote monitoring centre to summon the fire brigade. The same transmission medium is often used to also transmit a fault condition (Fault Routing) to the monitoring centre to summon a

	service agent.
Auto-Reset	An in-situ detector test mode (sometimes called “Walk Test”), which allows detectors to be alarm tested in their installed positions. The zone is disabled and detector algorithms are bypassed to allow the detector to go into alarm quickly. The detector is automatically reset to allow the next detector in the zone to be tested.
Base Display	This is the display shown without operator intervention, or when the CANCEL key has been held or pressed a number of times to get back to the top display. The *MX1* may be showing normal, faults, disables. The Alarm List is a special base display (but is not classified as the Base Display in this manual).
CO	Carbon Monoxide – a colourless poisonous gas that moves by diffusion, emitted by smouldering fires.
Dirty [detector]	Smoke detectors can become contaminated due to a buildup of dust, dirt and other foreign particulates inside the sensing chamber. *MX1* monitors the detector reading as it increases due to dirt buildup, and compensates by shifting the alarm threshold to maintain a consistent sensitivity to smoke. It signals a dirty state for the detector when this reading indicates that the level of contamination is such that it can no longer be compensated for. From this point onward (until the detector is cleaned and replaced) it is more sensitive to smoke and thus more likely to produce a nuisance alarm.
FRC	Flat ribbon cables, usually internal to the c.i.e. cabinet.
Nuisance alarm	An alarm condition that occurs without the presence of a fire.
Off-normal (point)	The point is in a condition other than normal, for example fault, disabled, active, etc.
Off-normal (system)	A system condition where there is one or more points or zones that are not normal. That is, a point or zone has a status other than normal – for example, Fault, Alarm, Dirty, or Device Fail.
Residential Mode	A configuration where a smoke detector alarm does not activate the alarm devices and alarm routing. Only a warning local to the originating detector is given.

Example Displays

This manual includes a number of example *MX1* LCD displays. The information shown in most of these is defined by the site-specific data used, and so may differ for each installation.

Nuisance Alarms

Nuisance alarms (also called false alarms or unwanted alarms) are alarm conditions caused by events other than a fire. These can be generally categorised according to two causes:

- The detector has correctly sensed the phenomena it is designed to detect, but the reason for the phenomena being present is not a fire. Examples are: a heat detector being triggered by very hot air from an oven, hot outside air entering an air-conditioned foyer, smoke from an outside fire triggering a smoke detector in the building, or welding setting off a flame detector.

- The detector has sensed a phenomenon different to what it is designed to detect, but one that causes similar effects to the detector. For example: steam or insects setting off a photoelectric detector, dust from building works, a nail being driven through detector cabling, or radio interference affecting a detector.

The actions to reduce the occurrence of both causes are generally the same and involve:

Removing the unwanted effect that is causing the detector to operate.

- Repositioning the detector so it is not influenced by the effect.
- Changing the settings of the detector so it is more resilient to the effect.
- Changing the detector type to one that is not sensitive to the effect, but is still suitable for the environment and the risk.

Some precautions building owners/occupiers can take to reduce the possibility of nuisance alarms include:

- If structural repairs or maintenance are to be performed in the building, ensure that any work that generates dust or smoke is only carried out after the relevant zones have been disabled. Smoke detectors should be fitted with temporary covers to prevent dirt from accumulating. Once the work is complete, remove the covers, reset any alarms detected while the zone was disabled, and then enable the zone.
- Ensure that kitchens, bathrooms, and shower rooms are fitted with exhaust fans, and that if provided with closing doors there is pressure relief to allow effective extraction when the doors are closed.
- Detectors should not be located where they can be exposed to dust, heat or other phenomena that can adversely affect them. If they are no longer in a suitable position or are not of a suitable type for the location, contact the service company to discuss relocation or changing the detector type.
- If the building has long-term occupants, contact a "nuisance alarm reduction" compliant service company to conduct training in how to minimise nuisance alarms (contact the Fire Protection Association Australia for a list of suitable companies).

Acknowledgements

MX1 firmware incorporates software from external sources. This acknowledgement applies to this external software.

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Chapter 2
Managing Alarm Conditions

Alarm Condition

An alarm condition occurs when a fire detection device (such as a smoke detector or manual call point) activates.

MX1 indicates the presence of the alarm condition by illuminating the general **FIRE** indicator and zone indicators (if fitted), through messages on the LCD, and (generally) by activating the building's alarm devices and alarm routing output to the fire brigade.

It may also activate associated equipment (which could be contained in the *MX1* cabinet), such as smoke control systems (e.g., AS 1668 fan controls) or fire extinguishing systems.

This chapter describes how *MX1* displays alarms and how to use the keypad to investigate and manage alarm conditions.

The first two alarms can be viewed on the LCD at Access Level 1. To view further alarms on the LCD, or reset or disable alarms will require Access Level 2. See "Operator Access Levels", page 1-11, for more information.

MX1 may be configured with AIF (Alarm Investigation Facility), AAF (Alarm Acknowledgement Facility) or Alarm Delay Facility (ADF) to reduce the chance of nuisance alarms. These facilities provide a local indication of a fire alarm to allow investigation and cancelling of a nuisance alarm before the fire brigade is called. AIF, AAF and ADF alarms may be indicated on the *MX1* LCD. See "Alarm Investigation Facility (AIF)" on page 2-7 or "Alarm Acknowledgement/Delay Facility (AAF/ADF)" on page 2-10 for details.

Alarms from other sources, such as sprinkler systems, may be shown on *MX1*. Refer to "Alarms from Other Sources" on page 2-10 for details.

In some installations smoke detector alarms may be programmed for local annunciation only. This is called residential mode. Refer to page 2-11 for further information.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

Handling Alarms Using the Fire Brigade Panel

The following steps suggest the method to be used in handling alarms using the Fire Brigade Panel (f.b.p.), i.e., the area of the keyboard within the red border. Note these instructions do not apply to a Remote FBP provided for non-fire brigade use (as the Remote FBP keyboard may be disabled during alarm to prevent clearing critical alarm information).

1. Silence Buzzer. Pressing the **SILENCE BUZZER** key will stop the sounding of the internal buzzer due to the alarm. The buzzer will re-sound if a new alarm occurs.

2. View alarm(s). Identify the zone and point in alarm (and for subsequent alarms if more than one) and decide on action. Press **NEXT** to see the third and subsequent alarms. For detailed information about each alarm see Viewing Alarm Details on page 2-5.

3. Investigate the alarm(s). If an emergency condition exists, facilitate evacuation and rescue. If the alarm is a nuisance alarm, identify the device in alarm, and, where possible, the cause. If the alarm is caused by a CO detector check all adjacent rooms and spaces for any source of CO. CO is a colourless and odourless gas and moves by diffusion.

4. Silence/Resound Alarm. If evacuation of occupants is no longer considered necessary then SILENCE/RESOUND ALARM can be pressed to turn off the alarm devices (occupant warning system). The Alarm Devices Activated LED will turn off and then the alarm devices themselves will turn off (this may take a few seconds). Note that a separate EWIS or sound system for emergency purposes will need to be silenced at that unit.

The alarm devices will automatically re-sound if a new alarm occurs. To re-sound silenced alarm devices manually, press SILENCE/RESOUND ALARM again.

5. Reset the alarm(s). Press **RESET** to attempt to clear all alarms. Refer to “Resetting Alarms” on page 2-6.

6. Wait at least one minute to ensure all alarm conditions have cleared. If an alarm reappears investigate further, and if a detector will still not reset, if possible determine the cause, e.g., the detector is faulty, insect infested, or excessively dirty, or there is lingering smoke from a minor fire event. Note that manual call points (MCPs) that have been operated will need to have the frangible element replaced before they can be reset. If the source of alarm cannot be cleared, then disable the alarm (see next step).

7. Disable the alarm(s). Press **DISABLE** to disable the alarms. This will disable zones and/or points in alarm depending on the system configuration. If alarms remain in the list after the Disable operation is complete, press **RESET** to clear the alarm list. The Disables indicator will be lit. Re-enabling zones and points that have been disabled requires use of keys outside the f.b.p. Refer to Chapter 3 for details.

8. Log the event. Enter the alarm details in the log book. Advise the building owner or their representative.

Viewing Alarms

When the first alarm condition is detected by the *MX1*, it does the following to indicate the presence of the alarm:

What the *MX1* Does When an Alarm Occurs

- The red general Fire indicators light red and individual Zone Alarm indicators (if fitted) flash red.
- The buzzer pulses.
- The Fire Brigade alarm routing output is activated, shown by the red **ALARM ROUTING ACTIVATED** indicator.
- The Alarm devices are activated, shown by the red **ALARM DEVICES ACTIVATED** indicator.
- Other outputs, e.g. smoke control, air-conditioning shutdown, door holder releases, etc., may be activated to control the fire situation.

Alarm Display

The LCD will show the first alarm on the top two lines and, if present, subsequent alarms on the lower two lines.

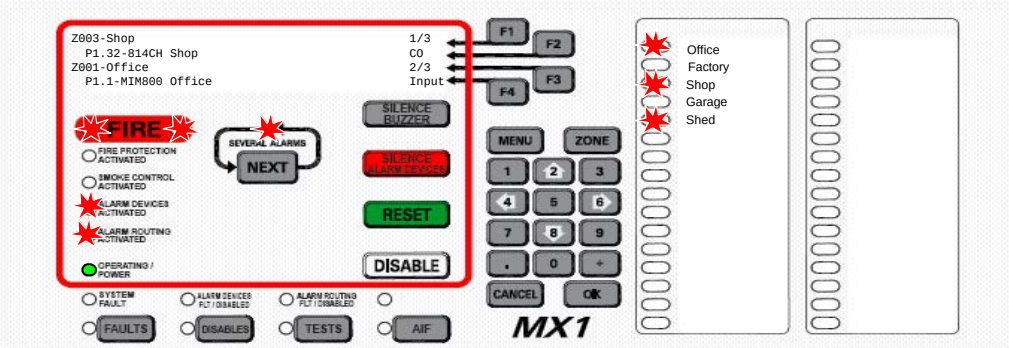

Fig 2-1 – Example of an Alarm Display Showing First and Second Alarms

The first line of each alarm will show:

- the zone number.
- the zone name.
- the alarm number out of the total number of alarms present, for example, 1/3 is the first alarm out of three.

The second line of each alarm will show:

- the device number (for example, p1.32)
- the point name
- the type of alarm for the point that generated the alarm condition (for example, CO for carbon monoxide detector).

If the length of the point name plus the type of alarm is too long to simultaneously show on the screen, these two fields will alternate every couple of seconds.

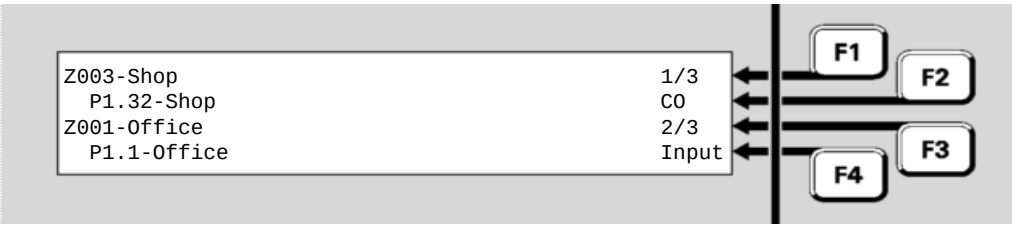

Fig 2-2 – Alarm Display Showing Alarms 1 & 2 Out Of 3

The **SEVERAL ALARMS** indicator will be lit if there are more than 2 alarms present, and pressing the **NEXT** key will scroll the lower two lines through any subsequent alarms (the alarm list).

The first and second lines will continue to show the first alarm.

Viewing Alarm Details

If **MENU** is pressed when the alarm list is displayed, the following menu is shown.

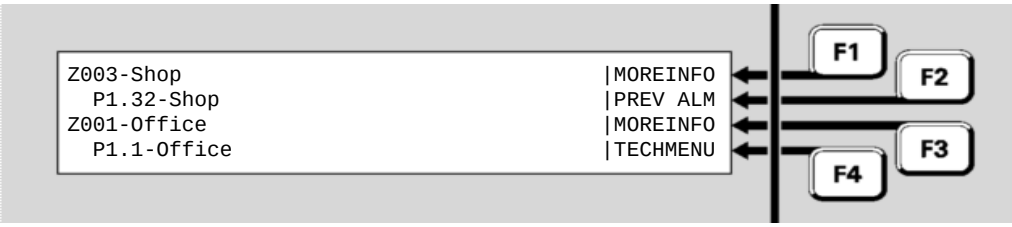

Fig 2-3 – Example of Alarm Display Showing Menu

From the alarm list, **F1** to **F4** may be pressed for the corresponding functions without first pressing **MENU**. Pressing **TECHMENU**←**F4** allows access to all the other menu functions while an alarm is present. Pressing and holding CANCEL returns to the alarm list.

Pressing **MORE INFO** ←**F1** or **MORE INFO** ←**F3** will show the Alarm Detail display for the particular alarm.

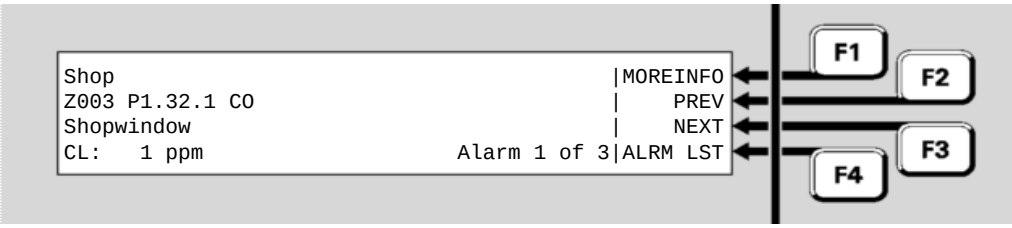

Fig 2-4 – Alarm Detail Display

NOTE if the panel sending the alarm is not an *MX1* panel then the information shown depends on the configuration of the sending panel.

For *MX1* panels

- The first line shows the zone name.
- The second line shows the zone number, the point number (device number and subpoint) and alarm type for the subpoint that caused the alarm.
- The third line shows the point name.
- The fourth line shows the current level (CL=”current analogue level”) in appropriate units for the device type, in this case, parts per million of carbon monoxide. It also states which alarm of the total number of alarms this is.

Press

- **MORE INFO** ←**F1** to show pre-programmed action text for the zone and the date and time of the alarm.
- **NEXT** or **NEXT**←**F3** to step to the next (later) zone in alarm.
- **PREV**←**F2** key to step to the previous (earlier) alarm.
- **ALRM LST**←**F4** to return to the Fire Brigade Panel alarm list.

Silencing the Buzzer

To silence the Fire Brigade Panel buzzer, press the **SILENCE BUZZER** key (at the *MX1* panel or at the Remote FBP). The buzzer will be Silenced. No other output or indication on the fire alarm panel will change.

Silencing/Resounding Alarm Devices

On a fire alarm the alarm devices (occupant warning system) will generally be activated – indicated by the red ALARM DEVICES ACTIVATED LED on. Once the alarm is investigated and the building occupants are permitted to re-enter the building, the alarm devices can be silenced by pressing the **SILENCE/RESOUND ALARM** key. However, if it is necessary to re-sound the alarm devices then press the **SILENCE/RESOUND ALARM** key again. This key will toggle the alarm devices on and off while an alarm is present.

The Alarm Devices will automatically re-sound on a new alarm.

Note the Alarm Devices need to be silenced before the **RESET** or **DISABLE** keys can be used.

On a networked system the *MX1* may be configured to allow you to silence/resound alarms on remote panels. Refer to Silencing Remote Alarm Devices in Chapter 9.

Resetting Alarms in the Alarm List

Generally the alarm state latches with the *MX1* so that each alarm can be viewed later when fire-fighting personnel arrive at the fire panel.

Overview

When the alarms have been investigated and are no longer required they can be reset.
The condition that caused each alarm must be cleared before the zone can be reset to the normal state (for example, smoke cleared from smoke detectors, manual call point element restored to normal, latched detectors or MCP in the field have been disabled).

Resetting all Alarms

If the LCD is showing the alarm list, i.e., the first alarm on the top 2 lines and any subsequent alarm on the next two lines, pressing **RESET** will reset all zones in the alarm list. The display shows “Resetting Alarms…”, and as each alarm is successfully reset, its entry in the list will disappear. When the last zone is cleared, the alarm list display is cancelled.

Resetting an Individual Alarm

Press **F1** for the first alarm or scroll the display with **NEXT** until the required zone alarm is shown on the last 2 lines of the display. Then press **F3** to select that zone.

- Press **RESET**

- Press **OK** to confirm the reset command.

While the alarm is being reset, “Resetting” will be shown on the LCD.

If the particular zone in alarm is reset successfully, the alarm will disappear from the display and the alarm count will reduce by one.

If an Alarm Will Not Reset

If one or more detectors or devices in the zone are still active, the zone alarm state will not reset. At the end of the reset period, any points still in the alarm condition will be re-annunciated as new alarms.

Disabling Alarms in the Alarm List

Disabling a zone or point stops its state from affecting the system. When a zone is disabled, it cannot put the system into alarm or fault, nor can an existing alarm or fault on the zone cause outputs to operate.

Disabling All Alarms in the Alarm List

If the LCD is showing the alarm list, i.e., the first alarm on the top 2 lines and any subsequent alarm on the next two lines, pressing **DISABLE** will show “Disabling Alarms…” and then disable all alarms (including any other alarms if the Several Alarms indicator is lit) in the alarm list.

This operation will disable the zone(s) or disable the points in alarm that map to the zone(s) in the alarm list depending on system configuration. If the *MX1* remains in alarm after the Disable is done (i.e., points in alarm were disabled), press **RESET** again to fully reset the zone and clear the *MX1* from the alarm condition.

Disabling an Individual Alarm

Press **F1** for the first alarm or scroll the display with **NEXT** until the required zone alarm is shown on the bottom two lines of the display. Then press **F3** to select that zone.

- Press **DISABLE**.
- Press **OK** to confirm the disable command.

When the particular zone is disabled, the alarm will disappear from the display, and the alarm count will reduce by one.

Enabling Disabled Zones

Refer to Chapter 3, “Managing Faults and Disables”, for details on how to enable zones that have been disabled.

Alarm Investigation Facility (AIF)

The Alarm Investigation Facility (AIF) provides for a programmed delay between the annunciation of alarm on the LCD and activation of the alarm devices and fire brigade alarm routing outputs. This delay allows a suitably trained operator time to acknowledge the alarm and then investigate the situation and reset any nuisance alarms.

AIF may be enabled (Attended Mode) when a suitably trained operator is in attendance and disabled (unattended) when there is no-one qualified

to handle the alarm investigation procedure.

In Attended Mode an alarm from a smoke detector in a zone configured for AIF will be treated as an AIF alarm (see “Handling an AIF Alarm” on Page 2-9). If a subsequent alarm occurs while the AIF alarm is present, then the AIF delay is cancelled and both alarms are treated as ordinary alarms.

Alarms from MCPs and most other detector types will not be configured for AIF, and transmission of these alarms to the brigade will not be delayed.

In Unattended Mode, the *MX1* operates normally and transmission of alarms to the brigade is not delayed.

Configuring AIF for an installation may require permission from the fire brigade and other authorities.

Selecting Attended Mode

Press **AIF**. This will toggle the AIF between Attended and Unattended modes. AIF Attended mode is indicated by the AIF LED being ON.

If the *MX1* is not configured to use AIF, pressing the AIF button will have no effect and the AIF LED will not light.

Alternatively, from the base display, press **MENU** repeatedly until a menu is shown that has an AIF option.

Note that if the *MX1* is not configured to use AIF, the AIF menu option will not be shown.

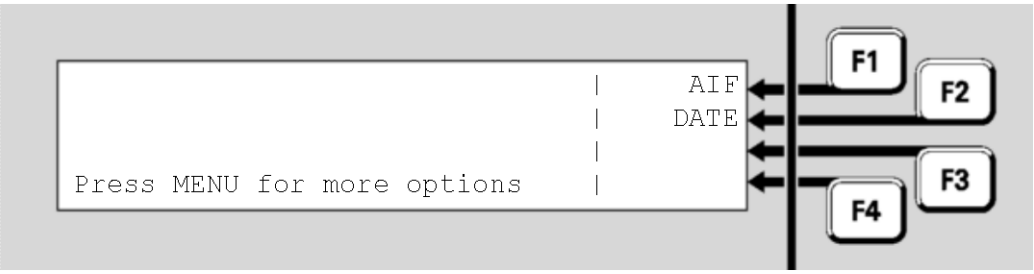

Fig 2-6 – Menu Showing AIF Option

Press **AIF←F1** to select the AIF display. This will show the current AIF mode (unattended or attended) and allow the mode to be changed.

Press **F1** or **F4** as appropriate to select attended or unattended mode. The new mode will be reflected in the status of the AIF LED.

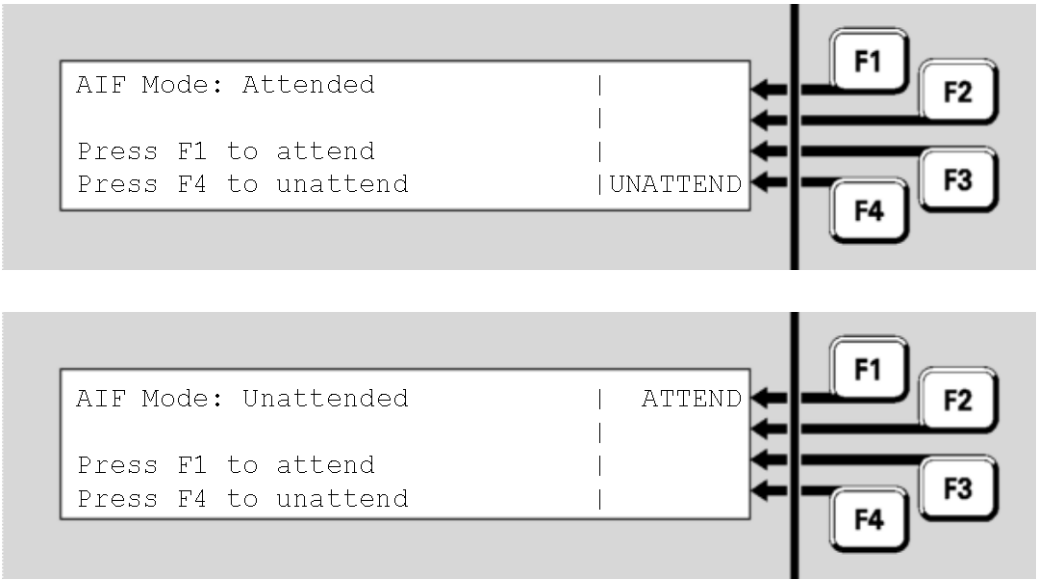

Fig 2-7 – Selecting Attended or Unattended Mode

When the required mode has been selected, press **CANCEL** to return to the base display.

Handling an AIF Alarm

When a smoke detector alarm occurs on a zone configured for AIF and the AIF mode is attended, the alarm is shown in detail on the LCD.

- The top line shows the zone number, AIF alarm, and 1/1 to show it is the first and only alarm.
- The second line shows the zone text.
- The third line shows the point number that caused the alarm and its alarm type.
- The fourth line shows the point text.

The alarm devices and the alarm routing will not be activated, and the operator has a predetermined time (up to 30 seconds) to acknowledge the alarm.

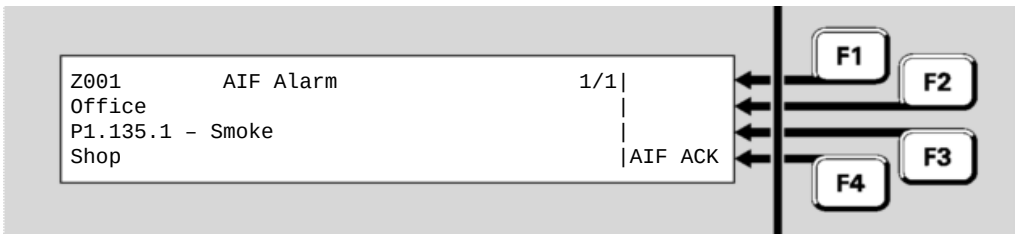

Fig 2-8 – Example of a Display Showing AIF Alarm

Press **AIF ACK**←**F4** to acknowledge the alarm and start the AIF investigation timer. The LCD will show “ACK” before “AIF Alarm” on the top line and remove the **AIF ACK**←**F4** menu option.

The alarm buzzer will not be silenced by pressing AIF ACK. It is

recommended the alarm buzzer be left on to remind operators that the alarm must be reset otherwise the fire brigade will be called.

Investigate the zone and area where the point in alarm is located. If no source of fire can be detected, or the cause is identified and does not require fire brigade attendance, reset the alarm by pressing **RESET** and then **OK** (see page 2-6). The alarm will be reset and the AIF timers cleared. If the cause of the alarm is still present, the zone will go into alarm again.

If the alarm is not acknowledged, or is not reset by the end of the programmed investigation time (default 5 minutes) or another alarm occurs, then the AIF delay is cancelled and the alarm(s) are treated as ordinary alarms.

Note that pressing **DISABLE** from this display will not allow the alarm to be disabled.

Alarm Acknowledgement/Delay Facility (AAF/ ADF)

Alarm Acknow-ledgement / Delay Facility

In some situations where nuisance smoke alarms are likely, the Alarm Acknowledgement Facility (or Alarm Delay Facility) may be used to allow the occupant to acknowledge (AAF only) the alarm locally and then have time to clear the smoke before the alarm is fully recognised and is signalled to the fire brigade, etc.

By default, these alarms are not indicated on the *MX1* until the alarm is fully recognised. In some situations, where suitably trained operators are handling alarms on the *MX1*, the initial smoke detector alarm can be indicated on the FBP display. In this case the initial alarm is shown as a standard alarm, except that the Alarm Type is shown as AAF (or ADF) and the Fire Indicator, Alarm Devices and Alarm Routing are not activated. If the alarm is cleared by the occupant before the fire brigade is signalled, the alarm is automatically cleared from the *MX1*.

If the alarm becomes fully recognised, the initial alarm indication is replaced with a new alarm event and treated as usual.

Alarms from Other Sources

Other alarm types, such as sprinkler systems, pump run status, etc. may be connected to the *MX1* and displayed in a number of ways.

For example, sprinkler alarms may be annunciated as for any other alarm in the system, i.e., shown in the Alarm List and activate Alarm Routing and Alarm Devices. As such, these alarms may be viewed in the same way as any other alarm, but resetting of the alarm may not be successful until the sprinkler water flow has been stopped.

Alternatively, the sprinkler system may activate the alarm routing and alarm devices independently of the *MX1*, but use the *MX1* to simply in THIS PAGE INTENTIONALLY LEFT BLANK
dicate which flow switches are operating within the building. These indications will usually not be alarm conditions and will clear automatically when the water flow is stopped.

Residential Mode

The *MX1* may be configured for some smoke detectors to work in residential mode (sometimes used in permanently occupied apartments where the occupant can take action if smoke is indicated). An alarm on such a detector will not summon the Fire Brigade, nor will any alarm indication be shown at the *MX1* panel. Instead, a local alarm is given at the detector (for example, by a sounder base) so that the occupant(s) can investigate the situation and determine whether there is a fire.

If the situation is found to be a real fire, a general alarm can be generated by activating a manual call point, usually in a common area. If the detector is a combined smoke and heat multi-sensor, an alarm from the heat sensor will generate a general alarm.

Residential mode can include annunciation of a smoke detector alarm at a reception desk, for example.

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Chapter 3
Managing Faults and Disables

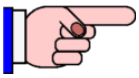
Fault Conditions

A fault condition occurs when a system component is in a condition that may affect its ability to function correctly.

The *MX1* continually checks the condition of its internal and external components, and will generate indications on the front panel and signals to fault routing equipment, etc., when it detects a fault.

Examples of faults are:

- an *MX* detector is removed from its base,
- a field wiring problem (open circuit, short circuit or signal interruption) between the *MX1* and any of its detectors,
- a ground fault between *MX1* wiring and earth,
- a problem with the power supply or battery.



Generally, all faults are signalled to the fault routing equipment.

Disabled Conditions

A disabled condition occurs when an operator takes a component out of service, for example, to prevent a nuisance alarm when maintenance work such as building repairs or welding is being done in an area, or because it is faulty and repair may take some time.

A disabled component is prevented from contributing to alarm and fault indications or outputs. However, since the system is not in a “normal” state, under most configurations the presence of disabled components is shown by indications on the front panel.

MX1 uses non-volatile memory to store the disable status for zones, points, ancillary groups and the alarm devices. If the *MX1* is powered down or restarted within 10 seconds of disabling or enabling a zone, point, etc., then the new status may not be stored correctly and the old status will remain.

Other Off-Normal Conditions

The LCD will display a message “SYSTEM IS OFF-NORMAL” when any points are off-normal, but not in alarm or fault. This could be due to a service error such as:

- Alarm routing is isolated,
- Database Write Enable link is fitted, etc.

Pressing the **NEXT** key will display any off-normal points.

In this Chapter

This chapter describes using the operator interface to investigate the details of a fault condition, and to manage disables.

Refer to the page number listed in the following table for information on a specific topic.

Viewing Faults

How the *MX1* Indicates the Presence of a Fault

When a fault condition that has not been disabled is detected by the *MX1*, the operator interface does the following:

- The yellow FAULTS indicator lights.
- If fitted, a yellow zone indicator will flash for a zone fault.
- The buzzer sounds continuously (if configured).
- The LCD displays the number of fault conditions present and may show a fault action message, for example to call the service company, as shown below:

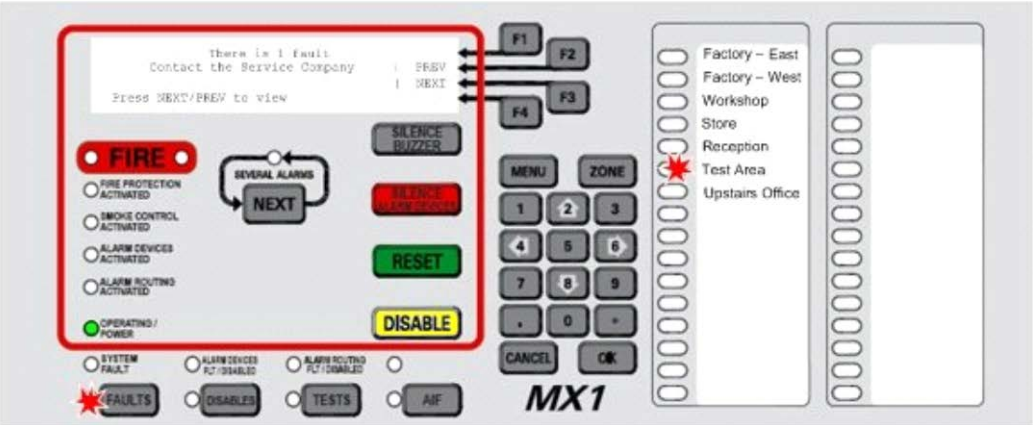


Fig 3-1 – Operator Interface Showing Fault Condition

If a fault condition occurs on a disabled item then no indication is given, but the fault(s) can be viewed by pressing **FAULTS**.

Responding to a Fault Indication

Faults should be assessed and repaired only by a trained and competent operator. Otherwise, the service company should be called. Chapter 10 contains a fault finding guide.

Viewing the Fault Details

If the Faults indicator is lit, press **FAULTS** to display the first item in fault. Pressing **FAULTS** will work from most displays as well as the base display.

Any zones in fault are listed first, in numerical order, followed by the points in fault, also in numerical order.

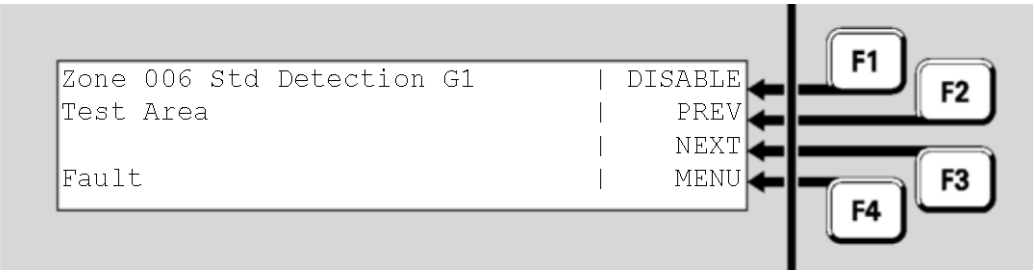


Fig 3-2 – *MX1* LCD Showing Zone Fault

"Zone 006" indicates the zone in which the fault condition has arisen.

The Profile name displayed (Std Detection G1 in this example) identifies the set of configuration settings in use for the zone.

"Test Area" indicates the location text for the zone.

The bottom two lines show the status conditions present for the zone.

To step the Fault display to the next item, press the **NEXT** key or **NEXT**←**F3** soft key.

To step to the previous item, press the **PREV**←**F2** soft key.

Zone Faults

A zone fault will be registered only if one of the points associated with that zone is or was in a fault condition.

Zones can be configured to latch their faults, i.e., to maintain the fault indication even after the point fault that originally caused it has cleared.

Point Faults

A point fault will be indicated if the point has a fault condition present. This could be a wiring or supervision fault, an addressing fault or some other detected mis-operation.

In some instances a fault on a device will put all of the points of that device into the fault state, for example Device Fail and Type Mismatch faults. Thus a single device fault may result in more than one fault being indicated on the system. However, events for only point 0 will be logged to the event history or to the printer, so as to not unnecessarily fill the event history.

Fault indications for points are usually non-latching, i.e., when the point fault is cleared, the fault indication will automatically clear.

Therefore, while it is usual to find zones and points in the Faults list, it is possible to find only zones in the list, if all the point faults have cleared. In this situation, the point that caused the zone fault can be determined from the history log. See Chapter 4, Viewing the Event History.

Resetting a Displayed Fault Indication

To reset a latched fault indication:

- Press **FAULTS** to display the Fault detail display.
- Press **NEXT** or **PREV←F2** to step through the Fault list to the zone or point to be reset.
- Press **RESET** and **OK** to confirm the reset.

If the reset was successful, the state of the zone or point will change from Fault to Normal. If the fault is still present, the fault indication will not clear, or may clear and re-announce after a few seconds.

If the fault on a zone does not clear then the fault condition is still present on one or more points, and these point faults will need to be cleared before the zone fault can be reset.

Viewing Disables

When there are one or more zones, points or components that have been disabled, the operator interface does the following:

How the *MX1* Indicates the Presence of Disabled Items

- The yellow DISABLES status indicator lights.
- If fitted, the yellow zone indicator will turn on for a disabled zone.
- The LCD on the interface panel indicates the presence of an Off-Normal condition, as shown below.

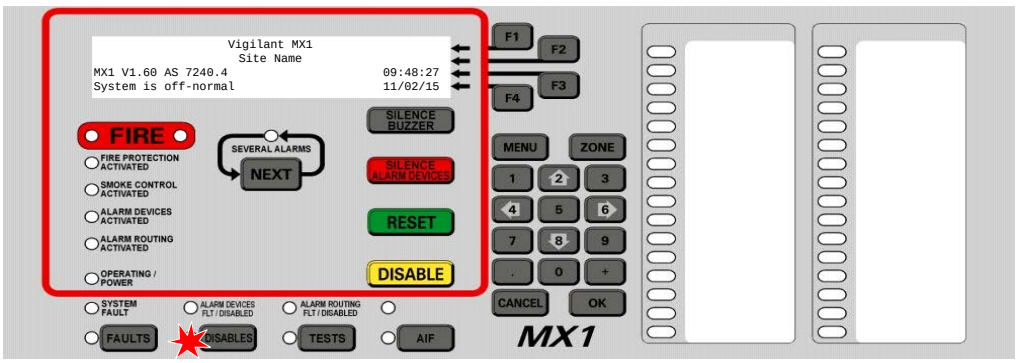


Fig 3-3 – Operator Interface Showing Disables Condition

Viewing the Disabled Items

To view the list of disabled items, press the **DISABLES** key.

The **DISABLES** key will work from most displays as well as the base display. This will show the first item in the Disables list.

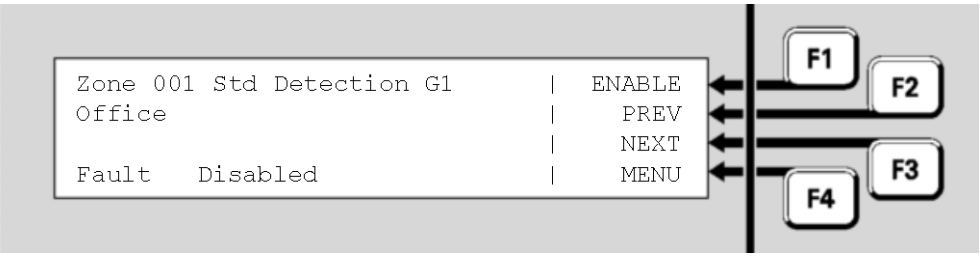


Fig 3-4 – Viewing the Disables List

In the example here, zone 001 has a fault as well as being disabled, but the Disabled condition means that this will not produce a Fault indication. However, it will still appear in the list of items that can be viewed by pressing the **FAULTS** key. Similarly disabled zones in alarm will indicate the alarm status when the Disables key is pressed.

Disabling a zone is a convenient way of hiding the state of all the points associated with that zone. However, the points themselves are not disabled by disabling the zone and may still affect other zones or outputs that they are mapped to.

Note that the disabled point or zone may have other conditions present (fault, alarm, etc.), but that these indications are prevented from affecting the system by the point or zone being disabled.

The disabled zones are listed first, in numerical order, followed by the disabled points, also in numerical order.

To step through the Disables list, press the **NEXT** key or **NEXT**🡐**F3** soft key.

To step to the previous item, press the **PREV**🡐**F2** soft key.

If there are no disabled items in the list, the display shows “no disables found” and then changes to the “Disable” menu. See page 3-6, “Disable Menu Options”.

Enabling a Disabled Item

To enable a disabled item:

- Press **DISABLES** to display the Disables list.
- Step through the Disables list with **NEXT**🡐**F3** or **PREV**🡐**F2** to the zone or point to be enabled.

Press **DISABLE** or **ENABLE**🡐**F1** and then **OK** to confirm the enabling.

If the disabled zone or point is in Alarm, enabling it may cause the system to enter the Alarm state.

From the Disables List other options are available by pressing the **MENU** key. These are described in the next section.

Disable Menu Options

There are commands available from the Disable menu to disable or enable whole blocks of zones or points as well as individual zones or points.

Press the **DISABLE** key from the base display. Alternatively, from the Disables List, press the **MENU←** **F4** option. This gives a menu of what to disable or enable.

Do not press the f.b.p **DISABLE** key when the Alarm List is being shown unless the intent is to disable all alarms.

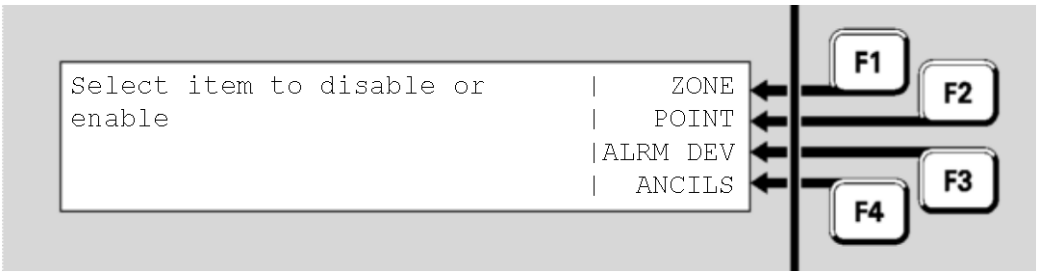


Fig 3-5 – Selecting an Item to be Disabled or Enabled

- **ZONE←** **F1** allows a zone or range of zones to be enabled/disabled. Refer to Disabling or Enabling a Zone (page 6-9).
- **POINT←** **F2** allows a point or range of points to be enabled/disabled. Refer to Disabling or Enabling a range of Points (page 6-7).
- **ALRM DEV←** **F3** allows the Alarm Devices to be enabled/disabled.
- **ANCILS←** **F4** allows the ancillary groups to be enabled/disabled (see page 3-7).

Alarm Devices

From the Disable Menu press **ALRM DEV←** **F3** to enable/disable the alarm devices. The confirmation screen will show the action that is about to be performed (i.e., enable or disable) and request the **OK** key be pressed.

If **OK** is pressed the action is carried out, otherwise press CANCEL to return to the previous screen.

Ancillary Groups

Many *MX1* installations have functionality for control of lifts, air-conditioning systems and so forth during alarm conditions. When the panel is undergoing tests it may be necessary to disable this functionality in order to avoid disruption to site occupants.

The Disable Ancils command provides a convenient means to enable or disable this functionality without having to address each individual function.

From the Disable menu press **ANCILS←F4**. This gives a display such as follows.

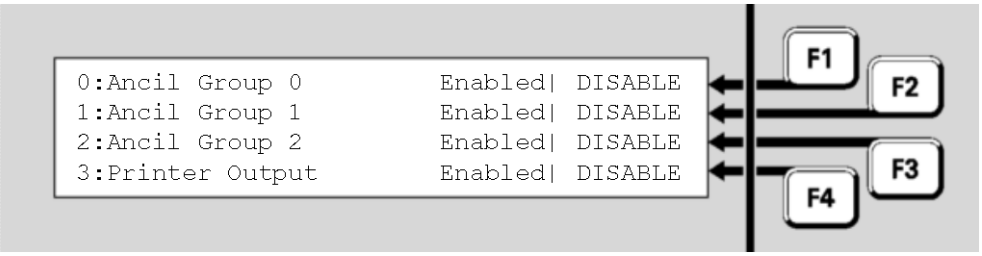


Fig 3-6 – Ancillary Groups Display

Each line represents one ancillary group and gives a description of the functionality controlled by that group, followed by its status (Enabled or Disabled). Each group can be enabled or disabled by pressing the corresponding F-key. No confirmation is required.

The functionality represented by each ancillary group is determined by the site-specific configuration. The names of the ancillary groups should describe this functionality. In the above example, “Printer Output” is one such description.

Note that if no functionality has been configured for an ancillary group, disabling that group will have no effect on the system but could result in the **DISABLES** status indicator turning on (as each Ancillary Group has a point that reflects its Enable/Disable status and these appear in the Disables list when the group is disabled).

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Chapter 4
Viewing the Event History

Introduction

The *MX1* maintains a history of the 900 most recent events that have occurred. These are stored in non-volatile memory, so are not lost on power down. When the history is full, the oldest event is deleted so a new event can be added.

In this Chapter

When contacting technical support services, ensure that the event message shown on the *MX1* LCD is quoted exactly as shown.

General Message Format

Each message in the Event History shows a change in the state of some system component, for example a zone or a point. The message shows the new state, the component that changed, and the time and date when the change was registered.

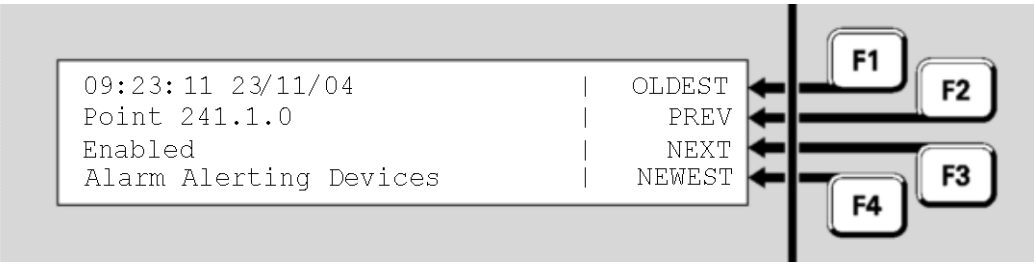

Fig 4-1 – Event History Message

In this example, the message is saying that at 9:23:11 am on 23rd November 2004, the point numbered 241.1.0, representing the Alarm Devices, was enabled.

There are three types of event message:

- System, where line 2 of the display says "**`Local event`**"
- Zones, where line 2 of the display says "**`Zone nnn`**"
- Points, where line 2 of the display says "**`Point Eq.Dev.Sub`**".

The following sections describe these in more detail.

Viewing Event History

Displaying Event History

If the *MX1* display is not showing one of the base displays, i.e., Normal, Off-Normal, Fault or the Alarm list, press and hold **CANCEL** until the current base display is shown.

Press **MENU** to see a set of options:

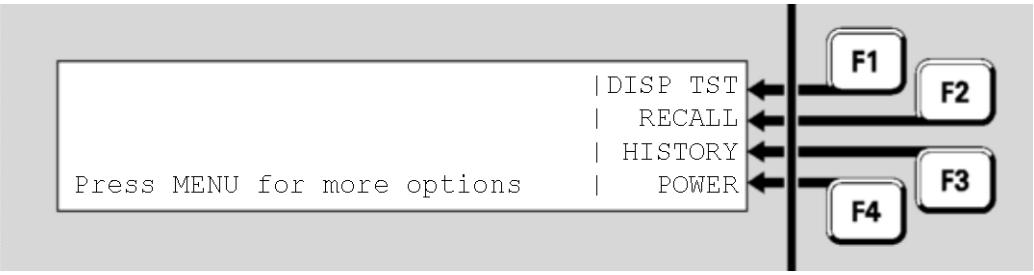

Fig 4-2 – Options Resulting from Pressing the Menu Key

Press **HISTORY←F3** to display the event history. The most recent event will be displayed first.

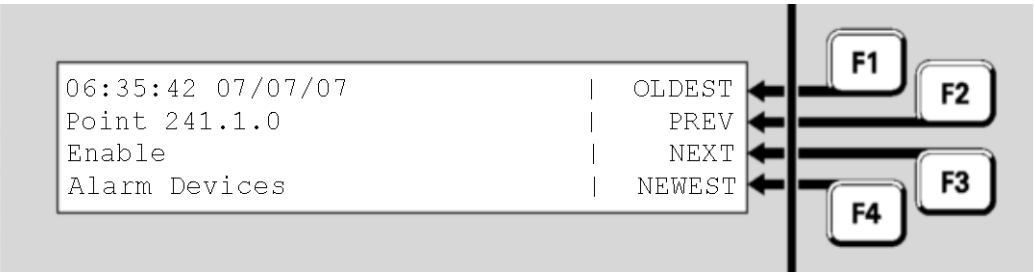

Fig 4-3 – Event History Display

The display shows:

- the time and date of the event,
- the number of the zone or point, or “Local Event” for system events,
- the type of event, e.g., Disable, Enable, Alarm, Fault, or a description of the local event,
- the text description of the zone or point involved.

Explanations of the event messages are given below.

History Navigation Keys

The soft keys **F1** - **F4** are used to step forward and backward through the event log:

- **NEXT** or **NEXT←F3** steps to the next (later) event.
- **PREV←F2** steps to the previous (earlier) event.
- **OLDEST←F1** shows the oldest event in the log.
- **NEWEST←F4** shows the newest (most recent) event.

Stepping **NEXT←F3** from the newest event will return to the oldest event after a brief message.

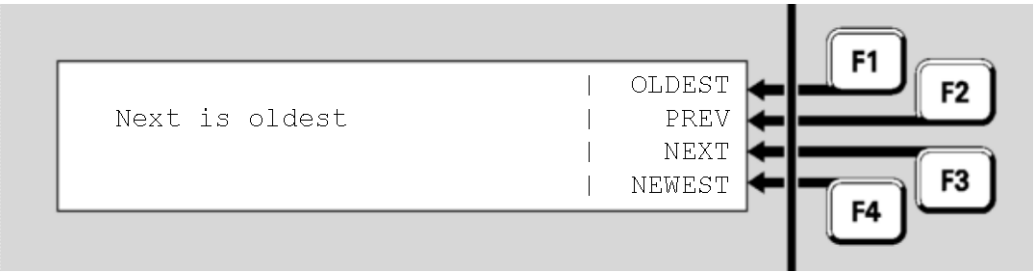

Fig 4-4 – Brief Message Shown Before Displaying Oldest Event

Stepping **PREV←F2** from the oldest event will return to the newest event after a similar message.

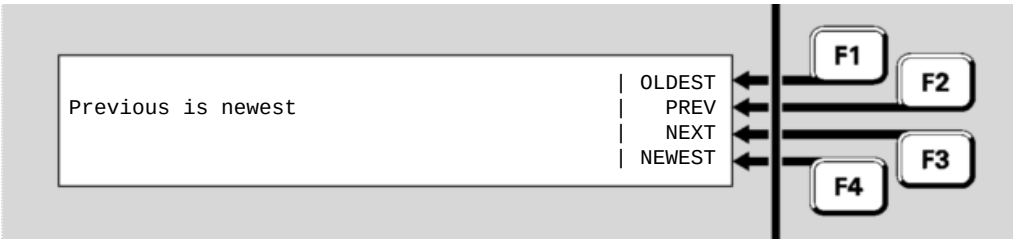

Fig 4-5 – Brief Message Shown Before Displaying Newest Event

Press **CANCEL** to return to the base display.

Zone Events

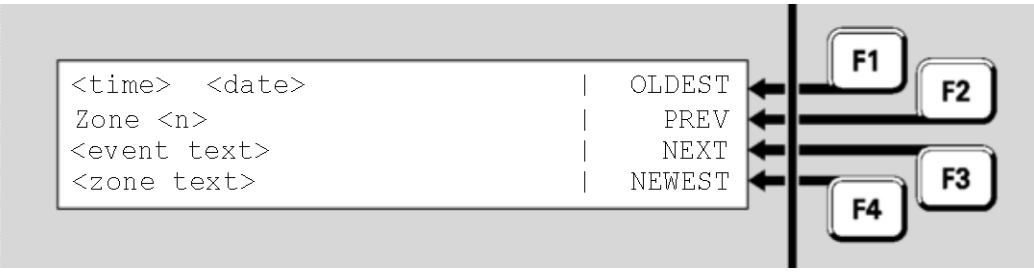

Fig 4-6 – Zone Event Text Format

The **<zone text>** is the descriptive text for the zone.

The **<event text>** is one of the following:

Zone Events Text	
Event Text	**Meaning**
Activate	This zone has become Active (distinct from Alarm state). Output points mapped to the zone become operated.
Alarm	One or more of the detectors in this zone has gone into Alarm.
Alarm ACK'D	The alarm on this zone has been acknowledged by a user.
Alarm clear	The alarm on this zone has cleared.
Alarm Test Start	A test of the processing of alarm conditions in this zone has been started.
Auto Reset Test	Auto-Reset mode has been started for this zone.
Auto Reset Timeout	Auto-Reset mode for this zone has been cancelled due to a timeout period with no new alarms.
Bad Event	The event code wasn't recognised by this panel.
Deactivate	This zone has stopped being Active.
De-operate	All output devices in this zone have been switched out of the operated condition.
Disable/Enable	This zone has been disabled/enabled by an operator command respectively.
Fault	One or more of the devices in this zone is faulty.
Fault clear	All faults on this zone have cleared.
Fault Test Start	A test of the processing of fault conditions in this zone has been started.
Fault Test Stop	A fault test has been terminated by an operator.
First alarm	A detector mapped to this zone has signalled alarm, but the zone alarm is not signalled yet because the alarm is being investigated (AAF alarm) or a second point in alarm is required (the zone is programmed for dual-hit operation).
Input activated Input deactivated	An input point mapped to this zone has become Active (distinct from Alarm) or has stopped being Active, respectively.
Normal	This zone has returned to normal.
Operate	One or more non-disabled output devices in this zone have been switched into the operated condition.
Operate Test Start	An Operate Test command has been issued for this zone. This will result in all the zone's output points being test-operated.
Pre-alarm	One or more of the detectors in this zone is in a pre-alarm condition.
Pre-Alarm clear	The pre-alarm condition on this zone has cleared.
Reset	This zone has been reset by an operator command.
Test Abort	The current test on this zone has been cancelled.
Test Fail	The current test on this zone has failed.
Test Pass	The current test on this zone has passed.

Point Events

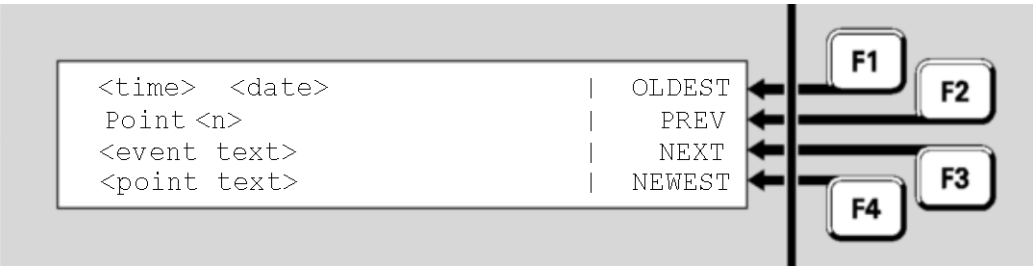

Fig 4-7 – Point Event Message Format

The **<point text>** is the configured descriptive text for this point.
The **<event text>** is one of the following:

Point Events Text	
Event Text	**Meaning**
Alarm	This point is in alarm.
Alarm Clr	The alarm condition on this point has cleared.
Alarm test fail	This point has failed its alarm test.
Alarm test start	An alarm test on this point has started or stopped, respectively.
Alarm test stop	
Auto-Reset start	Auto-Reset mode for this point (detector) has been started or stopped, respectively.
Auto-Reset stop	
Control CB Fail	This relay output point will not switch to its required state. The checkback signal does not match the required state.
Control CB Nml	This relay output point is now in its required state.
De-operate	The output device has been switched out of an operated.
Device Fail	This point (*MX* addressable device) is not responding to polling requests from the *MX1*.
Device Fail Clear	This point (addressable device) is now responding to polling requests.
Device Fault	This flame detector has a fault other than a window fault.
Dirty Alert	This point (detector) is still functional but requires service due to contamination.
Dirty Alert Clr	This point (detector) is no longer affected by contamination.
Disable	This point has been disabled.
Enable	This point has been enabled.
Fault	This point is faulty.
Fault Clr	The fault condition on this point has cleared.
Input activated	An input device has changed into or out of an activated condition, respectively.
Input deactivated	
Load Supply Fail	The separate supply to this device, for example a DIM800 or SNM800, is faulty.
Low Temp Fault	The ambient temperature for a detector with a CO sensor has gone below (above) its long term minimum operating limit.
Low Temp Normal	
O/C Fault	An input or output has an open circuit in the wiring connected to it.
Old MX ASIC Fault	The *MX* module does not support the requested function (e.g., falling edge interrupts) so needs to be replaced with a newer model.
Isolator Fault	The line isolator of the *MX* device is activated due to a short circuit condition on the *MX* loop. Only some devices will report this.
Operate	The output device has been switched into an operated.
Parameter Error	This device has been incorrectly set up at the factory and requires replacement.
Point Type Mismatch	The reported and configured types differ for this *MX* point.
Point Type OK	The reported and configured types now agree for this point.
Pre-Alarm	This detector has gone into a pre-alarm condition.
Pre-Alarm clear	The pre-alarm condition on this point (detector) has cleared.

Point Events Text	
Reset	The point has been reset, clearing any latched state.
Reset history	The point's HH and HL values have been reset.
Reset tracking	The point's TV value has been reset (to the CV).
S/C Fault	An input or output has a short circuit in the wiring connected to it.
Test De-operate	This output point has been switched into or out of an operated condition as part of a point test.
Test Operate	
Test Start Not nml	This point is not Normal at the start of a self test, for example type mismatch, device fail.
Unassigned point	There is a device at this address which is not in the system data file.
Window Fault	This flame detector has a dirty window.

System Event

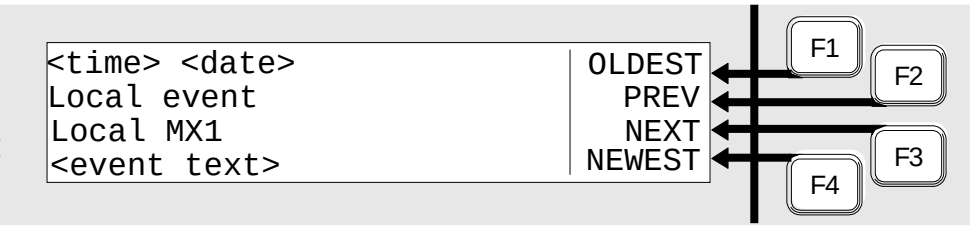

Fig 4-8 – System Event Message Format

The **<event text>** is one of the following:

System Events Text	
Event Text	**Meaning**
Alarm Devices Silence	The alarm devices were silenced after an alarm occurred.
Alarm Devices Unsilence	The alarm devices were resounded after being silenced.
Bad Event	The event code was not recognised by the panel.
Cold start	The *MX1* has been powered up.
Command Received	A zone or point command has been received on the network from the specified SID.
Commission Mode On/Off	Commissioning mode has been started/stopped.
Date changed	The system date has been changed. The new date is used for the event.
Daylight Save Start	Daylight Saving Time adjustment to the system clock has been started or stopped, respectively.
Daylight Saving End	
DB Prgrm (ID) User Name	A user able to change the system datafile logged on or logged off the programming port, respectively. ID is user ID, user name shows the user's name.
DB Prgrm end	
Diag logon (ID) User Name	A user able to use diagnostic functions logged on or logged off the diagnostic/programming port, respectively. ID is user ID, user name shows the user's name.
Diag logoff	

System Events Text	
History Reset	Non-volatile event messages were all cleared (usually following a restore failure). All previous history events will have been lost.
History restore fail	Retrieval of non-volatile event messages failed during system start up.
Keypad restart	The LCD/Keyboard microprocessor has restarted.
LCD logon	A user able to use Level 3 functions logged on or logged off, respectively.
LCD logoff	
Logic vars reset	The values of non-volatile logic variables were reset (usually following a restore failure). All nonvolatile variables will be initilised to FALSE.
Logic vars restore fail	Retrieval of non-volatile logic variables failed during start up.
Pnt disables reset	Non-volatile point disable states were reset (usually following a restore failure). All points will have become ENABLED.
Pnt disables restore fail	Retrieval of non-volatile point disable states failed during start up.
Printer events lost	The printer queue was over filled, so some events to be printed were lost.
Reboot xxx yyyyyyyy	The *MX1* has restarted software execution due to problem xxx, yyyyyyyy shows a technical detail. If this occurs repeatedly contact your service company.
RZDU Cmd rec'vd	An operator command was received from a connected RZDU.
RZDU test timeout	An RZDU failed to report that a self-test passed within 4 minutes of starting.
Sw fault xxx yyyyyyyy	The *MX1* internal checking routines have detected an inconsistency that needs to be addressed. xxx, yyyyyyyy show the details of the faults. If this occurs contact your service company.
System running	This is a daily timestamp, indicating the system is working.
TAP Access Granted	A temporary access password has been used to log onto the *MX1*.
Time changed	The system time has been changed. The new time is used for the event.
Warm start	The *MX1* has restarted without being powered down, for example, to change the datafile.
Zone disables reset	Non-volatile zone disable states were reset (usually following a restore failure). All zones will have become ENABLED.
Zn disables restore fail	Retrieval of non-volatile zone disable states failed during start up.

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Chapter 5
Recalling Zone and Point Status

Introduction

This chapter describes using the front panel to view the status of zones and points.

The various states that zones and points can have are described on pages 1-15 and 1-12 respectively.

Note; some points may be recallable and appear to be in various “normal” states, but cannot have commands performed upon them. This may be due to the configuration settings used in a particular *MX1* installation, or that the points are for display-only purposes.

Equipment Points are listed on page 12-8.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

Recall Menu Options

If the *MX1* display is not showing one of the base displays, i.e., Normal, Off-Normal, Fault or the Alarm List, press and hold **CANCEL** until the base display is reached.

Press **MENU** (or from the Alarm List press TECHMENU-F4) to see a set of options:

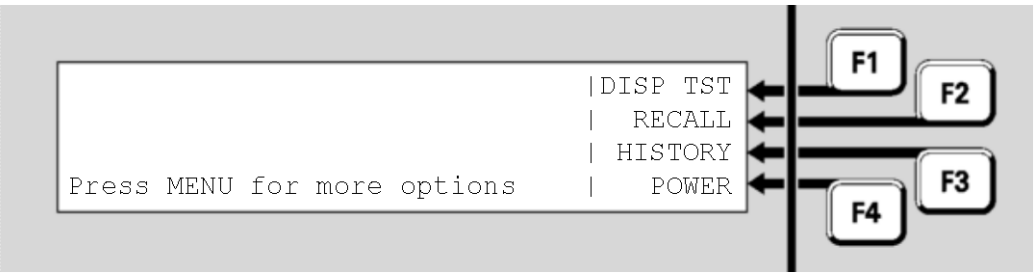


Fig 5-1 – Menu Options

Press **RECALL**←**F2** to select what to recall.

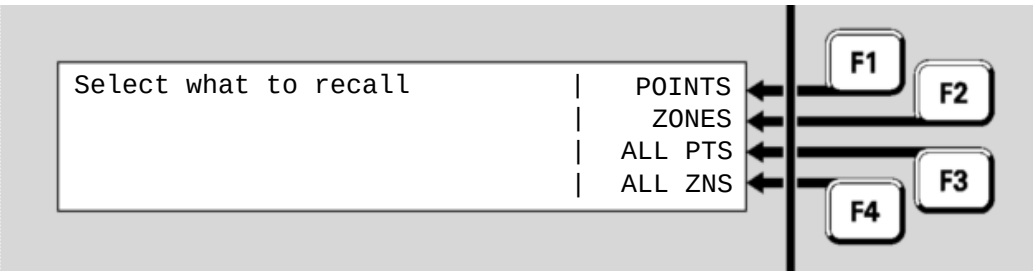


Fig 5-2 – Recalls Menu

Press:

- **POINTS**←**F1** to show the off-normal points recall options
- **ZONES** ←**F2** to show the off-normal zones recall options
- **ALL PTS**←**F3** to show the state of all points
- **ALL ZNS**←**F4** to show the state of all zones.

In the subsequent point or zone displays, pressing **MENU**←**F4** or **MENU** displays a menu of commands that may be applied to the zone or point. These are described in Chapter 6, ”Zone and Point Functions”.

Note: some points may be programmed to be excluded from off-normal or fault displays because they are not used in a particular *MX1* installation. Therefore, these will never appear in the Faults list or the Off-Normal Points list. However, they may be programmed to appear in the All Points list, and may show a state other than Normal. Some points may be programmed to never be displayed, and these points will not appear in any of the lists.

Recalling Off-Normal Points and Zones

Recall Points

The POINTS←F1 option in the Recall menu (see Figure 5-2) allows the off-normal points to be recalled.

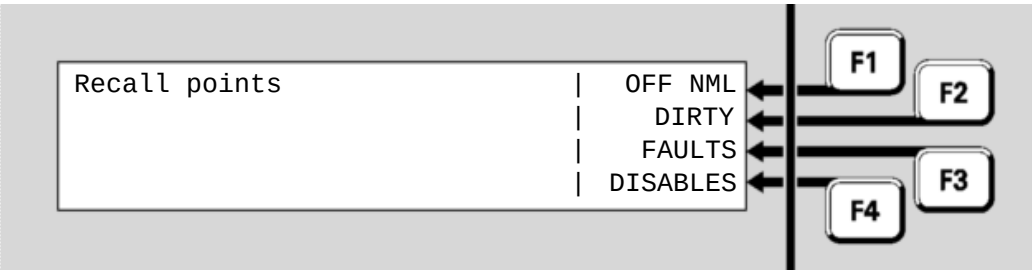


Fig 5-3 – Recall Points Display

Press:

- **OFF NML**←F1 to show all the off-normal points (i.e., not in a Normal state)
- **DIRTY**←F2 to show all points in the dirty condition
- **FAULTS**←F3 to show all points in fault
- **DISABLES**←F4 to show all disabled points.

If your panel is connected to a network you will see the following menu after you select one of the menu items:

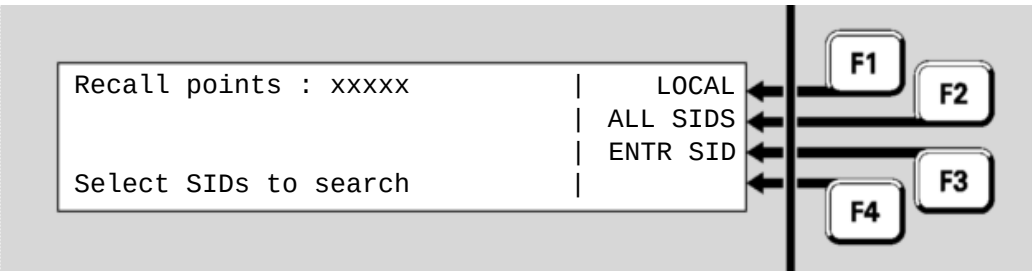


Fig 5-4 – Recall Points Network Menu

Press:

- **LOCAL**←F1 to show the selected points on the local *MX1*
- **ALL SIDS**←F2 to show the selected points on the network
- **ENTR SID**←F3 to show the selected points on a particular *MX1* panel. This will prompt you to enter the SID of the panel to search.

The points are displayed in numerical order, starting with the lowest numbered point. An example is shown in Figure 5.5.

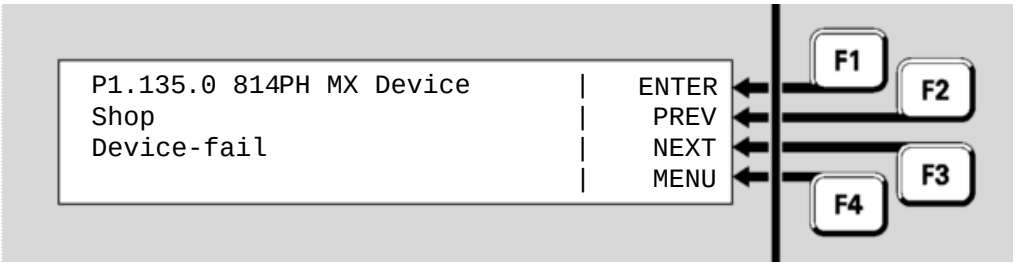


Fig 5-5 – Off-Normal Point Display

- Line 1 shows the point number, device type and point type.
- Line 2 shows the point description.
- Line 3 and 4 shows the point status. Refer page 1-12 for details.

In this example, point 1.135.0 is for a device which has been removed or become disconnected, hence the Device Fail status. ”Shop” is the point description set in the site-specific configuration. It indicates the physical location of the device.

From the point display, pressing **NEXT** or **NEXT**←**F3** steps to the next point.

After the highest numbered point, the list wraps around to the lowest numbered point again.

Pressing **PREV**←**F2** steps to the previous point in the list.

Press **ENTER**←**F1** to show the point number entry display:

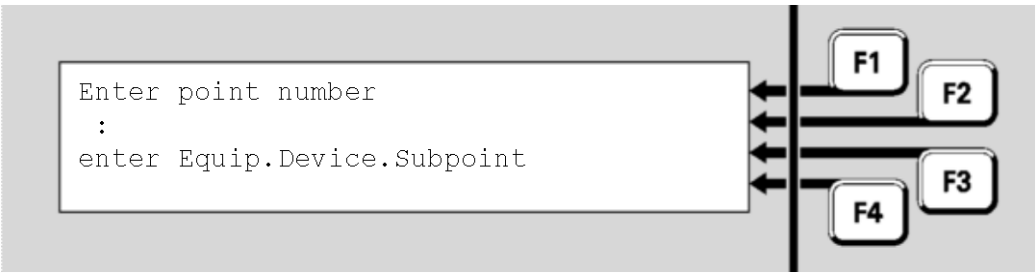


Fig 5-6 – Point Number Entry Display

This allows a new point number to be entered and its status recalled.

Enter the required point number and press **OK**.

Recall Zones

The ZONES←F2 option in the Recall menu (see Figure 5-2) allows the off-normal zones to be recalled.

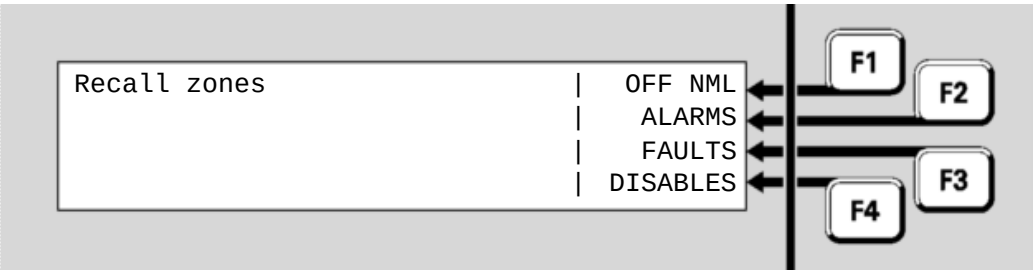


Fig 5-7 – Recall Zones Menu

Press:

- **OFF NML**←F1 to show all off-normal zones (i.e., not in a Normal state)
- **ALARM**←F2 to show all zones in alarm
- **FAULTS**←F3 to show all zones in fault
- **DISABLES**←F4 to show all disabled zones.

If your panel is connected to a network you will see the following menu after you select one of the menu items:

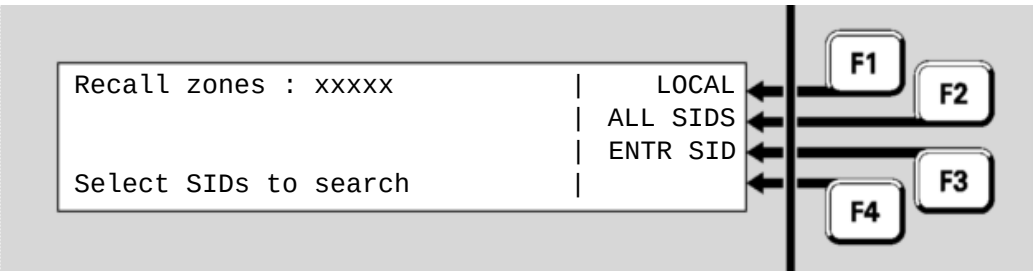


Fig 5-8 – Recall Zones Network Menu

Press:

- **LOCAL**←F1 to show the selected zones on the local *MX1*
- **ALL SIDS**←F2 to show the selected zones on the network
- **ENTR SID**←F3 to show the selected zones on a particular *MX1* panel. This will prompt you to enter the SID of the panel to search.

The zones are displayed in numerical order, starting with the lowest numbered zone. An example is shown in Figure 5.9.

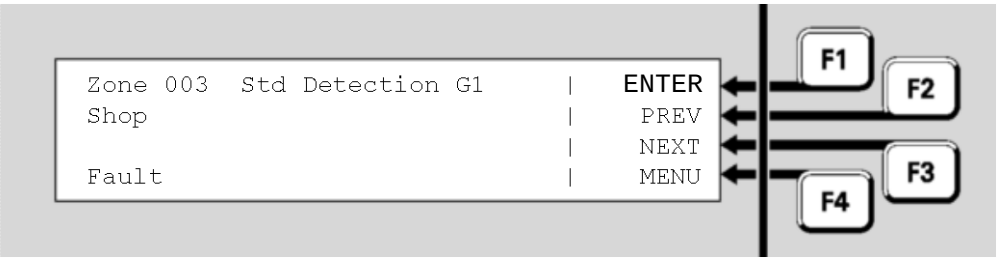


Fig 5-9 – Off-Normal Zone

The display shows the zone number and its operating profile on the top line, the zone text on the second line, and the zone status on the third and fourth lines. Refer to page 1-15 for details on the zone status conditions.

Function keys **NEXT←F3** and **PREV←F2** step forwards and backwards through the list of zones.

All Points

The **ALL-PNTS←F3** option in the Recall menu (see Figure 5-2) allows all configured points to be recalled.

If your panel is connected to a network you will see the following menu:

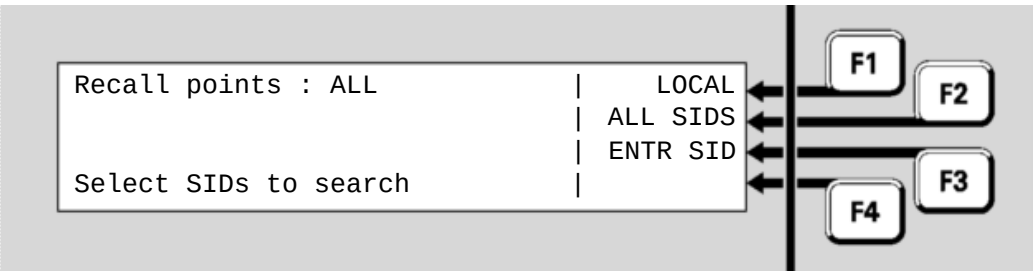


Fig 5-10 – Recall All Points Network Menu

Press:

- **LOCAL←F1** to show the selected points on the local *MX1*
- **ALL SIDS←F2** to show the selected points on the network
- **ENTR SID←F3** to show the selected points on a particular *MX1* panel. This will prompt you to enter the SID of the panel to search.

All configured points will be displayed starting at the lowest numbered point, irrespective of the point condition. An example is shown in Figure 5.11.

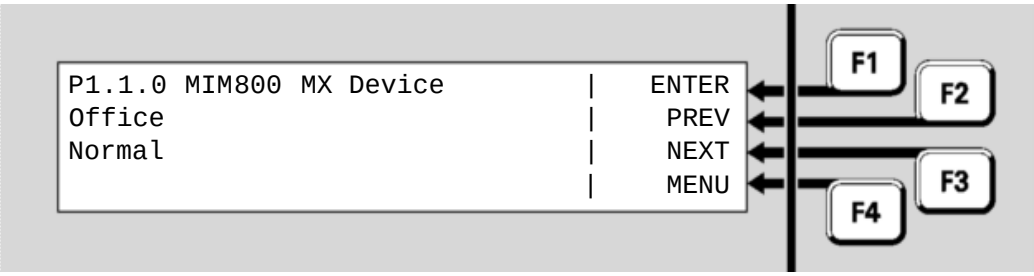


Fig 5-11 – Point Recall Display

Point numbering and usage is described in detail in Chapter 1, Point Numbers (page 1-12).

All Zones

The **ALL ZNS**←**F4** option in the Recall menu (see Figure 5-2) allows all configured zones to be recalled.

If your panel is connected to a network you will see the following menu:

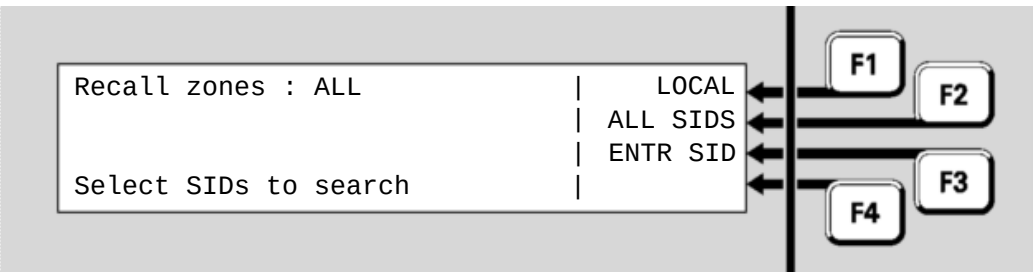


Fig 5-12 – Recall Zones Network Menu

Press:

- **LOCAL**←**F1** to show the selected zones on the local *MX1*
- **ALL SIDS**←**F2** to show the selected zones on the network
- **ENTR SID**←**F3** to show the selected zones on a particular *MX1* panel. This will prompt you to enter the SID of the panel to search.

All configured zones will be displayed starting at the lowest numbered zone, irrespective of the zone condition. An example is shown in Figure 5.13.

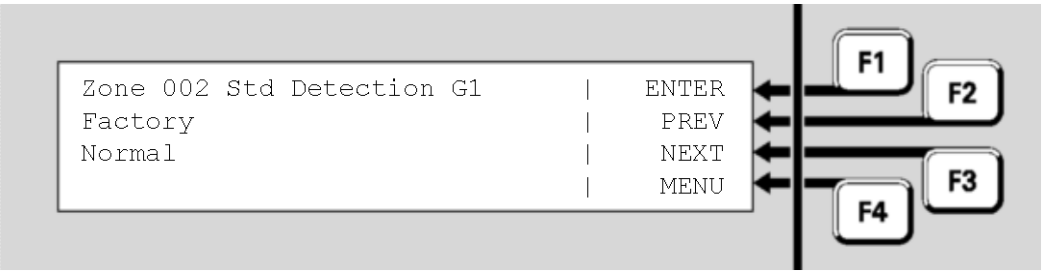


Fig 5-13 – Recall Zone Status Display

"002" is the number of the zone. "Std Detection G1" is the name of the operating profile that has been programmed for the zone.

"Factory" is the description given to the zone to associate it with its general physical location.

"Normal" indicates that no alarms, faults or other conditions are current for this zone.

Press **NEXT←F3** to navigate forward to the next zone, and **PREV←F2** to move back to the previous zone.

From the All Zones status display, you can directly enter the number of a new zone to be displayed. Press **ENTER←F1** to show the zone number entry display:

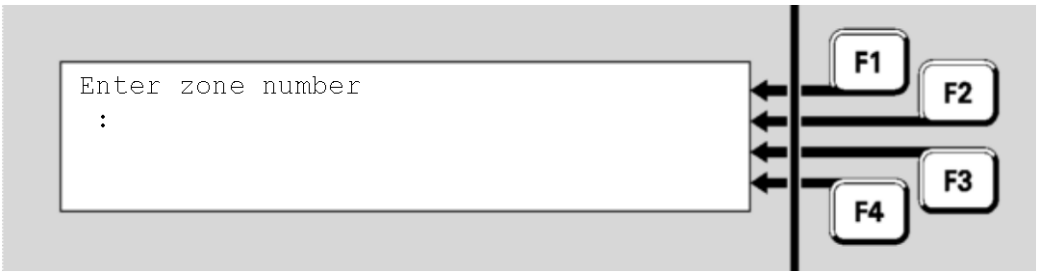


Fig 5-14 – Entering a Zone Number

Enter the number of the zone to be viewed using the numeric keypad, followed by **OK**.

Using the Zone Key to Recall Zones and Points

Zones To recall a zone, press **ZONE** from the base display or Alarm List. Enter the required zone number and press the **OK** key. This will show the recall status display for that zone. See chapter 6 for the commands available on a zone status display.

Points To recall a point, press **ZONE** twice from the base display or Alarm List. Enter the required point number and press the **OK** key. This will show the recall status display for that point. See chapter 6 for the commands available on a point status display.

Chapter 6
Zone and Point Functions

Introduction

This Chapter describes use of the front panel to change the status of zones and points.

Except where noted, all these commands require operator Access Level 2. See page 1-11 for more information about Access Levels.

Equipment points are described on page 12-8.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

Displaying Zone or Point Command Menu

From any of the recall point or zone status displays described in Chapter 5, you can press **MENU** or **MENU**←**F4** to see the commands available for the currently displayed item.

Alternatively, for a zone, press **ZONE** or for a point press **ZONE** twice from the base display or Alarm List. Enter the required zone or point number and press the **OK** key. This will show the recall status display for that zone or point.

For example, in a point recall display pressing **MENU** will show a menu of commands.

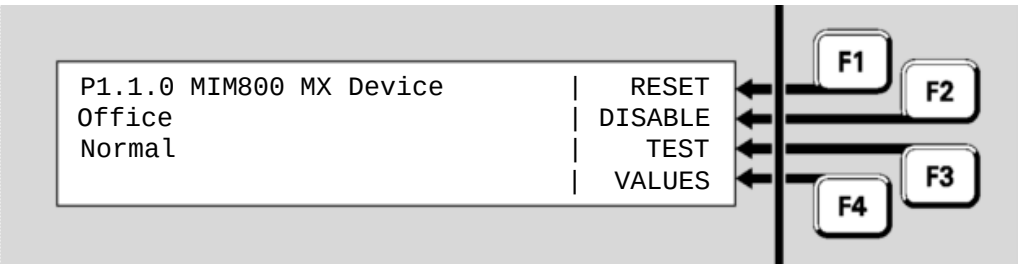


Fig 6-1 – Recall Point Status Display

- **RESET←F1** will reset the displayed point. See the next section for more detail.
- **DISABLE←F2** will disable or enable the displayed point. See page 6-5 for more detail.
- **TEST←F3** will test the point. See pages 6-11 and 6-15 for more detail.
- **VALUES←F4** will display analogue values for a point. See page 6-17 for more detail. This option is not displayed for a zone.

Pressing **MENU** again will switch back to the Recall Point or Zone Status display.

Resetting Zones or Points

Resetting a Zone

From the recall zone status display, press **MENU** or **MENU←F4** to display the zone menu commands.

Press **RESET←F1** or **RESET** to reset the zone.

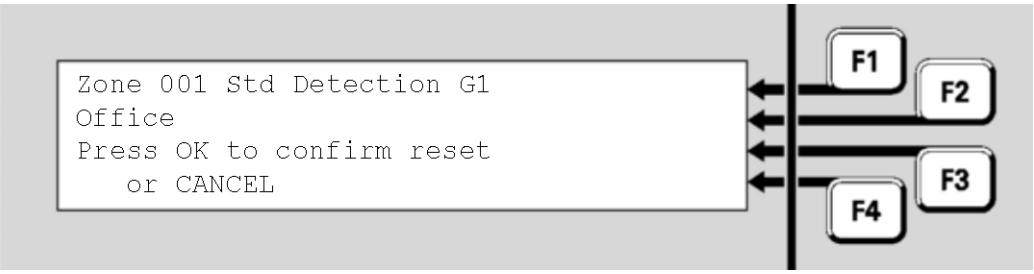


Fig 6-2 – Zone Reset Confirmation Display

In the confirmation display, press **OK** to confirm the reset or **CANCEL** for no action.

Resetting a Range of Zones

Do not press the f.b.p. **RESET** control when the Alarm List is being shown unless the intent is to reset all alarms.

A range of zones can be reset from a base display by pressing the **RESET** key. Reset options are as shown below.

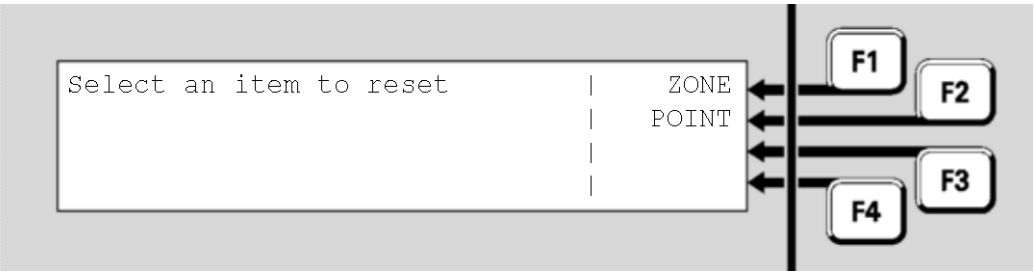


Fig 6-3 – Reset Menu

Press **ZONE←F1**.

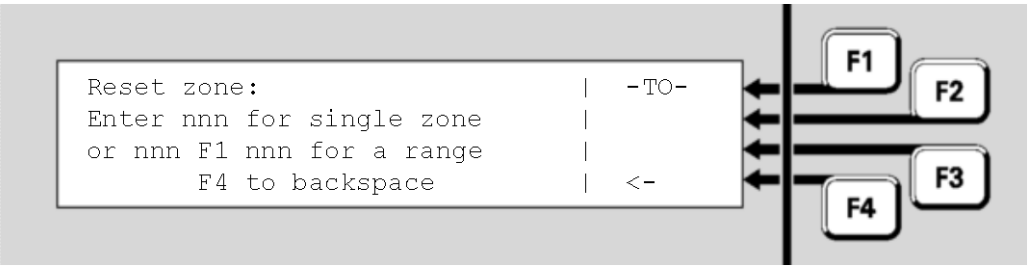


Fig 6-4 – Zone Number Entry Display – Showing Range Option

Enter the first zone in the range to be reset. Then press **F1** and enter the last zone in the range. Press **OK**.

F4 can be used as a backspace key.

The resulting menu offers one or more reset options and a cancel option.

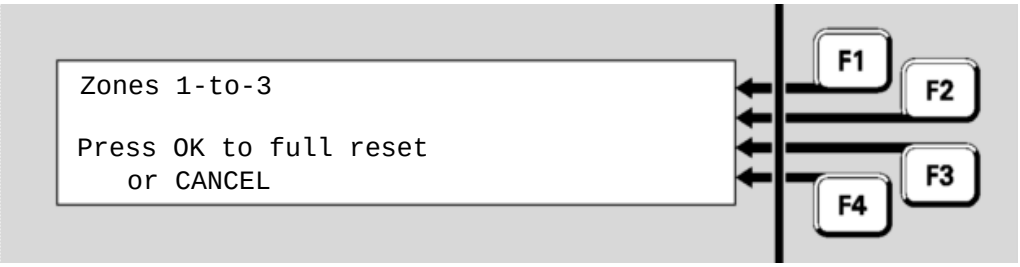


Fig 6-5 – Zone Reset Option Menu

Press **OK**, or **CANCEL**. The system will perform the reset on the configured zones in the range and then display the recall zone status display for the first zone so that the result of the command can be viewed.

Resetting a Point

From the recall point status display, press **MENU** or **MENU**←**F4** to display the point commands.

Press **RESET**←**F1** or **RESET** to reset the point. There are several options for resetting a point:

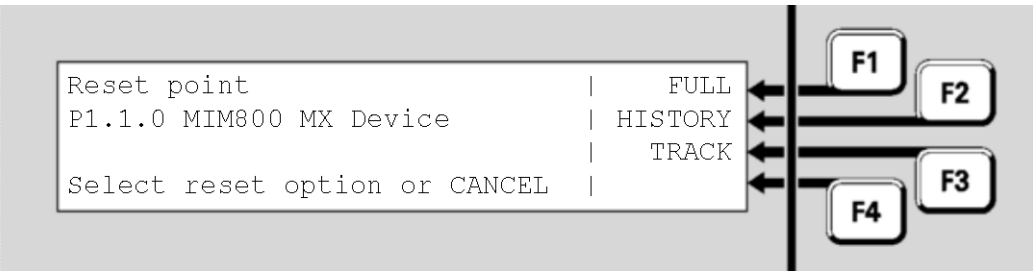


Fig 6-6 – Options For Resetting A Point

- **FULL**←**F1** is the basic reset to restore a point to a Normal state. The alarm and fault states are cleared (if possible) and any tests in progress are cancelled. This option would normally be used only for

latching devices.

- **HISTORY←F2** sets the point's History High and History Low values to the current value, if it has history values. If it does not, this has no effect. Generally, only analogue addressable detectors have history values.
- **TRACK←F3** resets the point's Tracked value to the current value, if it has one. If it does not, this has no effect. Generally, only analogue addressable detectors have Tracked values. This option is useful for resetting the tracking after a new or cleaned detector has been installed.

After selecting the type of reset required you will be asked to confirm or cancel the reset. Pressing **OK** will confirm the reset and display the recall display for the point concerned. Pressing **CANCEL** will return to the display shown above.

Resetting a Range of Points

A range of points can be reset from a base display by using the **RESET** key. Reset options are as shown below.

Do not press the f.b.p. **RESET** key when the Alarm List is being shown unless the intent is to reset all alarms.

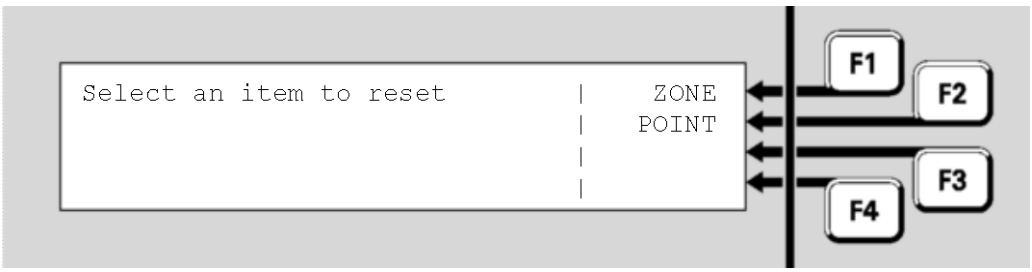


Fig 6-7 – Selecting An Item To Be Reset

Press **POINT←F2**.

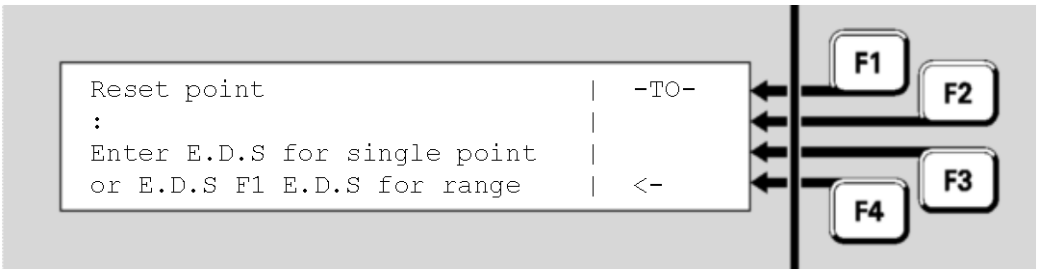


Fig 6-8 – Enter A Point Range To Be Reset

Enter the first point in the range that is to be reset. Then press **F1** and enter the last point in the range.

F4 can be used as a backspace key to correct wrong entries.

For devices on the local panel, you may enter
- a single device or a range of devices, or
- a single point, or a range of points within the same device

For devices on a remote panel, you may enter
- a single point, or a range of points within the same device

For information on point numbers and ranges refer to “Point Numbers” (page 1-13). The *MX1* automatically enters the end-point in the range at the same level as the start point already entered by the operator. For example, if the first point in the range is entered as “1.1.1” and **–TO-**←**F1** is then pressed, the prompt “1.1._” will appear.

Once the point number(s) are entered, press **OK** and you will then be asked to select the reset option. Refer to “Resetting a Point” (page 6-3) for details of the point reset options.

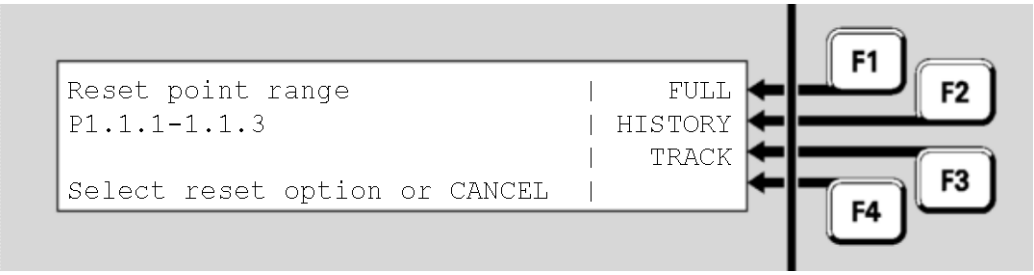


Fig 6-9 – Selecting The Reset Option

Press **FULL**←**F1**, **HISTORY**←**F2** or **TRACK**←**F3**. You will then be asked for confirmation. Press **OK**.

The configured points in the range will be reset for the selected option.

The display will then show the recall point status display for the first point in the selected range. Use the menu options to navigate through the point range, or press **CANCEL** to return to the base display.

If no points are configured in the selected range, the message “No Valid Points Selected” will be shown briefly.

Disabling and Enabling Points or Zones

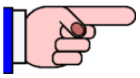
Description of Operation

In general, each zone, each device, and each point may be disabled to stop conditions on the item affecting the system. For example, the smoke sensor point of an 814PH detector may be disabled to stop alarm monitoring for smoke while certain building work is going on around the detector. This will leave the heat sensor point still operational and able to detect alarms.

Disabling a device by entering the equipment and device number (i.e., no subpoint) will normally disable all sensor or input subpoints. With these subpoints disabled, a detector may be completely removed from the loop with the consequential fault condition(s) masked by disable.

Where it is required to disable only a particular element of the sensor, e.g., heat or smoke, then the relevant subpoint only should be disabled.

Note that although device fail conditions are signalled from subpoint 0, fault conditions will still be signalled from other sensor input subpoints if a device is removed with only subpoint 0 disabled.



Some subpoints will be programmed such that they cannot ordinarily be disabled, e.g., detector LED subpoints. However, if these subpoints are in a Device Fail condition, they can be forced into a disable state by first logging into Access Level 3 before using the disable point command(s). In this case the confirmation screen will describe the disablement as a “Force Disable”.

If a zone is disabled this will disable functionality for all its points as well, unless the points map to another zone or their status is used directly. In this case it will be necessary to disable the points directly.

If all points that map to a zone are disabled then the zone becomes disabled automatically. It will not be possible to enable the zone until at least one point that maps to the zone is enabled. Note that you must separately enable the zone after you have enabled the point.

As soon as a zone is enabled it will resume its programmed behaviour in activating alarm devices, alarm outputs and fault outputs.

MX1 uses non-volatile memory to store disable status for zones, points, ancillary groups and the alarm devices. If the *MX1* is powered down or restarted within 10 seconds of disabling or enabling a zone, point, etc., then the new status may not be stored correctly and the old status will remain.

Disabling or enabling a Point from a Recall Point Status display

From a recall point status display (refer Chapter 5), press **PREV**🡐**F2** or **NEXT**🡐**F3** to reach the required point, then press **MENU**🡐**F4.**

Press **DISABLE**🡐**F2** or **DISABLE** to disable or enable the point. In the confirmation display, press **OK** to confirm or **CANCEL** for no action.

If this point is configured so that it cannot be disabled, a message “**This point cannot be disabled**” will be displayed briefly.

Disabling or Enabling a range of Points

From the base display, press **DISABLE**, then **POINT**←**F2**.

Do not press the f.b.p. **DISABLE** control when the Alarm List is being shown unless the intent is to disable all alarms.

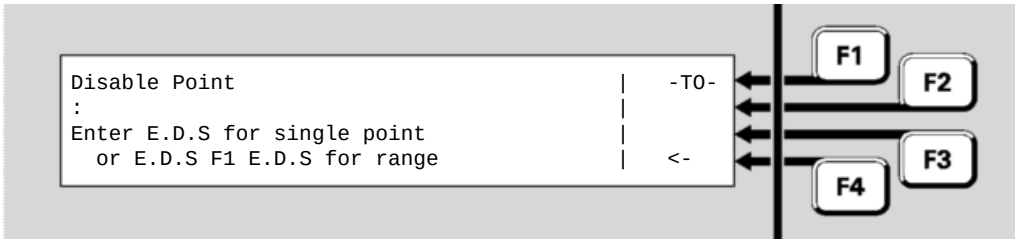


Fig 6-10 – Point Number Entry Display – Disable Points

Enter the first point in the range, then **F1** followed by the last point in the range. Point numbering is described in "Point Numbers" on page 1-13. Note that the selected range cannot span equipment numbers. If the starting point is a device number then the end point must be another device on the same equipment number. If the starting point number includes a sub-point, then the end point must include a sub-point of the same device. After pressing the **-to-**←**F1** key, the end point entry is automatically configured to the allowed range.

F4 can be used to backspace to correct wrong entries.
Press **OK**. If no configured points exist in the entered range, "No Valid Points Selected" is shown briefly before the point number entry display (Fig 6-10) is re-displayed.

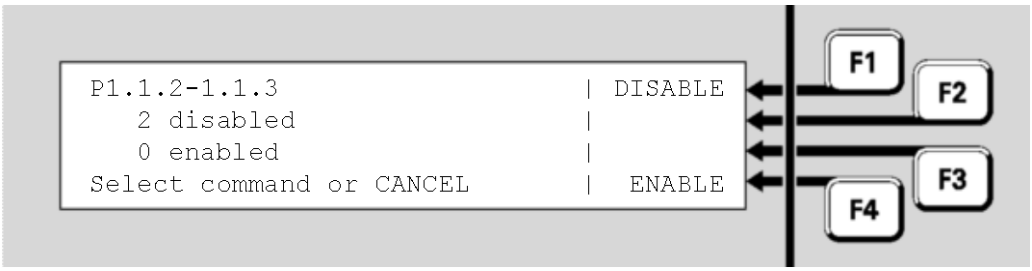


Fig 6-11 – Point Disable/Enable Menu

Fig 6-11 shows the number of configured points in the range that are already disabled and enabled.

Press **F1** to disable the range of points, or **F4** to enable the range of points. A confirmation display will be shown.

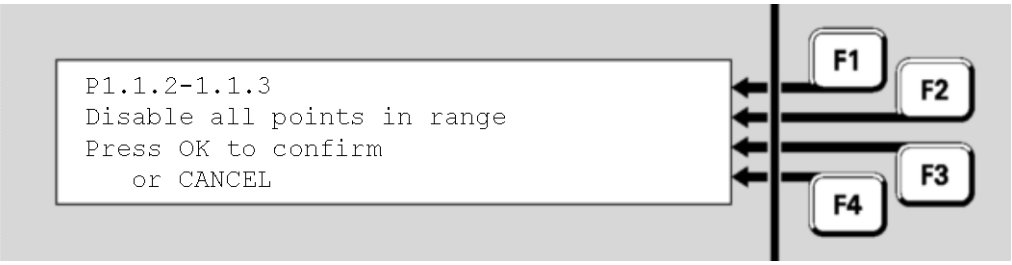


Fig 6-12 – Disable Point Range Confirmation Display

Press **OK** to carry out the function or press **CANCEL** to abort the command and return to the previous display.
On Enabling a range of points the following choice is given:

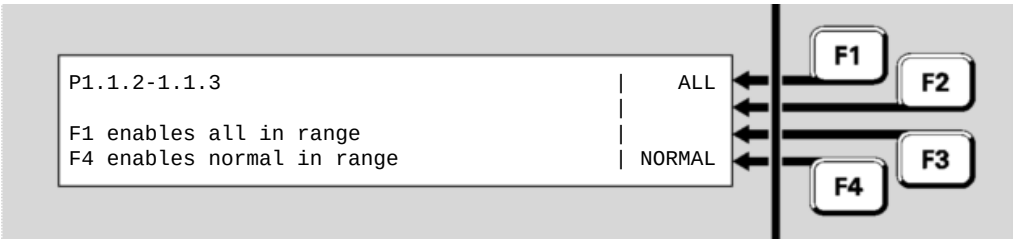


Fig 6-13 – Enable Point Range Choice Display

Pressing:
- **ALL←F1** will enable all points in the range irrespective of their status (e.g., points could be in alarm).
- **NORMAL←F4** will enable only those points in the range that are in the Normal condition (i.e., points in alarm, fault, test, etc., will remain disabled).

Press **OK** in the following confirmation screen to carry out the selected point enables.

Disabling or Enabling a Zone from Recall Display

From the Recall Zone Status display, press **MENU** or **MENU←F4** to display the zone commands.

To jump to a specific zone, press **ENTER←F1** from the Recall Zone Status display and enter the required zone number - for example, Zone 23. This would be entered as **2** **3** **OK**.

Press **MENU←F4**, then **DISABLE←F2** or **DISABLE** to disable the zone. If the zone is already disabled, the F2 option will be **ENABLE** instead of **DISABLE**. In the confirmation display, press **OK** to confirm or **CANCEL** to abort the command.

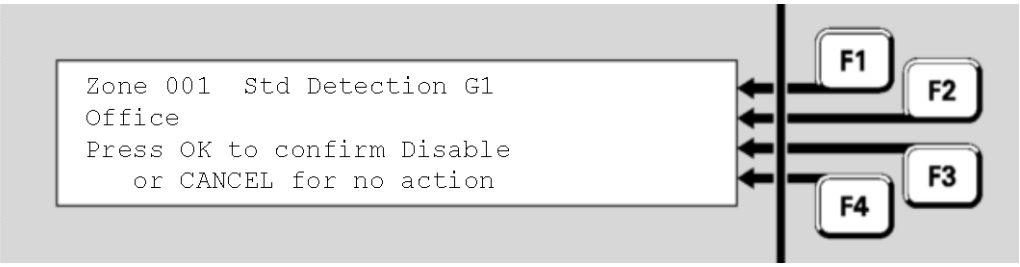


Fig 6-14 – Confirming Zone Disable

When a zone is disabled, the corresponding zone indicator will light yellow.

If this zone is configured so that it cannot be disabled, a message, "**`This zone cannot be disabled`**", will be displayed briefly.

Disabling or Enabling a Zone or a Zone Range

Do not press the f.b.p. **DISABLE** control when the Alarm List is being shown unless the intent is to disable all alarms.

From the base display press **DISABLE**, then **ZONE**←**F1**. A single zone or a range of zone numbers can be entered in this display:

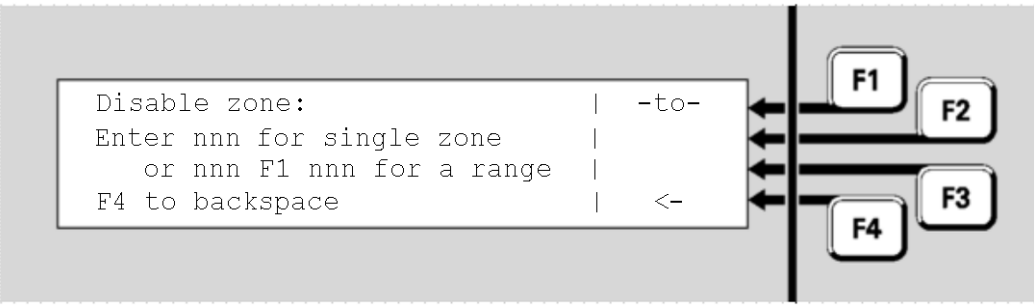


Fig 6-15 – Entering Zones To Be Disabled or Enabled

Enter a single zone or the required range and press **OK**. For example:

- If only zone 2 is to be disabled, this is entered as **2** **OK**.
- If the zone range 23 to 38 inclusive is to be enabled or disabled, this would be entered as **2** **3** **F1** **3** **8** **OK**.

F4 can be used as a backspace key to correct entry mistakes.

If a single zone has been entered, this display results;

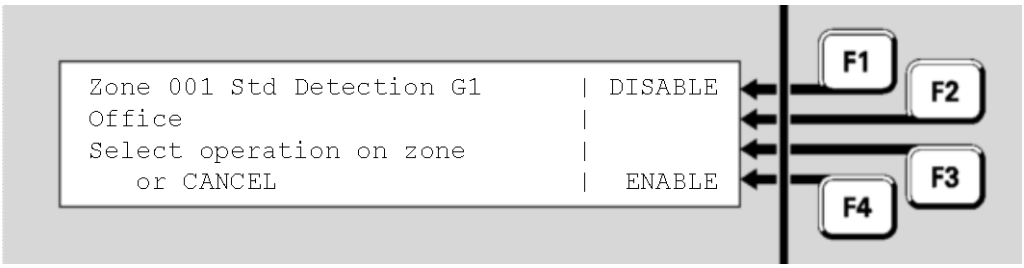


Fig 6-16 – Disabling Or Enabling A Single Zone

Press **DISABLE**-**F1** to disable the zone or **ENABLE**-**F4** to enable the zone. Press **OK** in the following confirmation display to complete the command, or **CANCEL** to abort it.

If a range of zones has been entered, the next display shows how many configured disabled and enabled zones there are in this range. Note that the entered zone range may include zone numbers that are not configured for this system, and therefore the sum of the disabled and enabled zones displayed may not tally with the apparent number of zones.

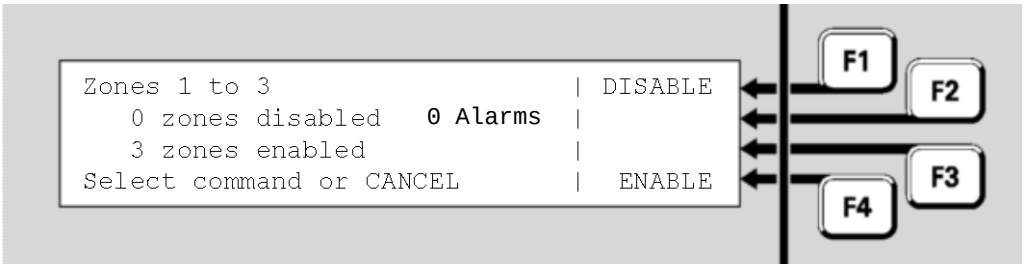


Fig 6-17 – Displaying/Enabling a Range of Zones

To disable the range of zones, press **DISABLE**←**F1**, and a confirmation display will result.

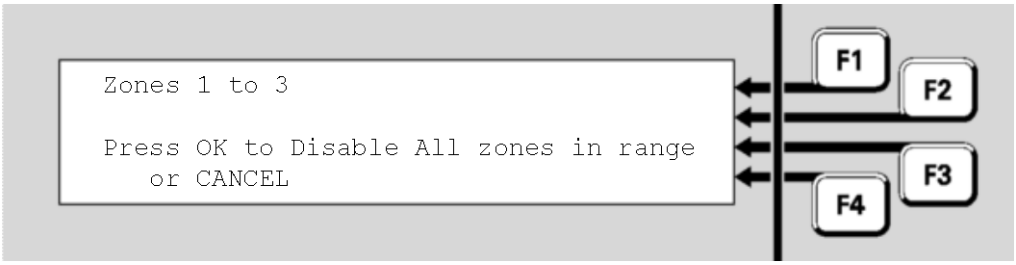


Fig 6-18 – Disabling All Zones In A Range

Press **OK** to confirm the command. You will be returned to the Recall Zone Status display for the first zone in the specified range. Press **CANCEL** to return to the previous display.

To enable the zones in the range (refer Fig 6-17), press **ENABLE**←**F4**.

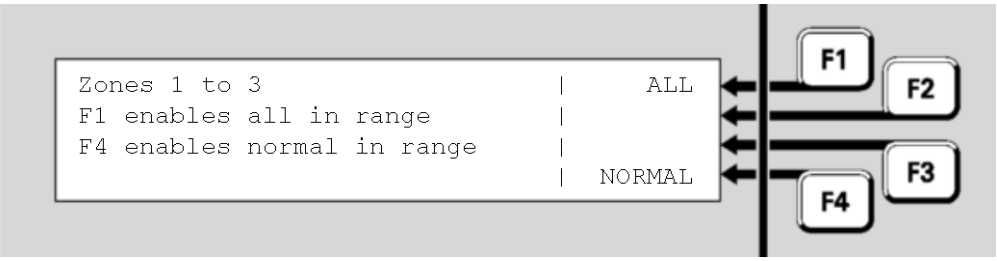


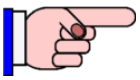
Fig 6-19 – Choice for Enabling A Range Of Zones

Selecting **ALL**←F1 will enable all zones in the range, irrespective of their status.

If any of these zones are in Alarm or Fault states, they will resume their programmed behaviour in activating alarm devices and fault outputs once they have been enabled.

If **NORMAL**←F4 is selected, only those zones in the range that are in the normal state will be enabled. Since (dependant on the configuration in use) enabling zones in alarm could activate remote signalling, alarm devices, etc., this option permits the system to be returned to service without accidentally enabling an alarm and perhaps signalling the brigade.

In the confirmation display press **OK** to enable the zones in the range, or **CANCEL** to abort the command.



Attempting to enable a zone that has all of its points disabled will not work even though it falls within the specified range of zones. To enable the zone, one or more of its points will need to be enabled first.

Testing Zones

From the recall zone status display, press **MENU** or **MENU**←F4 to display the menu options, then press **TEST**←F3 to display the zone test menu.

Alternatively, from the base display press **TESTS**, **INITIATE**←F4, **ZONE**←F1 and enter the zone number.

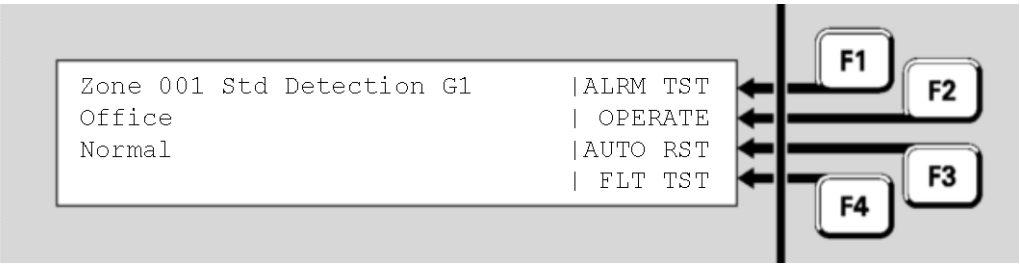


Fig 6-20 – Zone Test Status and Menu

Test options for a zone are:

- **ALRM TST**←F1 – perform an alarm test on this zone.
- **OPERATE**←F2 – force all output points controlled by this zone to operate.
- **AUTO RST**←F3 – put this zone into Auto-Reset test.
- **FLT TST**←F4 – perform a fault test on the zone.

If any of these test options is selected, a confirmation display/prompt will be displayed. Press **OK** to confirm that the test should start.

While the test is running, none of the other tests can be started for this zone. However, tests can be started or stopped on other zones, and other front panel functions can be used, for example viewing history, point status recalls, etc.

The zone test can be stopped by resetting the zone. This is most easily done by pressing the **TESTS** key then **SEARCH**←F1, to display the list of items currently being tested, stepping to the desired zone under test by pressing **NEXT**, and pressing **RESET** then **OK** to confirm the reset.

Do not start any zone tests while the zone is being reset (resetting is shown on the status screen) as the reset process will clear the test.

Alarm Test

This test generates an alarm in the zone by finding all enabled points that are mapped to the zone and putting them into a test alarm condition. Those devices with a physical alarm test capability will have it activated. Other devices will have an alarm condition simulated by the *MX1*. An Alarm Test can be performed on both Enabled and Disabled Zones. The Enabled zones will be automatically disabled at the start of the test so as not to activate any outputs.

The zone can be manually enabled during the test so that the flow-on effects of the alarm can be observed.

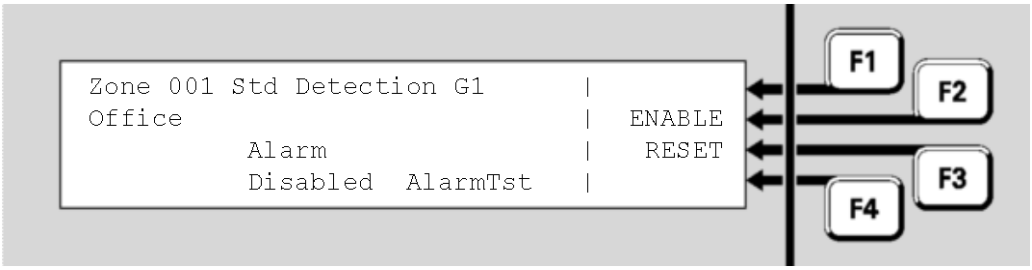


Fig 6-21 – Zone Alarm Test Status and Menu

Press **ENABLE**← F2 to enable the zone. Note that enabling the zone while the alarm test is in progress may sound the alarm devices, call the brigade, etc., when the zone goes into alarm.

Pressing **RESET←F3** will end the test and clear any alarm indications. It will also restore the zone's enable/disable status to what it was before the test was started.

The test passes when the zone goes into the alarm condition. The zone will go into alarm condition only when all enabled points mapped to it have gone into alarm. If this does not occur (e.g., because a device is in Device Fail or all alarm-generating points are disabled) within three minutes the test will fail.

Note: Each point put into alarm by the Zone alarm test will be logged (if enabled) to the printer and history, show Alarm in their status and activate any directly controlled outputs.

Operate Test

This test will allow all the output points controlled by the zone to be operated. After the test command is confirmed, the zone will be disabled. It is necessary to enable the zone to actually operate all the output points. They will then operate for a programmed time (typically 5 seconds) or until the zone is disabled (**F2**), the test stopped (**F1**), or the zone reset (**F3**).

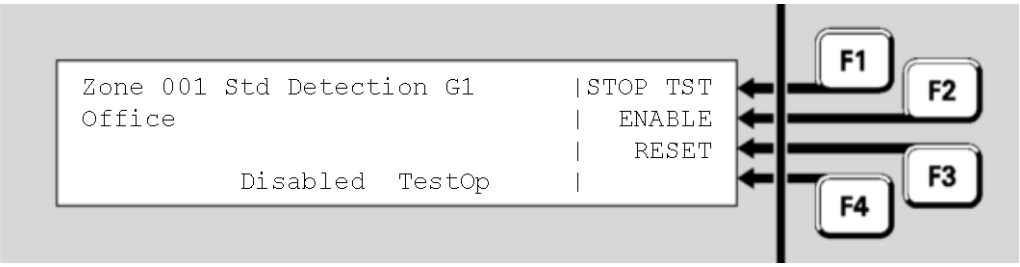


Fig 6-22 – Zone Operate Test Status and Menu

During the test, the menu options are:

- **STOP TST←F1** – stops the operate test on this zone.
- **ENABLE←F2** – will enable the zone in order to allow the output points to be actually operated.
- **RESET←F3** – stops the operate test and also resets any latched states (e.g., faults) for this zone.

Note that both **STOP TST← F1** and **RESET←F3** will also restore the zone's enable/disable status to what it was before the test was started.

Auto-Reset

The Auto-Reset test allows *in-situ* alarm testing of detectors and devices mapped to the selected zone without the need for a second person resetting alarms at the *MX1* panel.

The test bypasses all filtering, i.e., AVF, SmartSense and FastLogic are turned off, so that each device goes into alarm as fast as possible.

The Auto-Reset test uses the alarm devices to signal to the tester when a device mapped to the tested zone has gone into alarm (or Active Input). The alarm devices are operated for approximately 3 to 4 seconds, but only if the alarm devices are enabled. As additional points are tested, the alarm devices will operate as noted.

Once the point has gone into alarm (or into Active Input) and been processed by the zone the point is then ignored until it returns to normal (for at least 60 seconds). This allows devices to be tested quickly in succession, without waiting for smoke to clear or temperature to drop, for example. The zone status display and alarm LED continue indicating alarm even though the point alarms clears.

The Alarm (or Active Input) event for each point will be recorded in the event history, if event logging has been configured for the point. See Chapter 4 for more about viewing the event history.

The zone is automatically disabled during Auto-Reset test to prevent operation of mapped outputs, the alarm devices and alarm routing. However outputs activated directly from the point states will continue to work during Auto-Reset test unless the points or outputs are disabled.

If the zone is manually enabled during the Auto-Reset test all outputs controlled by the zone (including, for example, alarm routing) will operate.

If the zone is configured so that it cannot be disabled, Auto-Reset test cannot be used.

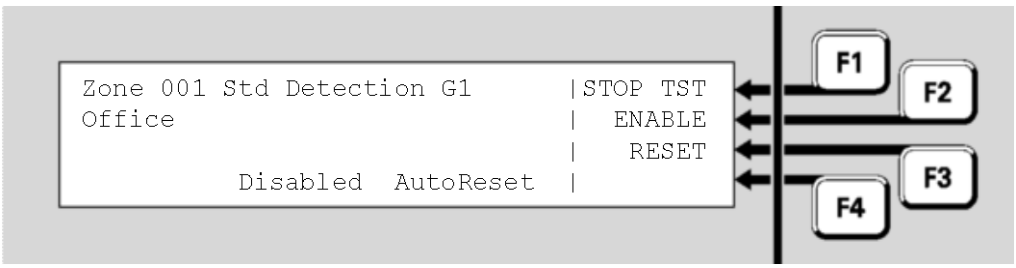


Fig 6-23 – Zone Auto-Reset Test Status Menu

During the test, the menu options are:

- **STOP TST**←F1 – stops the Auto-Reset test on this zone and then enables the zone.
- **ENABLE**←F2 – will enable the zone in order to allow the mapped output points to be operated.
- **RESET**←F3 – stops the Auto-Reset test and also resets any latched indications (e.g. fault) for this zone. The zone will revert to its original Disabled state (unless this was changed during the test).

Note that both **STOP TST**← F1 and **RESET**←F3 will also restore the zone's enable/disable status to what it was before the test was started.

The Auto-Reset test will automatically cancel if no new alarm is received for two hours. In this case, the zone will revert to the state it was in (enabled or disabled) when the test was started.

On exiting the test (whether stopped, reset, or timeout) if an alarm is still present (e.g., call point left operated) the alarm will be treated normally and may generate a nuisance alarm. Therefore it is recommended the zone be disabled before the test, and enabled again only after confirming 1-2 minutes after the test is exited that the state of the zone is normal.

Fault Test

This test generates a fault condition for the zone. You will be asked to confirm or cancel the test. The following display will be shown during the test;

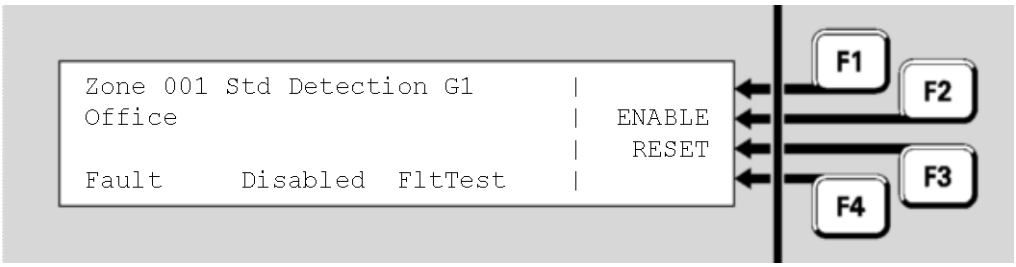


Fig 6-24 – Fault Test Status Menu

If the zone does not go into fault, the test fails.

Note that the test will disable the zone being tested, and the fault is simulated. If it is required to test how the system is affected by the zone fault, the zone can be manually enabled during the test by pressing **ENABLE**←**F2**.

To stop the test, press **RESET**←**F3.** This will also restore the zone's enable/disable status to what it was before the test was started.

Testing Points

From the recall point status display, press **MENU** or **MENU**←**F4** to display the menu options.

Press **TEST**←**F3** to display the test options for the point, which will depend on the point type, as described in the following sections.

Alternatively, from the base display, press the **TESTS** key, **INITIATE**←**F4** and select **POINT**←**F2**. Enter the required point number, then press **OK**.

Addressable Detectors and Modules

Addressable devices, such as detectors, have several inputs and outputs differentiated by the sub-point number. For example, an *MX* 814CH detector has:

- An analogue input point for the CO sensor,
- An analogue input point for the heat sensor,
- An output point for the integral LED,
- An output point for the remote indicator,
- An output point for a functional base.

Each point can be tested independently.

Analogue Input Point

The test options for an analogue input point are:

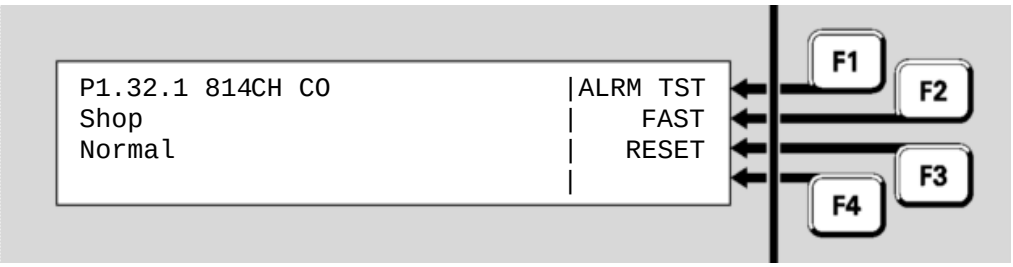


Fig 6-25 –Analogue Input Point Test Menu

- **ALRM TST**←**F1** starts a full alarm test. Any programmed delays and algorithms for the point will be included.
- **FAST**←**F2** starts a fast alarm test, bypassing any programmed delays and algorithms.
- **RESET**←**F3** resets the point.

WARNING: the Alarm and Fast point tests do not automatically disable the point (or mapped zones) so all programmed alarm devices and alarm routing operate as for a real alarm.

Disabling the point or mapped zone(s) before the test will prevent these operating, and only the display and zone indicator will show the alarm.

The amount of time taken for an Alarm or Fast test is dependent on the type of device being tested, and on detailed settings in the system configuration. For example, heat and smoke detectors with nuisance alarm rejection algorithms will react more slowly to an Alarm test than to a Fast test, whereas a contact input point will react quickly to both Alarm and Fast tests.

Input Points

An input point is something such as General Purpose Input 1 on the controller board. There are no test options for these points.

Output Points

An output point is something that can be controlled, such as an *MX* device LED or an ancillary relay.

Test options for output points are:

- **OPON←F1** puts the point into the Operated state, after a confirmation prompt.
- **RESET←F3** resets the point, including any latched states and turns off any TestOp state.

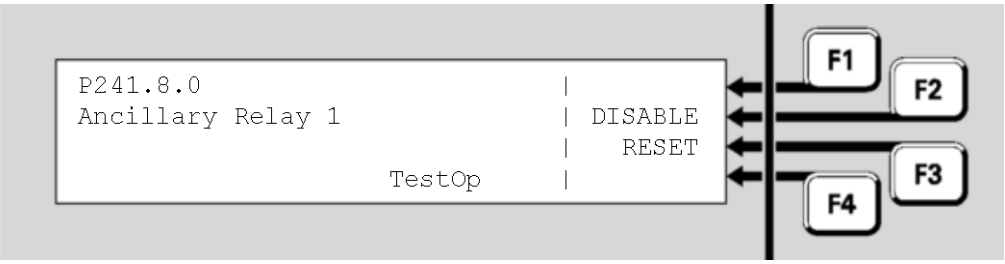


Fig 6-26 – Output Point - Test in Progress

While the Operate Test is active, the test options are:

- **DISABLE←F2** will disable the point. If the point is already disabled this option will be **ENABLE←F2**.
- **RESET←F3** resets the point (stopping the test), including any latched states.

The point is not automatically disabled by this test, so testing some outputs may activate external equipment such as sounders, door releases or even fire suppression equipment.

Also, at most 10 detector LEDs can be turned on at the same time. Testing more than 10 simultaneously will still pass, just the LED will not turn on.

Viewing Point Values and Settings

Using Point Value Data

MX1 translates sensor readings into analogue values. These values are processed by algorithms to determine the status of the point. The raw values, equivalent levels measured in physical units (for example, ppm CO, ºC Temperature, % Obscuration, % Alarm) and algorithms for a point can be recalled on the display.

These are intended for device fault or performance diagnosis, and are not very meaningful without a good understanding of the system.

Displaying Point Values

From the Recall Point Status display, press **MENU** or **MENU←F4**:

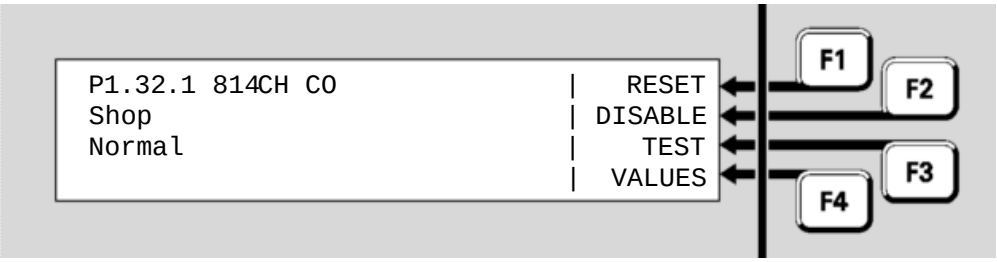


Fig 6-27 – Recall Point Status Display

Press **VALUES**←**F4** to view the point's current levels. Note that not all points have information for any or all of these displays. For those points, the *MX1* displays messages to that effect.

Current Level Values

These examples show typical displays for the points of an *MX* 814CH combined carbon monoxide and heat addressable detector.

The display shows the sensor/input current level, that is, a value converted from the raw value into appropriate, real-world units, together with the pre-alarm and alarm thresholds.

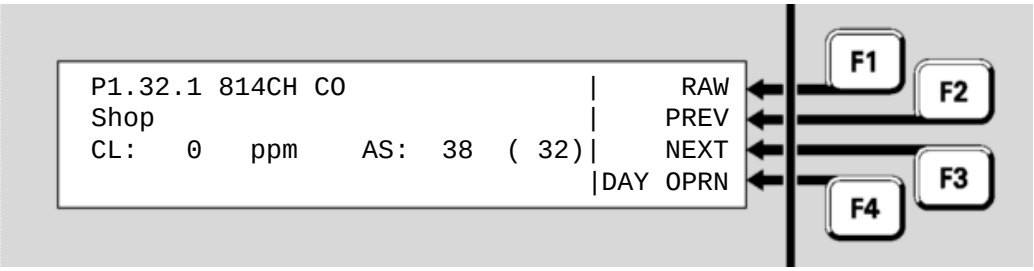


Fig 6-28 – Point Current-Level Display – Physical Values

- CL - Current level in appropriate units for the device type, in this case, parts per million of carbon monoxide.
- AS - Alarm Sensitivity (threshold) in parts per million of carbon monoxide, followed by the Pre-Alarm Sensitivity (threshold) in parts per million of carbon monoxide in brackets for the current algorithm (day or night mode). For smoke detectors using the fast logic algorithm the alarm sensitivity is shown as 0.0 = Low, 0.1 = Med, 0.2 = High; and the pre-alarm sensitivity is always 0.
- For heat devices, the fourth line may also contain Rate-of-Rise (ROR) information.

The displayed values will be updated at about 5 second intervals, as new readings are received from the detector.

Raw (Unconverted) Data Readings

Pressing **RAW**←**F1** will show the raw (unconverted) readings from the sensor/input:

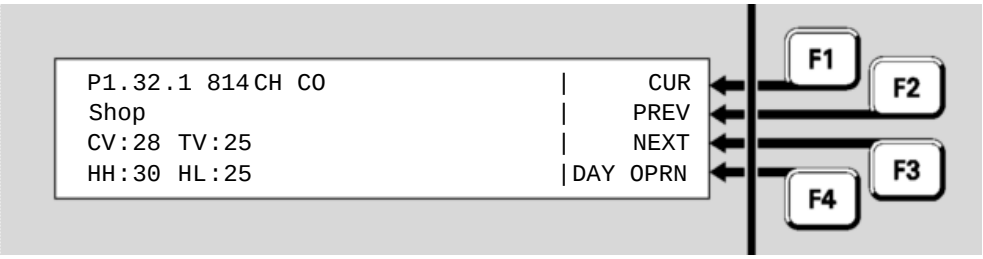


Fig 6-29 – Point Raw-Value Display

The readings displayed will depend on the *MX* point type and include:

- CV - Current Value, or RAW - raw value. The unconverted current value or reading for the sensor or input, but calibrated as required for the device.

  If the raw value from the sensor indicates a fault (e.g., very low value) then the raw value is the uncalibrated value so the actual fault can be seen. Also the current level will be 0.

- TV - Tracked Value, a long-term smoothed version of CV. For 801F and 801FEx flame detectors this shows the fault status.
- HH and HL - History High and History Low are the highest and lowest values of CV since the point's history was last reset (see page 6-3).
- For heat sensors that have Rate-of-Rise enabled the current rate-of-rise (RoR) and the highest rate-of-rise (RoRHH) values are also shown.
- For photoelectric sensors, the contamination level is shown on the third line.
- H% shows the history high as a percentage of the alarm threshold. For example, H% = 120 means the input went to 120% of the alarm threshold.

To return to the Point Current-Level Display (physical units of measure) press **CUR←**F1.

Algorithm

Pressing the **DAY OPRN←**F4 key on any point value display will show the Day algorithm for that point if the point is on an *MX1* panel..

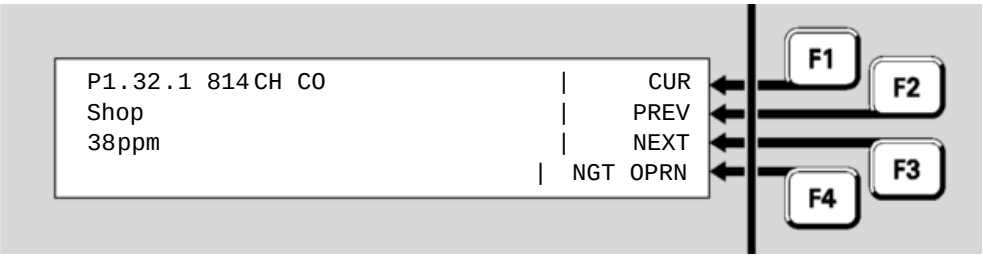


Fig 6-30 – Point Algorithm Settings

On the third line the name of the Day algorithm will be shown – typically this will describe the detection mode and sensitivity. Then pressing **NGT OPRN←**F4 will show the name of the Night algorithm (usually this will be the same as the Day algorithm). The currently used sensitivity settings are shown in the Point Current Level Display (Fig 6.28).

Dirty

Pressing the **DIRTY←**F4 key on any point value display will show the percent dirty values for that point if the point is on an *MX4428* panel.

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Chapter 7
Logging On to Access Level 3

Introduction

Most service functions are available at Access Level 2. See Access Levels on Page 1-11.

Critical service functions are available at Access Level 3 which is entered on the keypad using a User Code and PIN at Access Level 2.

This chapter describes logging on to Access Level 3.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

Logging On to Access Level 3

Logging On

If the *MX1* display is not showing one of the base displays (Normal, Off-Normal, Fault or the Alarm List), press **CANCEL** until the base display is reached.

Press **MENU** three times to reach the logon option.

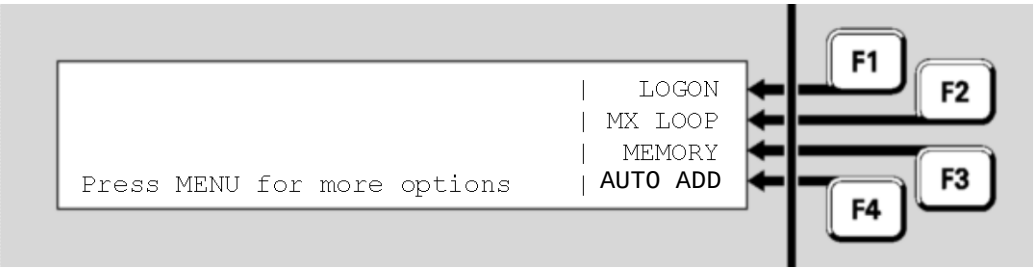

Fig 7-1 – Menu Options-Third Screen

Press **LOGON←F1** to see the logon display. Note that if no option is shown at **F1**, the *MX1* is already at Access Level 3.

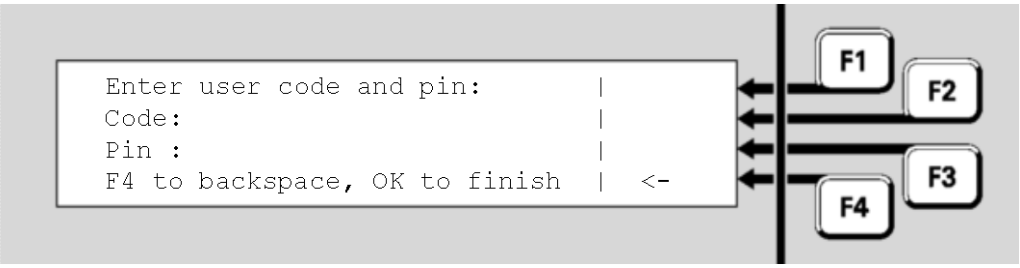

Fig 7-2 – Log On Display

Using the numeric keypad, enter the single digit user code followed by the PIN for this user code. Press **OK** after the PIN is entered.

Each digit of the user code and PIN are represented on the display by an '*' symbol when you enter them. If you mis-key a number, press **F4** to backspace over it, then re-enter the correct number.

If the user code and PIN match, a "verified" display will show briefly:

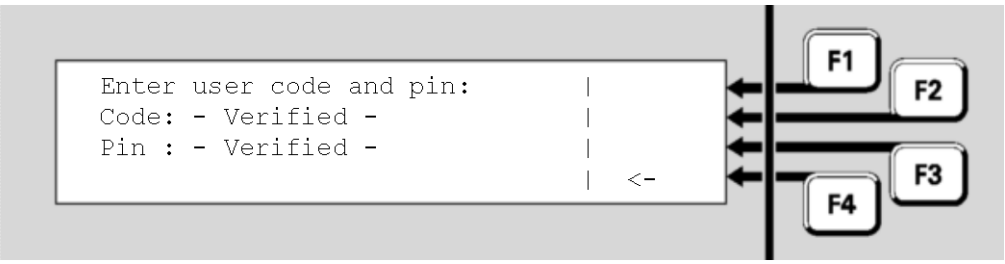

Fig 7-3 – Successful Level 3 Logon

This will be followed by the Menu display, but with the **LOGON←F4** option removed.

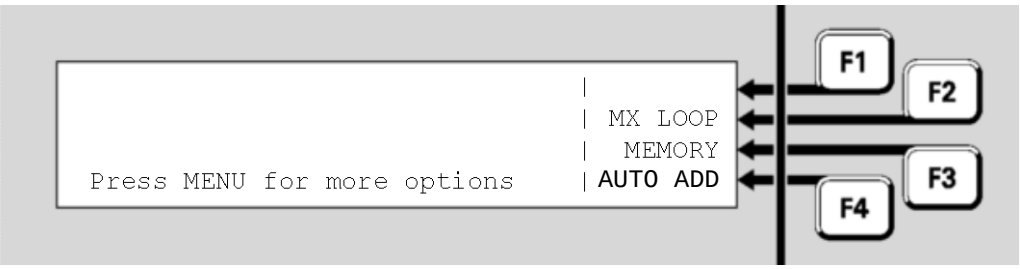

Fig 7-4 – Level 3 Menu Display

Logging Off

You will remain logged on to Level 3 until one of the following happens:

- The cabinet door is closed and locked (which operates the door switch) or the keyboard-enabling keyswitch is switched off.
- The door switch is operated manually.
- The system is restarted as part of loading a new configuration data file.
- The system is powered down and powered up again.
- Ten minutes elapse since the last key is pressed.

Chapter 8
Other Service Functions

Introduction

This chapter describes other service functions that are available from the *MX1* front panel.

Some of these commands require operator Access Level 3. See Chapter 7 for how to log on to operator Access Level 3.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

Front Panel Display Test

Testing the Front Panel Display

The LCD and indicator lights on the front panel of the *MX1* can be quickly checked for correct operation by using the display test.

If the *MX1* display is not showing one of the base displays, i.e., Normal, Off-Normal, Fault or the Alarm list, press CANCEL until the base display is reached.

Press MENU to see a set of options.

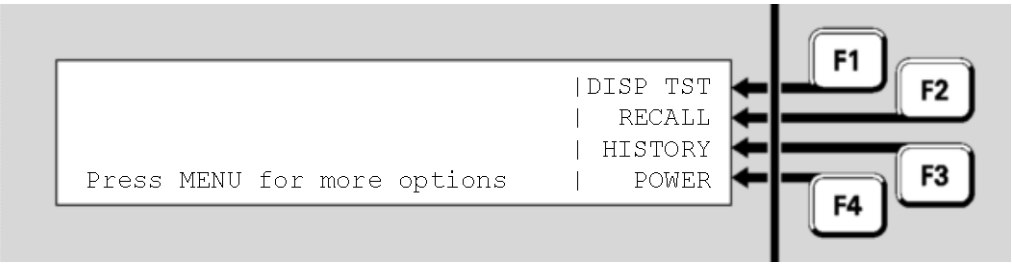

Fig 8-1 – Base Menu

Press **DISP TST**←F1 to start the display test:

- All the keypad indicators apart from the zone indicators will light steadily for the entire test.
- Each column of each set of 16 zone indicators will light in sequence, followed by each row of each set of zone indicators lighting in sequence.
- The LCD will go blank and a solid black horizontal bar will step from the top row to the bottom of the display.
- The buzzer will beep at its quiet and loud volume settings.

At the end of the test, the above menu will be shown again.

Setting System Time and Date

Setting the Time and Date

From the base display, press MENU twice to see a menu with a Date option. Press **DATE**←F2 to select the Date/Time menu:

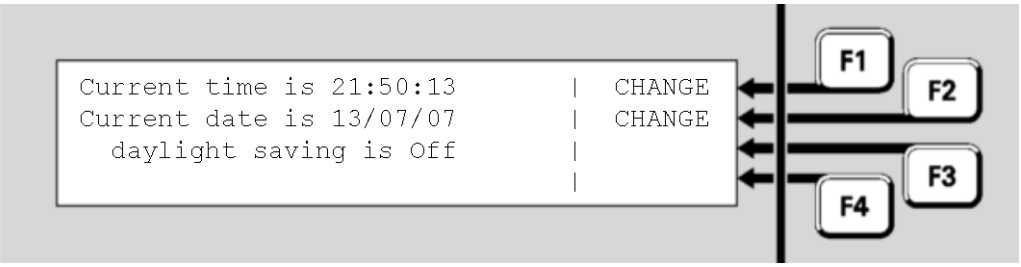

Fig 8-2 – Date And Time Change Menu

Setting the Time

To change the system time, press **CHANGE**←F1. All the digits are set to zeroes.

Enter the current time in 24-hour format as HHMMSS. Separators between the hours and minutes, and minutes and seconds, are not required. Press OK to store the new time and start the clock.

For example, a time of 1:35:00pm would be entered as 1 3 3 5 0 0 OK

Setting the Date

To change the system date, press **CHANGE**←F2. All the digits are set to zeroes.

Enter the day, month and year without separators.

For example, a date of 21 December 2004 would be entered as 2 1 1 2 0 4.

Press OK to store the new date.

Daylight Saving

The Daylight Saving status is automatically determined by the current date and the site's configuration.

Power Supply Status and Battery Testing

From the base display press MENU, then **POWER**←F4 to view the Power Supply Status.

The PSU and battery voltage and current readings are not calibrated. There may be offsets that become apparent, especially at low current levels to/from the battery. If accurate readings are required then suitable voltmeters and ammeters must be used to obtain the necessary measurements.

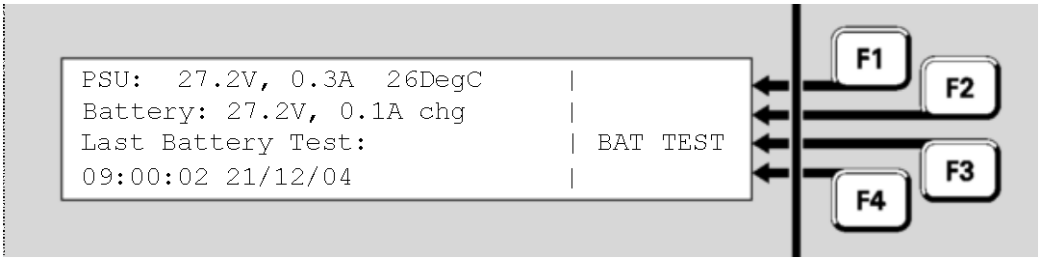

Fig 8-3 – Power Supply Status

The following information is displayed:

- `PSU:` is the power supply output voltage and current. The voltage reading may periodically fluctuate slightly when a Battery Connection check is made. Note that the current includes both battery-backed and non-battery-backed loads.
- `Temperature:` is the approximate temperature in the *MX1* cabinet in °C.
- `Battery:` is the voltage and current flowing at the battery terminals of the controller. The current is shown as `chg` for charge current flowing into the battery, and `dis` for discharge current flowing out of the battery.
- `Last Battery Test:` shows the time/date and result of the most recent battery test (manual or automatic).

Pressing **BAT TEST**←F3 will start a manual battery test. The duration of this battery test is determined by the system configuration (usually 1 minute). The test will not start if the mains power is off, or a battery test (automatic or manual) is already in progress.

During the battery test, a progress indication will be displayed showing the number of minutes remaining for the test. A manual battery test cannot be cancelled once under way. The battery test lowers the battery charger voltage (to 22-23V) so that the panel and loads are powered by the battery.

Automatic Battery Tests

MX1 also carries out automatic battery tests. The scheduling and duration of these tests are determined as part of the *MX1* configuration, and require no operator intervention under normal conditions.

By default the test will start at 9am on each working day and last for 60 minutes.

If the battery fails the automatic test the FAULTS indicator will light and the failure will be logged in the Event History (see Chapter 4). Where available, the service company will be notified.

The automatic battery test can be cancelled as follows.

From the base display press TESTS, **INITIATE**←**F4** , then MENU, **BATTERY**←F3 to view the Battery Test status screen.

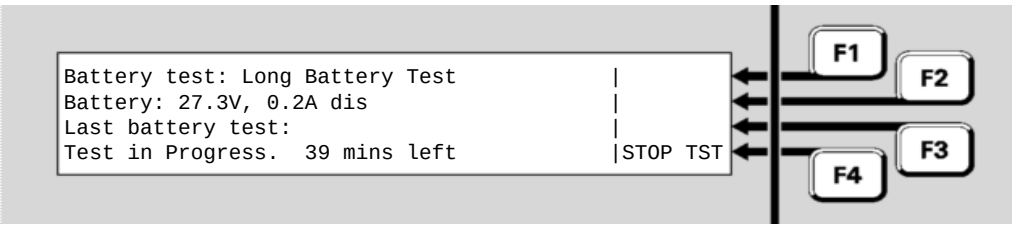

Fig 8-4 – Battery Test Menu

If the automatic test is running, as indicated by a Battery Test status of 'Long Battery Test", press **STOP TEST**←F4 to stop the test.

MX Loop Status

Viewing Loop Status

From the base display press MENU three times then **MX LOOP**←F2 to view the *MX* Loop Status.

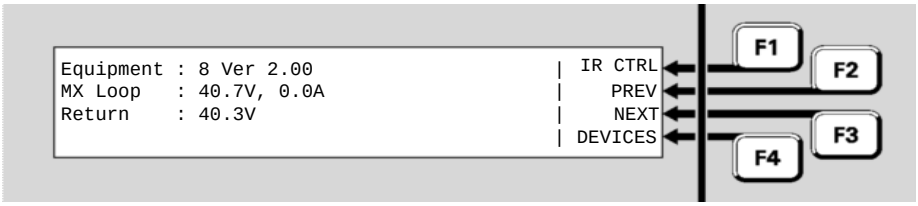

Fig 8-5 – *MX* Loop Status

- `Equipment`: shows which *MX* loop is being viewed. 1 is the on-board loop and 2 onwards are the optional *MX* Loop Cards. The firmware version for each *MX* Loop Card will be included. Press **PREV**←F2 or **NEXT**←F3 to switch between loops.
- `MX Loop`: is the voltage and current being fed to the loop wiring.
- `Return`: the voltage at the return end of the loop.

Normally the power is fed via the AL terminals and the loop return voltage is measured at the AR terminals. In this situation the points described below will all be normal.

Under fault conditions, the power feed may be switched to the AR end (for a short circuit at the AL terminals), or feed via both ends (for an open circuit in the loop, or a short circuit between two short circuit isolators).

Fig 8.5 shows a typical situation. The power feed is applied to the start of the loop, which is drawing only a light load current. The voltage at the end of the loop is being monitored to detect any breaks in the wiring.

If power is being fed to the AR side, the Return voltage displayed will be 0V. If the loop is drawing too much current, the *MX* Loop voltage display will also be 0V. A more detailed assessment of the *MX* Loop condition can be gained from the presence of these points in the fault list (refer to Chapter 11 (“Equipment Point Descriptions”) for details).

- `MX Loop Left S/C` – is in Fault if there is a short circuit between the AL+ and AL- terminals.
- `MX Loop Right S/C` – is in Fault if there is a short circuit between the AR+ and AR- terminals.
- `MX Loop Open Circuit` – is in Fault if there is an open circuit in the loop wiring. Note that an activated short circuit isolator will also register as an open circuit fault.
- `MX Loop Overload` – is in Fault if too much current is being drawn by the *MX* Loop. The normal capacity for each loop is 1A.

Press **IR CTRL**←F1 to access the infrared commands. Note this command requires operator Access Level 2.

The **DEVICES**←F4 command allows the loop to be scanned for all *MX* devices that are present, or to identify where a break may be. See Scanning for *MX* Devices page 8-7.

IR Control

From *MX* Loop Status display press **IR CTRL**←F1 to access the IR (Infrared) commands.

This command requires operator Access Level 2.

The 850 detectors support infrared (IR) communication with the 850EMT *MX* service tool. This allows technicians to carry out functions such as programming the detector's device number, reading its parameters and status, using an IR connection while standing some distance from the detector.

Before you can communicate with a detector using IR the loop the detector is connected to must be put into IR mode. Select the required *MX* loop (see Figure 8-5) and then press **IR CTRL**←F1. This will show the IR controls – see Figure 8-6a.

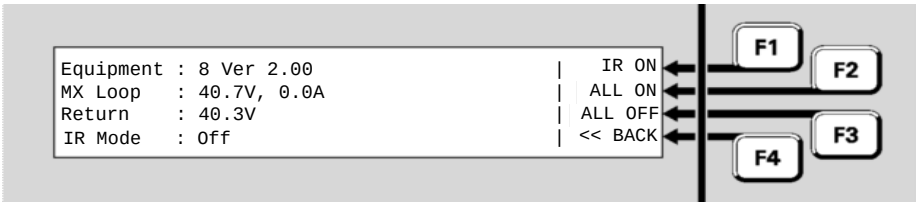

Fig 8-6a – *MX* Loop IR

Pressing **IR ON**←F1 will activate IR mode on the currently displayed loop.
Pressing **IR OFF**←F1 will deactivate IR mode on the displayed loop.
Pressing **All ON**←F2 will turn on IR mode on all loops.
Pressing **All OFF**←F3 will turn off IR mode on all loops.
Pressing **<< BACK**←F4 will return to the previous display (Figure 8-5).

IR mode automatically times out after 8 hours if it is not turned off via the menu.

CAUTION

A detector in IR mode cannot communicate with both the panel and the 850EMT service tool at the same time. Therefore while a detector is communicating with the service tool it is 'off line' and can no longer send alarms to the *MX1*. After 1 minute the detector will go into Device-fail at the *MX1*.

Scanning for *MX* Devices

The **DEVICES**←F4 command on the *MX* Loop Status screen can be used to scan that *MX* Loop for all *MX* devices present – even if the *MX1* has no, or a different, datafile present.

This can be used, for example, at installation time to check all devices have been installed, wired and addressed correctly, even without any datafile having been programmed into the *MX1*.

It can also be used if a foreign device is found (P241/26/5 goes into fault) by looking through each loop for FRGN devices, or when a loop break is present to identify those devices on each side (L or R) of the break.

The *MX1* will poll every address from 0 to 255 (note addresses 0 and 251-255 are not supported by the *MX1* for configured devices) and attempt to identify the type of device present (this may fail if two or more devices are present at the same address).

Figure 8-6b shows an example resulting display.

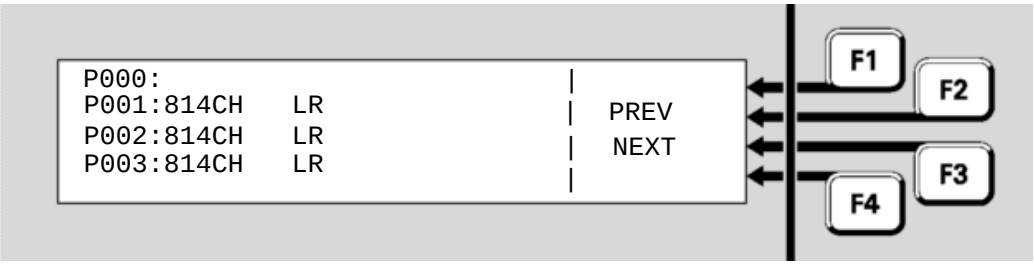

Fig 8-6b – Example *MX* Loop Scan Display

Each screen will show 4 addresses (e.g., 0, 1, 2, 3) plus:

- The device type – blank if no device is present at that address.
- L, R, or LR to indicate the device is visible from the left side, right side or both left and right side of the loop.
- DUP if two or more devices are present at the address.
- MISM if the device type does not agree with the type programmed in the *MX1*'s datafile.
- FRGN if the device is not programmed at all in the *MX1*'s datafile.
- UNDR if the address is 0 (under-addressed).
- OVER if the address is 251-255 (over-addressed).

NEXT←F3 and **PREV**←F2 can be used to step through the various addresses.

System Memory Status

Viewing System Memory Status

From the base display press MENU three times then **MEMORY**←F3 to view the System Memory Status menu.

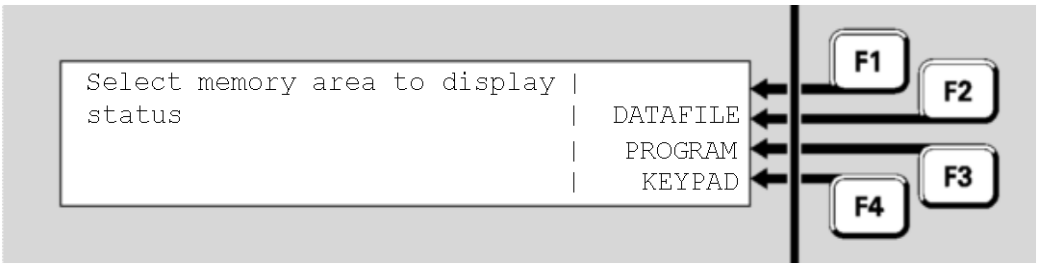

Fig 8-7 – System Memory Status Menu

Menu options are:

- **DATAFILE**←F2 displays information about the two site-specific configuration data files. There are two copies of the configuration file; only one of these will be active at any time.
- **PROGRAM**←F3 displays information about the controller firmware.
- **KEYPAD**←F4 displays information about the LCD/keyboard firmware.

Note the firmware version for each *MX* Loop Card is shown on the *MX* Loop Status screen page 8-5.

Viewing Datafile Status

Press **DATAFILE**←F2 to show the status of the first copy of the site-specific configuration.

The filename, date and CRCs of the configuration files stored in the *MX1* can be viewed. This will also show which configuration files are active.

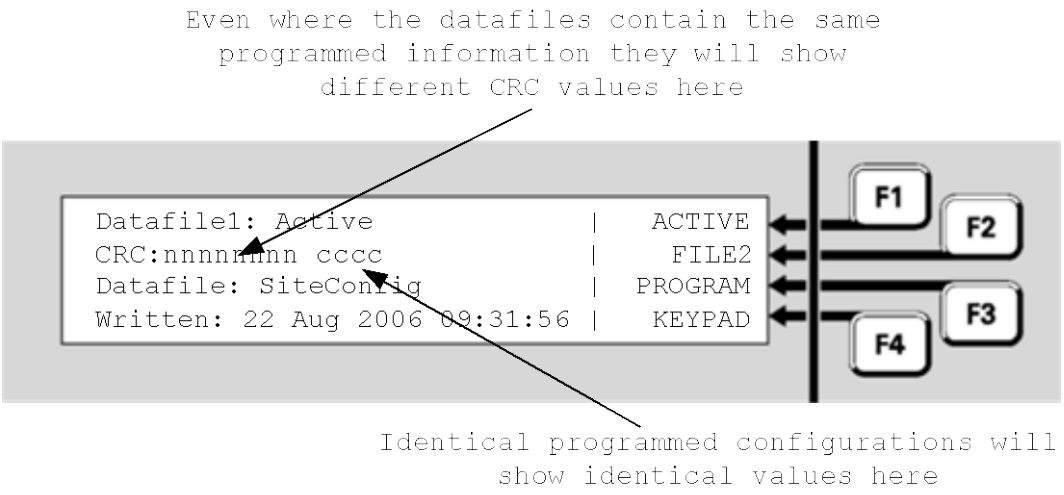

Fig 8-8 – Site-Specific Data Display – Datafile 1 Active

The following information is displayed:

- `Datafile1`: this shows the number of the data file and Active if this configuration file is being used or Disabled if not being used.
- `CRC`: this shows two values. The first is the integrity checksum for this data file, followed by the CRC for the configuration file (the same as displayed by SmartConfig). The correctness of the integrity checksum controls a system point, `Database 1 CRC`, which will produce a fault indication if the checksum is not correct. Note that the integrity checksum shown on line 2 for each data file will be different even when both data files are loaded from the same SmartConfig data file. The second value shows the "invariant" configuration data file CRC. This is the same value as calculated and displayed by SmartConfig using the Show CRC command, so these can be compared to confirm that the configuration data file in the *MX1* is the same as that in SmartConfig.

  If the same SmartConfig data file is loaded into both data file locations, the invariant CRC value will be the same for each of the data files.

- `Datafile`: the name of the SmartConfig file when it was downloaded into the *MX1* by SmartConfig.
- `Written`: the time and date on the PC when the configuration was last changed before being downloaded. Note that random characters may appear in the time and date fields when there is no valid datafile.

Menu options are:

- **`ACTIVE`**←F1 is an Access Level 3 command and will appear only if Access Level 3 is enabled. It forces this data file to become the active copy. A confirmation prompt is displayed. Press OK to restart the system and switch to this data file. If this data file is not valid, the system will automatically switch back to the other data file.
- **`FILE2`**←F2 switches to the equivalent status display for the second data file.
- **`PROGRAM`**←F3 displays information about the controller firmware.
- **`KEYPAD`**←F4 displays information about the LCD/keyboard firmware.

Viewing Controller Firmware Status

From the System Memory Status menu, press **`PROGRAM`**←F3 to show the status of the controller firmware.

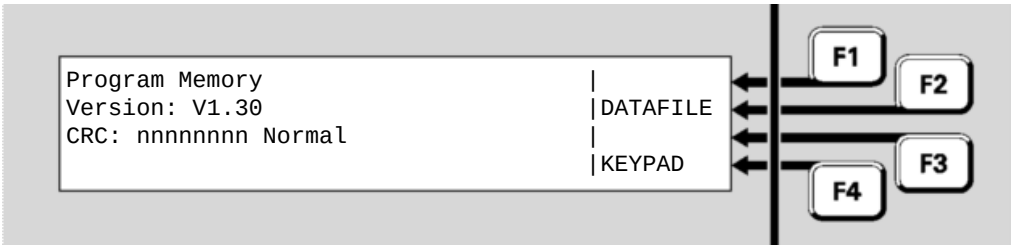

Fig 8-9 – Controller Firmware Display

The following information is displayed:

- `Version`: is the version of the controller firmware. This is also shown in the base display when the system is normal.
- `CRC`: the most recently calculated integrity checksum for the controller firmware and the correctness of the result. This checksum status controls a system point (241.27.3 Firmware CRC), which will produce a fault indication if the checksum is not correct.

Viewing Keyboard Firmware Status

From the Memory Status menu, press **KEYPAD**←F4 to show the status of the LCD/keyboard firmware.

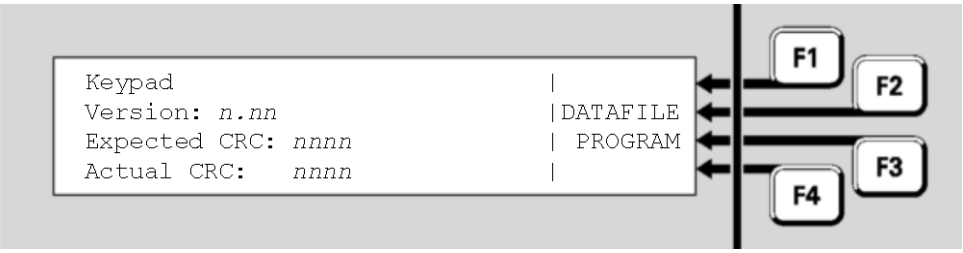

Fig 8-10 – LCD/Keyboard Firmware Status

The following information is displayed:

- `Version`: is the version of the keyboard firmware. This is also shown briefly on the LCD when the system powers up.
- `Expected CRC`: the correct value for the integrity checksum for the keyboard firmware.
- `Actual CRC`: the actual calculated checksum for the keyboard firmware. This checksum status controls a system point (243.1.6 `Keypad Firmware CRC`), which will produce a fault indication if the actual checksum does not match the expected value.

Test System

The Test System command allows the *MX1* firmware version, firmware CRC, and the two configuration datafile CRCs, to be viewed on one screen. This allows easy recording and checking.

From the base display press TESTS, which will show the following screen.

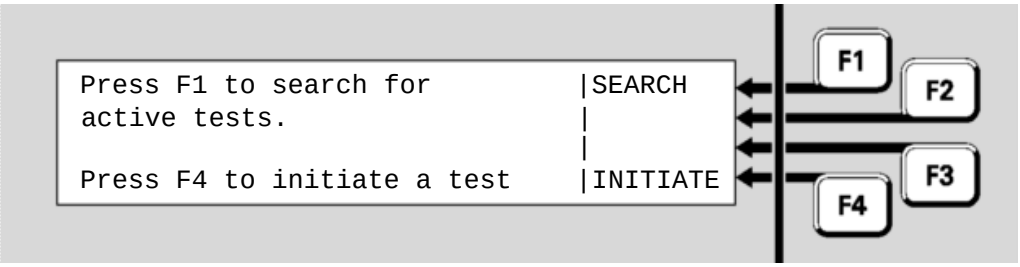

Fig 8-11 – Tests Screen

Press the **INITIATE**←F4 option and MENU twice so that a **SYSTEM**←F1 option is shown. Press F1 to show the following screen.

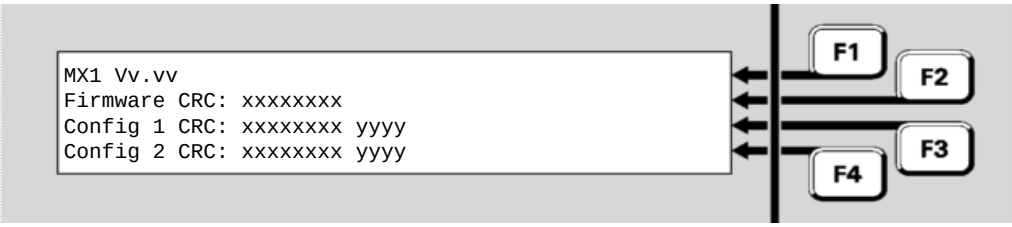

Fig 8-12 – Tests System Screen Shows Firmware and Config CRCs

The top line shows the *MX1* Controller firmware version, Vv.vv. The second line shows the firmware CRC. The third and fourth lines show the internal checksum (xxxxxxxx) and CRC (yyyy) for the two configuration datafiles. The CRC of the datafiles is the CRC as shown by the SmartConfig Show CRC command and can be used to confirm the datafiles are identical or the same as the file on the PC.

Test Alarm Devices

The Test Alarm Devices command allows all the alarm devices to be operated simultaneously, for example, during a trial evacuation of the building. The alarm devices operate until the test is stopped.

From the base display press TESTS, **INITIATE**←F4 and press **ALARM DEV**←F3 so the alarm devices test status screen is shown.

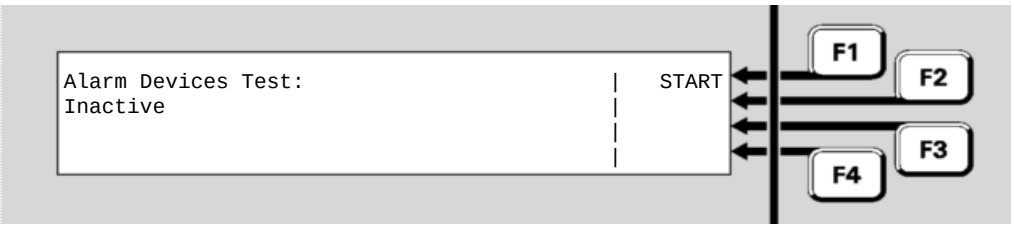

Fig 8-13 – Alarm Devices Test Status Screen

This shows the status of the test (Inactive or Active) and allows the test to be started (if the test is inactive) and stopped (if the test is active).

Press **START**←F1 to initiate the test – all alarm devices will operate unless they have been disabled. Conduct the test and then press **STOP**←F4 when complete.

The test can also be started by OpOn testing point 241.1.0 (the Alarm Devices point) and stopped by resetting this point.

Replacing an *MX* Device

From time to time it may be necessary to replace an MX loop device with a new one. When supplied, new *MX* devices are factory set to address 255. This section describes two methods to install and automatically re-address replacement *MX* devices.

From the base display press MENU three times, then press **AUTOADD**←F4 to show two choices:

- **OneAtTme**←F1 – "One at a Time" – allows one device to be replaced at a time by removing that device, fitting the appropriate replacement, then re-addressing the replacement from the *MX1* front panel.

- **Multiple**←F2 – allows multiple devices to be disabled from the front panel, then each device to be replaced (one at a time) and for the replacement to be automatically re-addressed w*hen* it is fitted. **This al**lows multiple devices to be replaced in one trip away from the *MX1*.

One At A Time Re-Addressing

This method can be used when
- a single addressable device is to be replaced, and the replacement device is of the same type, and
- the replacement device *is* unaddressed (i.e., set to the factory default address of 255).

Remove the device to be replaced (note that this may create a device fail fault) and fit the replacement unit. Press **OneAtTme**←F1 at the AutoAdd menu. This will result in one of the following displays – Figures 8-14 – 8-18.

Figure 8-14 shows the device that has been removed and that the replacement device has been recognised and is ready to be programmed. Press F4 to program the replacement device with the missing device's address. Once done, the device-fail fault on the point should clear, and affected zones can be reset to clear their faults.

Repeat the process for additional devices needing replacement.

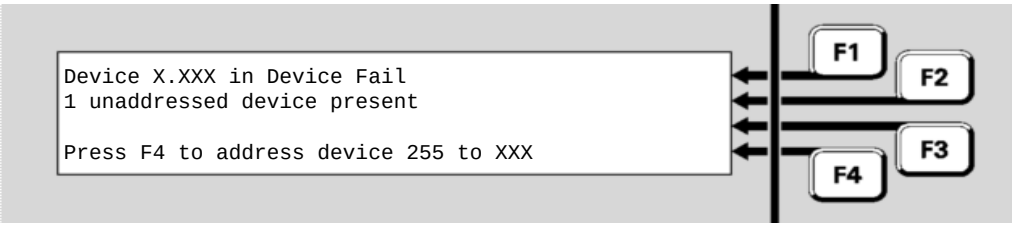

Fig 8-14 – Device Programming Menu

If the Auto-Addressing function does not find all of the required conditions met, one of the following displays (Fig 8-15, 8-16, 8-17 or 8-18) will be shown to indicate the cause.

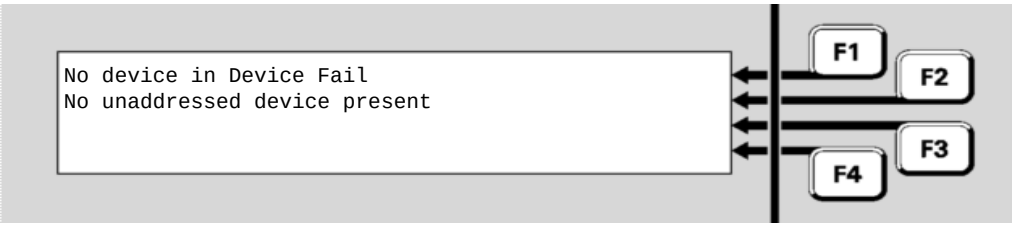

Fig 8-15 – Device Programming Menu – No Devices in Device Fail

There must be one (and only one) device in device fail on that *MX* loop for the re-addressing function to be used.

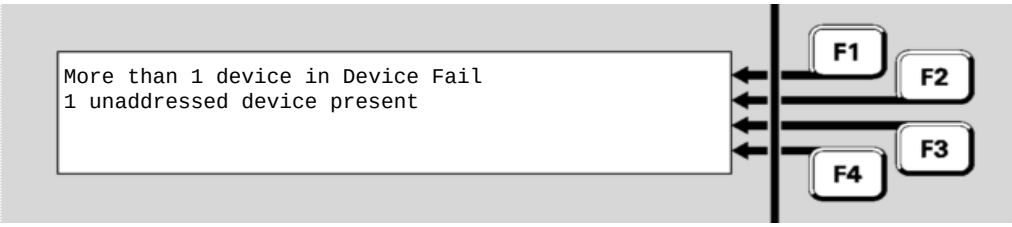

Fig 8-16 – Device Programming Menu – Multiple Devices

The OneAtTme function can be used only when there is a single device in Device Fail.

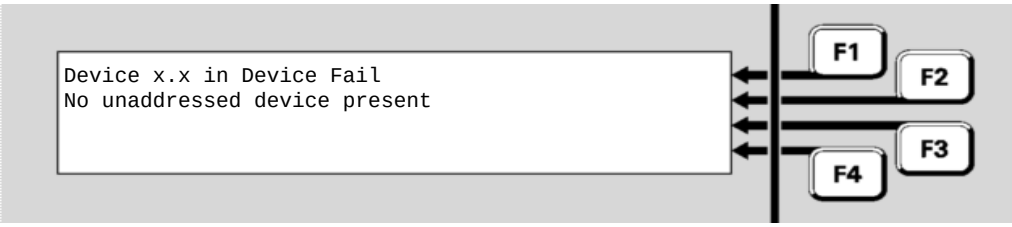

Fig 8-17 – No Unaddressed Device Present

Ensure that the new device has been correctly fitted to its base, or wired into the loop, that it has not already been programmed, and that no other device programmed to address 255 is installed on the loop.

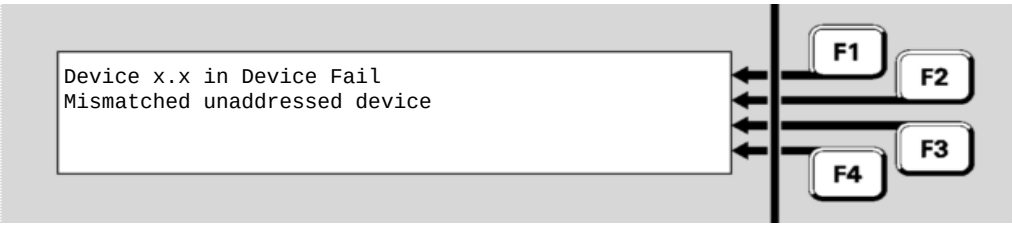

Fig 8-18 – Device Mismatch

Check that the replacement device is of the same type as the removed one. The OneAtTme function can program only replacement devices that are of the same type as the device they are to replace.

Multiple Device Re-Addressing

The **Multiple** addressing method allows multiple devices to be disabled, and then in a single trip away from the *MX1* panel, replace each device (one at a time) and have the replacement automatically re-addressed to match the removed one. Press **MULTIPLE**←F2 from the AutoAdd menu.

This will show a screen like Figure 8-19.

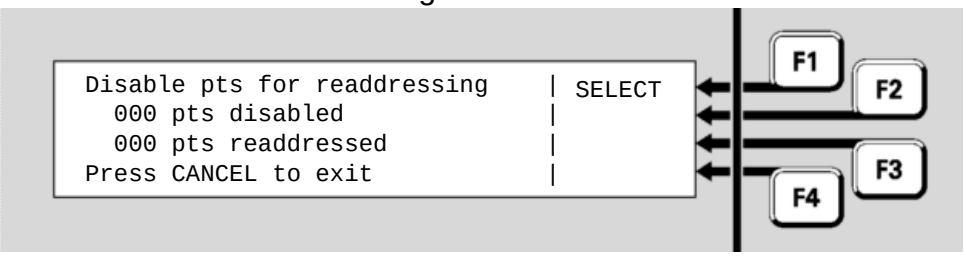

Fig 8-19 – Multiple Device Re-Address Display

This screen will show the total number of *MX* Devices that have been disabled (at least sub point 0 must be disabled for the device to be included in this count). It will also show the number of devices that have been re-addressed, incrementing as each device is removed and a replacement re-addressed.

Use the **SELECT**←F1 command to select those devices to be disabled and thus allow re-addressing. This command operates the same as Disabling or Enabling a point from a Recall Point Status display – Page 6-6. Press CANCEL to return to the Multiple Device Re-Address screen Fig 8-19.

Then proceed around the premises, replacing each selected device with a new device of the same type. When the new device is re-addressed its LED will turn on for 5 seconds and then start normal polling. Note this will not work if:
- the replacement device is not the correct type.
- the replacement device is not address 255.
- more than one device is not present on the loop (Device Fail).
- or the original device had not been disabled.

After all required devices have been replaced, recall each one (e.g., use the Disables command) and check that no device fail condition is present, then re-enable it. Also reset any zone faults, then check that point 241.26.5 is not in fault. This could happen if a replacement device is not re-addressed and so is seen as a foreign device.

Note this screen will not revert to the base display on a timeout or if the outer door is closed (allowing the cabinet door to be locked while replacing devices) or keyboard disabled, so it is necessary to press CANCEL to exit this re-addressing mode.

Buzzer Disable and Mute

Two commands are available to stop the alarm and fault buzzer from sounding - for example, during commissioning, annual surveys, or fault finding. Using these at either the *MX1* panel or the remote FBP will disable/mute the buzzers at both units, except for keypress beeps.

- Buzzer Mute: This is a temporary buzzer mute function and lasts for 24 hours or until the mute is cancelled – manually or by power down or restart of the *MX1*. Note that this will stop the buzzer from sounding for any alarms and fault conditions.

- Buzzer Disable: This function is an Access Level 3 command and lasts for as long as the buzzer is disabled.

Temporary Buzzer Mute

From the base display press TESTS then select **INITIATE**←F4 option and MENU to show the **BUZR DIS**←F1 option. Press this to display the Buzzer status screen.

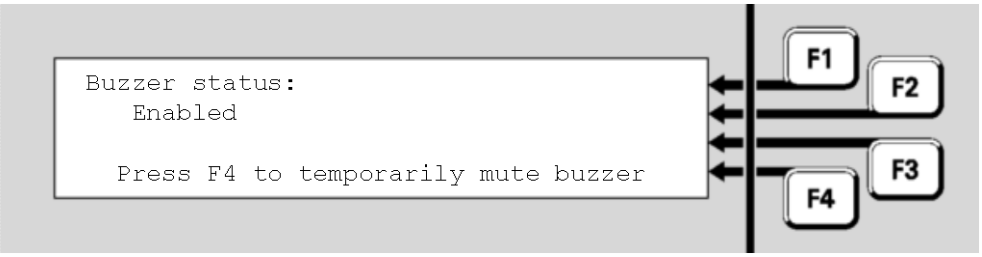

Fig 8-20 – Temporary Buzzer Mute Status

This will show the Buzzer status as Enabled, Muted or Disabled. When it's Enabled, press F4 to temporarily mute the buzzer for 24 hours, or until earlier cancelled.

Once the buzzer has been temporarily muted it will appear in the tests recall as Point 243.1.14 in a TestOp status, which can be cancelled by resetting this point.

F4 can be used to enable the buzzer if it is disabled or muted.

Buzzer Disable (Access Level 3)

Log on to Access Level 3 if not already (see Section 7). From the base display press DISABLE then MENU (twice if any Disables are present) to show the **BUZR DIS**←F1 option. Press this to show the buzzer status screen.

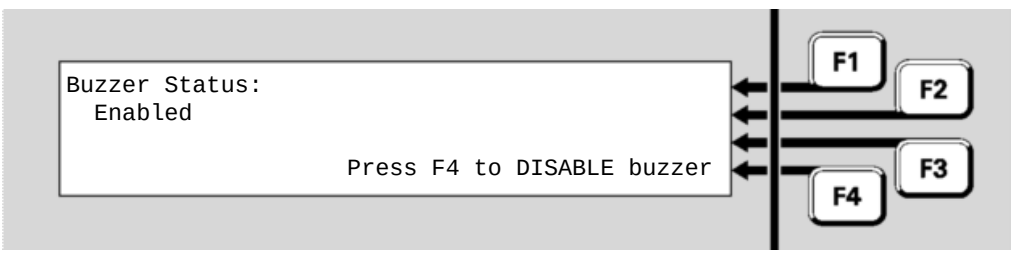

Fig 8-21 –Buzzer Disable Status

This will show the Buzzer status as Enabled, Disabled or Muted. Press F4 to enable or disable the buzzer. Once the buzzer has been disabled it will appear in the Disables List (point 243.1.14) and can be re-enabled from there.

Do not press the f.b.p. DISABLE control when the Alarm List is being shown unless the intent is to disable all alarms.

Commissioning Mode (Access Level 3)

Commissioning Mode reduces the time required for in-situ detector tests and setup procedures to be performed, by removing the processing algorithms.

The acknowledgement times for AAF and AIF are reduced to 10 seconds and the search times for AAF, ADF and AIF are reduced to 30 seconds.

During Commissioning Mode the system may produce unexpected nuisance alarms as the processing algorithms for detectors are bypassed, making them sensitive to smoke, etc.

To initiate Commissioning Mode, login to Access Level 3 and use the following procedure.

1. Press TESTS, **INITIATE**←F4.
2. Press MENU until "COMMISSN" appears in the display.
3. Press **COMMISSN**←F2, then **START**←F1. The following LCD indication should appear, a countdown from 120 minutes begins and point 241.27.10 will be put into TestOp state. Commissioning mode will end when this countdown is complete or it is manually stopped.

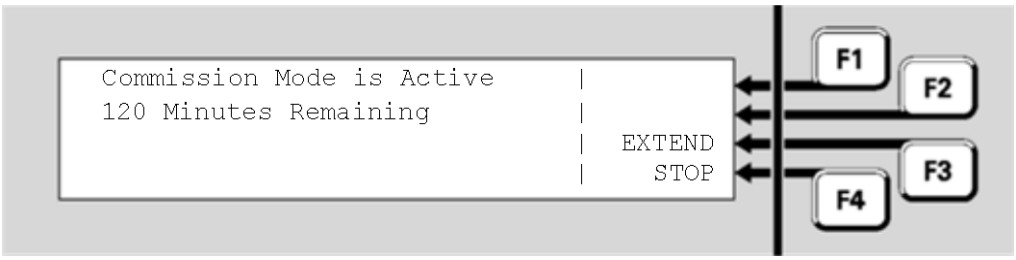

Fig 8-22 – Active Commission Mode Display

4. If the message "Commission Mode is Stopped" appears, press **START**←F1 to start Commissioning Mode again.
5. To extend Commissioning Mode by returning the countdown to 120, press **EXTEND** ←F3.

6. To end Commissioning Mode, press **STOP**←F4.

You cannot stop the test by pressing TESTS and then attempting to Reset or Disable the point (241.27.10) indicating that Commissioning Mode is active. You need to repeat the steps above and press **STOP**←F4.

Resetting the System (Access Level 3)

The *MX1* operation can be restarted from the LCD. This function requires Access Level 3. Refer to Section 7 to log on to level 3. From the base display, press the RESET key.

CAUTION

Do not press the f.b.p. RESET control when the Alarm List is showing unless the intent is to reset all alarms.

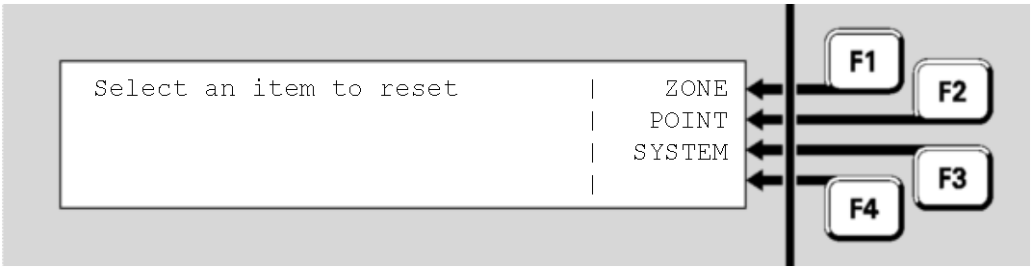

Fig 8-23 – Access Level 3 Reset Menu

Press **SYSTEM**←F3 to see the following prompt;

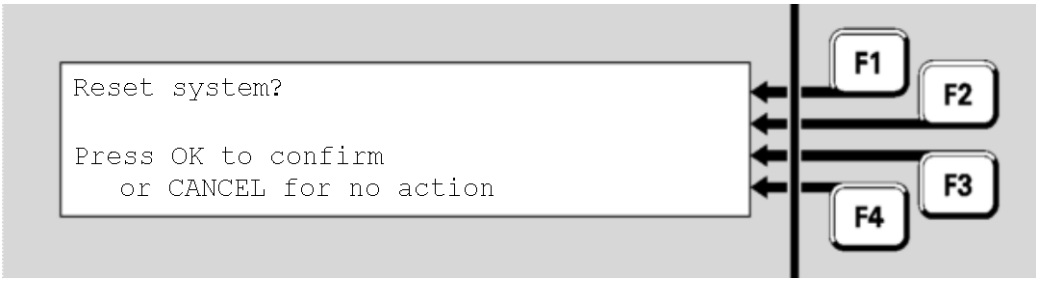

Fig 8-24 – System Reset Confirmation Screen

Press OK to restart the *MX1* panel as if power had been removed and re-applied.

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Chapter 9
Networking

Introduction

Multiple *MX1* fire panels along with other compatible panel-link devices may be connected together to form a network.

Some of the devices which may be part of the network include:

1. *MX1* fire panels
2. XLG colour graphics system
3. QE20 or QE90 evacuation system
4. NSA Nurse Station Annunciator
5. PMB Panel-Link Modbus Bridge
6. NDU Network Display Unit
7. MX4428 fire panel
8. F3200 fire panel
9. NLDU Network LED Display Unit
10. Compact FF

Networking allows *MX1* fire panels to share:

(i) Alarm information for display and control of alarms on the LCD. Alarms on one *MX1* can be displayed at other *MX1*s and Colour Graphics displays. Alarms can be silenced, reset and disabled from the *MX1*s and Colour Graphics displays.

(ii) Output logic status, allowing status and controls generated by the output logic at one *MX1* to be used by the output logic at another *MX1*, e.g., for extended AS 1668 Fan Controls.

(iii) MAF Status, so that one *MX1* can be a main brigade display and signalling point for a number of *MX1* panels on the site.

(iv) Event Information for status monitoring and network event printing. An *MX1* may be programmed to perform system wide event printing and event history, or from just selected panels.

(v) Control for activating, disabling and silencing the Alarm Devices on remote *MX1*s as a result of alarms or operator controls on the local *MX1*.

Network Zone/Point functions include:

(i) Recall the status of a specific zone or point on a remote *MX1*.
(ii) Search for zones or points of a specific condition on remote *MX1*s.
(iii) Send reset, disable, alarm test, fault test, abort test, and operate test commands on a single zone or range of zones or points to a remote *MX1*.

By using Tandem mode it is possible to take control of a remote panel on the network and operate it as if you were standing in front of it.

Keypresses are sent across the network to the remote panel and display updates are sent back to be displayed locally. This allows functions such as zone tests, enabling / disabling zones, etc., to be carried out remotely.

In this Chapter

Zone & Point Numbering

When *MX1* panels are networked together there must be a way to identify each *MX1* and the points and zones on that *MX1*.

In this manual, reference is made to "local" and "remote" panels. A local panel is the panel at which the operator is at. Remote panels are all other panels on the network. This applies even if a number of networked panels are co-located.

When a networked *MX1* is configured, it is programmed with a unique number between 1 and 254. This is its System Identification Number, or SID. The SID is used to:

(a) Identify a specific *MX1*.
(b) Identify a zone or point on a specific *MX1*, by combining the SID and zone or point number as detailed below.

For a networked *MX1*, point and zone numbers are displayed in the following formats:

Zszzz where s is the SID and zzz is the panel zone number
Pseee.d.s where s is the SID, eee is the equipment number, d the device number and s the sub-point.

Note that the panel zone number and the equipment number are always displayed as 3 digits, with leading ‘0’s where required.

E.g. Z35018 is Zone 18 on *MX1* number 35
P5023.4.1 is Point 23.4.1 on *MX1* number 5

When entering zone and point numbers on the keyboard there are two formats that can be used:

(i) Point and zone number(s) without the SID. These numbers can be used for accessing zones and points on the local panel. E.g., Point 23.4.0 and Zone 57. Note that when these points are displayed they will include the SID.

(ii) Point and zone number(s) including the SID. These numbers can be used for accessing zones and points on the local or on a remote panel. Multiply the SID by 1000 and add it to the point or zone number. E.g., point 12034.4.1 (Point 34.4.1 on SID 12) and zone 32105 (Zone 105 on SID 32).

E.g.	Z1057	is Zone 57	on *MX1* number 1
	Z35218	is Zone 218	on *MX1* number 35
	P5023.4.1	is Point 23.4.1	on *MX1* number 5

Note that all zeroes must be entered, e.g., for Zone 1 on Panel 2, the entry must be 2001, i.e., the intermediary 0s are necessary.

Note that any point or zone range that extends across more than one *MX1*, e.g., Z35097 to Z36002, is illegal.

Tandem Mode

It is possible to take control of a remote panel on the network and operate it as if you were standing in front of it. Keypresses are sent across the network to the remote panel and display updates are sent back to be displayed locally. The common LEDs on the local front panel always show the status of the local panel and do not show the status of the remote panel. It is only the content of the LCD from the remote panel that is shown at the local panel.

From the base display press: MENU twice and select TANDEM.

Enter the SID number (1 to 254) of the remote panel to access followed by the ENTER key as per the example in Figure 9-1.

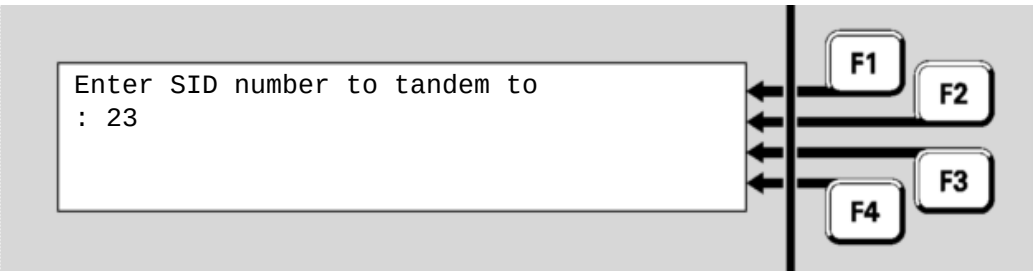

Fig 9-1 – Entering SID

If you have successfully connected to the remote panel the remote panel's SID, software details and site name will be displayed for about 2 seconds as per the example in Figure 9-2.

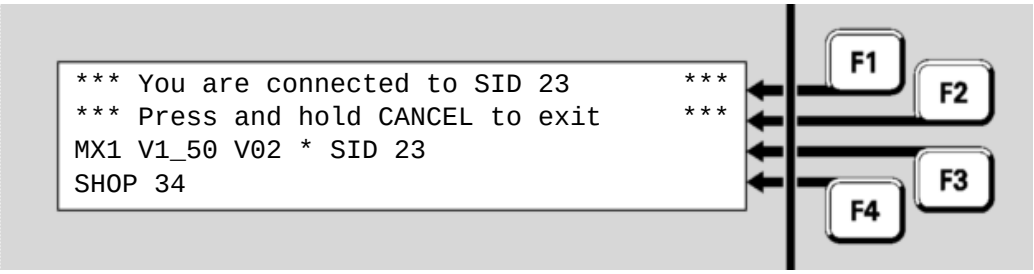

Fig 9-2 – Connected Display

If the connection cannot be established *No response from SID xx* will be displayed as per the example in Figure 9-3.

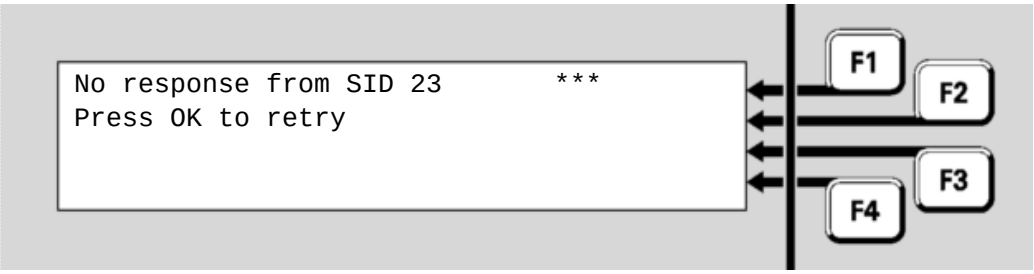

Fig 9-3 – Failed to Connect Display

Press:
OK to retry,
CANCEL to return to the previous menu.

While in Tandem mode a column of * characters will flash, either replacing the '|' characters if there is a menu displayed (as per the example in Figure 9-4) or on the right hand side of the display.

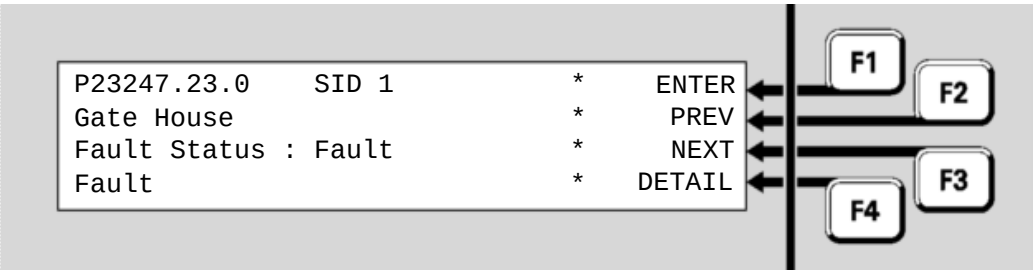

Fig 9-4 – Tandem Mode

During Tandem mode, all keypresses are sent to the remote panel, and display updates come from the remote panel.

To exit the Tandem connection, press and hold the CANCEL key for approximately one second and select OK when prompted. Also, if no keys are pressed for 5 minutes, a prompt is given to maintain the connection. If no key is pressed then the connection is cleared after 10 seconds. If a new unacknowledged FF alarm occurs while tandem mode is active, the tandem connection is terminated automatically and the FF alarm list is displayed.

If the device being connected to is an AS4428 panel with a two line LCD, then *MX1* provides a menu on the fourth line of the LCD to allow keys that are present on the AS4428 panel but not on *MX1,* to be used.

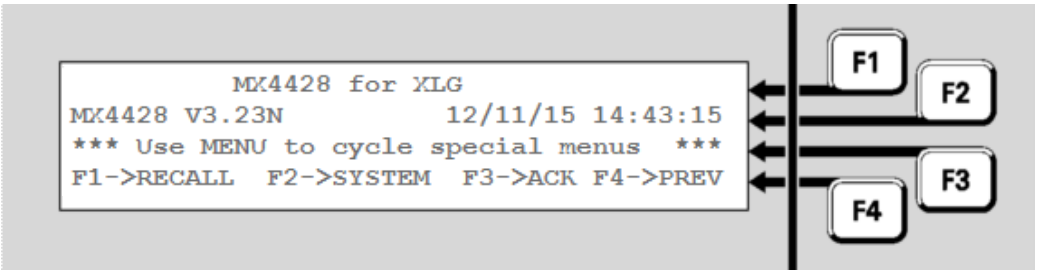

Fig 9-5 – Tandem Mode Menus

The MENU key can be used to cycle through the sets of extra keys.

Network Interface Device Points

The *MX1* Controller points 241.32 to 241.34 are used to display the status of the network interface device used to connect the *MX1* to the network.

Points 241.32.x are used to display I-HUB status information
241.33.x are used to display PIB status information
241.34.x are used to display the status of other network interface devices.

Refer to Equipment 241 – *MX1* Controller in Chapter 12 for descriptions of these points.

Network Status Points

Each panel on the network has a number of points associated with it to display network status information. The point numbers have the form ***247.SID.Sub,*** which consists of three parts:

- ***247*** is the equipment number used for network status points
- ***SID*** is the SID number of the remote panel or device
- ***Sub*** is the sub-point number, which indicates the type of status information.

All panels and devices have the following points:
247.*SID*.0 to display the Network Comms Status - see Fig 9-6
247.*SID*.1 to display the MAF Status – See Fig 9-7

Some devices may also include the following points:
247.*SID*.2 to display the Fault Status – See Fig 9-11
247.*SID*.3 to display the Warning Status – See Fig 9-12

These points are described in the following sections.

The example shown in Figure 9.5 shows the entry of the point number for requesting the Comms Status of an *MX1* with a SID of 23.

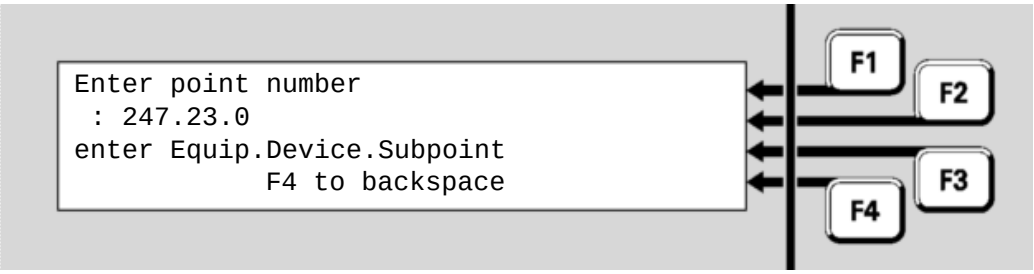

Fig 9-5 – Enter Point Number

Network Comms Status

The format of the Comms Status display is shown in Figure 9-6.

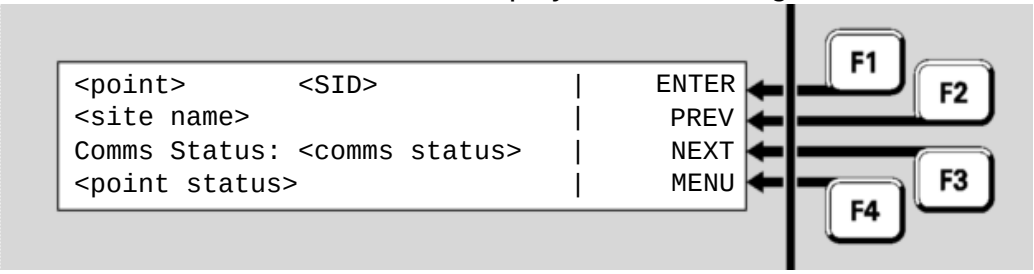

Fig 9-6 – Comms Status Menu

The **<point>** is the point number and **<SID>** and **<site name>** are the SID and name of the remote panel or device.

The **<comms status>** will be one of the following:

Not Monitored	The local panel is configured to not monitor the network communication links to the remote panel.
Normal	The communication links are functioning normally.
Link A fail	One of the two communication links (A) has failed, the other link is still operational.
Link B fail	One of the two communication links (B) has failed, the other link is still operational.
Scan fail	All communication links between the local and remote panel have failed.

The **<points status>** is one of the following:

Normal	The current network communication status is Normal or Not Monitored.
Fault	One or more of the communication links is in fail.
Disabled	The point has been disabled.

Network MAF Status

The format of the MAF Status display is shown in Figure 9-7.

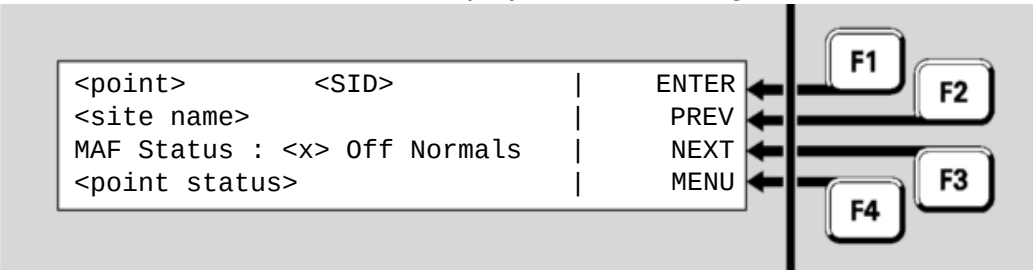

Fig 9-7 – MAF Status Display

The **<point>** is the point number and **<SID>** and **<site name>** are the SID and name of the remote panel or device.
<x> is either 'No' or the number of off normals present.

The **<points status>** is one of the following:

Normal	There are no off normals.
Fault	There are 1 or more off normals that map to a fault condition present.
Disabled	The point has been disabled.

Press **MENU**←F4 to display additional menu items as shown in Figure 9.8.

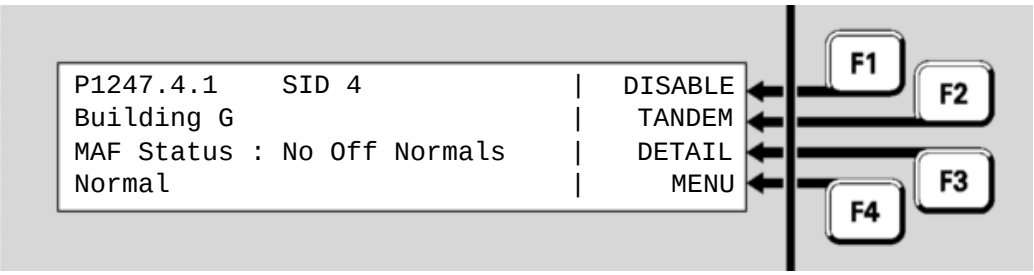

Fig 9-8 – Additional Menu Items

Press:

- **DISABLE**←F1 to disable the point
- **TANDEM**←F2 to remotely control that remote panel
- **DETAIL**←F3 to display the MAF totals and status from the remote panel
- **MENU**←F4 to display the default menu (as per Figure 9.7).

Press **DETAIL**←F3 to display the MAF totals and status as shown in the example in Figure 9.9.

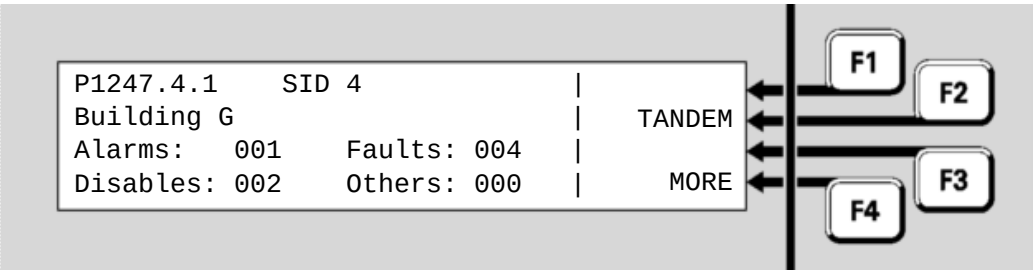

Fig 9-9 – MAF Totals

This displays the totals sent from the panel across the network. What the totals represent depends on the configuration of the panel, but typically the totals indicate the number of each type of event present at the panel. In the example shown in Figure 9.9 one zone or point is in alarm, 4 faults exist and 2 disables.

Press **MORE←F4** to display the general conditions (MAF Status) being reported by the remote panel as shown in the example in Figure 9.10.

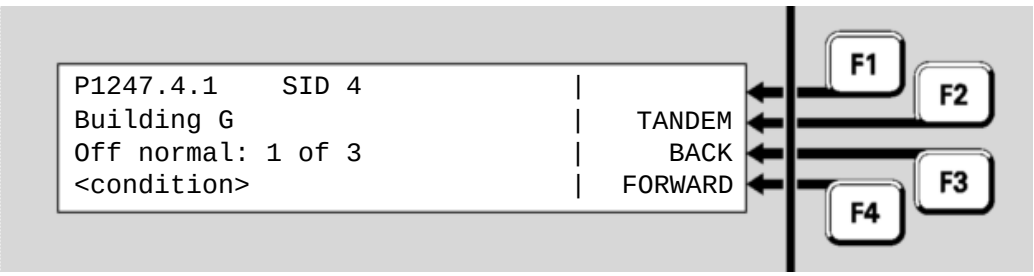

Fig 9-10 – General Conditions

The descriptions in the table below give an explanation to the condition being reported by the remote panel. Some conditions indicated are for reporting purposes only, e.g. PSU Fault, while others allow suitably programmed systems to interact with each other, e.g., Alarm Devices Activate.

A particular network system may not support all conditions listed. Additionally, the programming of a network system can also affect which causes can contribute to a particular condition.

The **<condition>** is one of the following:

Condition	Description
Abnormal	The remote system is in an abnormal condition, for example programming links are fitted.
Alarm Buzzer On	The remote system has its Alarm buzzer on.
Alarm Devices Silence Control	The remote system has asserted a control signal used to co-ordinate shared Alarm Devices.
Alarm Devices Silenced	The remote system Alarm Devices are Fire Brigade Panel Silenced.
Alarm Routing Disabled	The remote system has its Alarm Routing (brigade calling) disabled.
Alarm Routing Fault	The remote system has a fault asociated with its its Alarm Routing system (brigade calling).
Ancillary Disabled	The remote system is indicating that ancillary outputs are disabled.

AS 4428 System Fault	The remote system has an AS 4428 System Fault, which may include non-Zone, non-point fault statuses such as RZDU faults, power supply faults, network problems, etc.
AS 7240 System Fault	The remote system has an AS 7240 System Fault condition. See Status Indication page 1-7.
Bell Isolated	The remote system is signalling that its AS 1603 Bell (or equivalent) is disabled.
Bell On	The remote system is signalling that its AS 1603 Bell (or equivalent) is activated.
Brigade Disabled	The remote system is indicating that some or all of its brigade/monitoring service signalling outputs are disabled.
Brigade Test	The remote system has its AS 4050(int) Brigade Test function active.
Common Point Disable	The remote system has one or more points that are disabled.
Common PreAlarm	The remote system is signalling that one or more of its detectors are in the Prealarm condition.
Disables Routing Disabled	The remote system has its Disables Routing (monitoring service) disabled.
Disables Routing Fault	The remote system has a fault asociated with its its Disables Routing system (monitoring service).
Enabled alarms to recall	The remote system is indicating it has one or more enabled alarm conditions that can be recalled.
Enabled faults to recall	The remote system is indicating it has one or more enabled fault condition that can be recalled.
External Strobe Alarm	The remote system has alarm conditions that would activate the External Strobe.
External Strobe Isolate	The remote system has its External Strobe disabled/isolated.
External Strobe On	The remote system has its External Strobe outputs operated.
External Strobe Silence	The remote system is signalling that other panels can turn off their External Strobe.
Fault Buzzer On	The remote system has its Fault buzzer on.
Fault Routing Disabled	The remote system has its Fault Routing (monitoring service) disabled.
Fault Routing Fault	The remote system has a fault asociated with its its Fault Routing system (monitoring service).
FBP AIF Attended	The remote system has its Alarm Investigation Facility function enabled, and a suitably trained operator is in attendance.
Group Alarm Devices Activated	The remote system has local alarm conditions that are will activate the Alarm Devices.
MAF Alarm	The remote system has a brigade alarm that will activate the warning system or external strobe.
MAF Alarm No Bells	The remote system has a brigade alarm.
MAF Disable	The remote system has a disable condition that is signalled to the monitoring service.
MAF Disabled Alarm	The remote system has a disabled brigade alarm.
MAF Disabled Fault	The remote system has a disabled fault.
MAF Fault	Remote system has a fault that is signaled to the monitoring service.

Network Fault	The remote system has network faults, such as network path faults and communication failures.
NonMAF Alarm	The remote system has a non-brigade alarm.
NonMAF Disable	The remote system has a disable condition that is not signalled to the monitoring service.
NonMAF Disabled Alarm	The remote system has a disabled non- brigade alarm.
NonMAF Disabled Fault	The remote system has a disabled, non-monitored fault.
NonMAF Fault	The remote system has a fault that is not signalled to the monitoring service
Off-normals to recall	The remote system is indicating it has one or more off-normal conditions that can be recalled.
Plant Disabled	The remote system is indicating that plant outputs are disabled.
PSU Fault	The remote system has one or more power supply faults (for example, charger low, battery low or disconnected).
Reset Active	The remote system has a reset in progress.
Standby	The remote system has conditions which may include power supply inadequate, all zones isolated, or other critical faults or conditions that could compromise the operation of the system.
Test Fail Indication	The remote system has an unacknowledged test failure.
Unacknowledged System Faults Present	The remote system has one or more unacknowledged AS 4428 System Faults.
Warning System Alarm	The remote system has alarm conditions that would activate the Warning System.
Warning System Isolate	The remote system has its Warning System disabled/isolated.
Warning System On	The remote system has its Warning System outputs operated.
Warning System Silence	The remote system is signalling that other panels can silence their Warning System.

Network Fault Status

The format of the Network Fault Status display is shown in Figure 9-11.

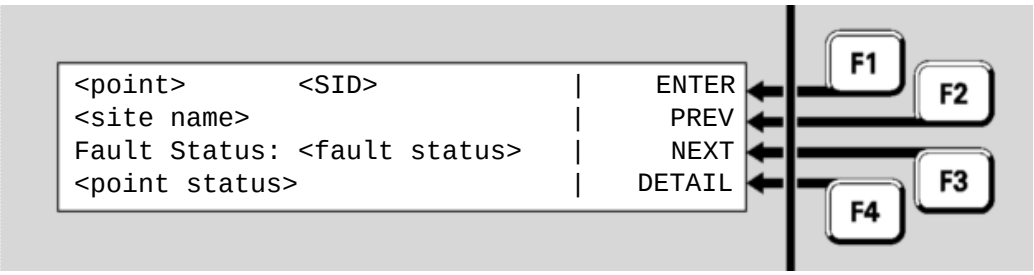

Fig 9-11 – Fault Status

The **<fault status>** is one of the following:

Normal	There are no network faults present.
Fault	There are 1 or more network faults present.

The **<points status>** is one of the following:

Normal	There are no network faults present.
Fault	One or more network faults present.
Disabled	The point has been disabled.

Refer to the user manual for the specific remote device for further details.

Network Warning Status

The format of the Network Warning Status display is shown in Figure 9-12.

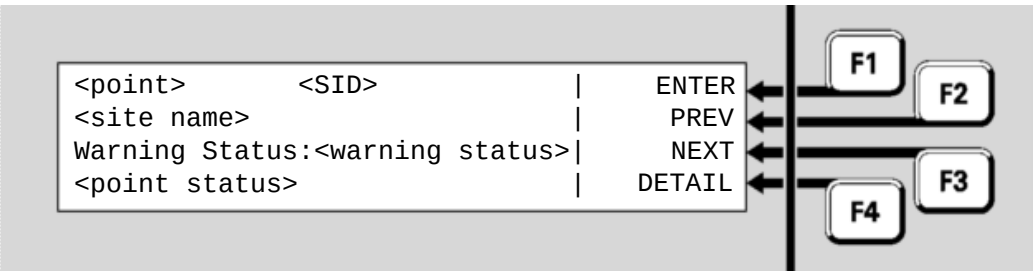

Fig 9-12 – Warning Status

The **<warning status>** is one of the following:

Normal	There are no network warnings present.
Fault	There are 1 or more warnings present.

The **<points status>** is one of the following:

Normal	The warning status is Normal.
Fault	One or more warnings are present.
Disabled	The point has been disabled.

Refer to the user manual for the specific remote device for further details.

Silencing Remote Alarm Devices

On a networked system the *MX1* panel may be configured to display alarms from other panels on the network and to allow remote silencing and disabling of the alarm devices at those panels. When an alarm is received from one of those panels pressing the **SILENCE/RESOUND ALARM** button on the local panel will cause the following menu to be displayed:

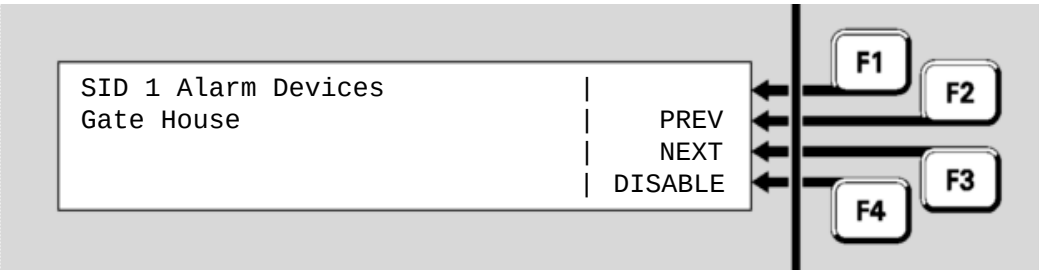

Fig 9-13 – Silence/Resound Alarms Example Display

The first line will display the SID of the panel you are using. The second line will display the site name.

Press **NEXT←F3** or **PREV←F2** to step on to the required panel.

If the alarm devices at the remote panel have been activated (i.e., its ALARM DEVICES ACTIVATED LED is on) then Activated will be displayed in the fourth line as shown in the example in Figure 9.14.

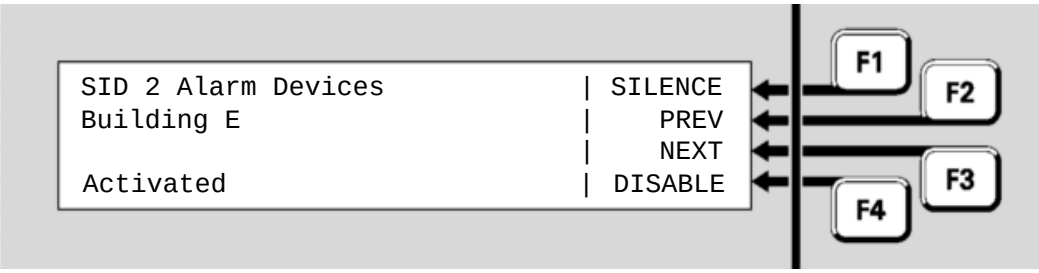

Fig 9-14 – Silence/Resound Alarms Example Display

Press

- **SILENCE ←F1** to silence the alarm devices at that *MX1.*
- **DISABLE ←F4** to disable the alarm devices at that *MX1*. A confirmation screen will be shown. Press OK to confirm the disabling.

Silence will silence the alarm devices until a new alarm re-activates them.

Disable will silence and disable the alarm devices, preventing them from activating until they are enabled.

If the alarm devices at the panel have been silenced (e.g., by having used the Silence command as shown in the example in Figure 9-14, or by a user silencing the alarm devices at the remote panel or a connected Remote FBP) **Activated FBP-Silenced** will be displayed on the fourth line and the F1 command will be **RESOUND** as shown in the example in Figure 9.15.

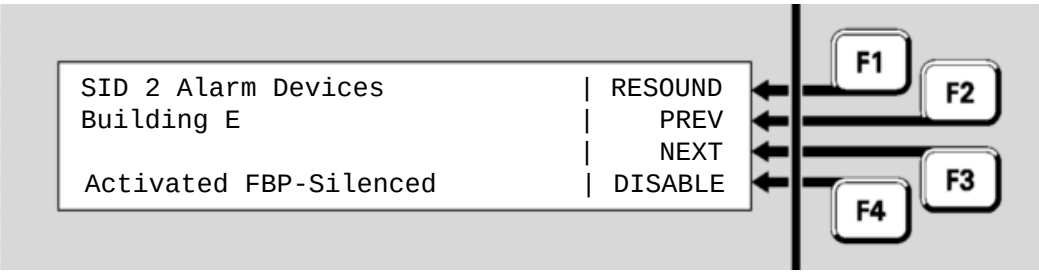

Fig 9-15 – Silenced Alarm Devices Example Display

Press **RESOUND** ←F1 to re-activate the alarm devices at the remote panel.

If the alarm devices at the panel have been disabled **Activated Disabled** will be displayed on the fourth line as shown in the example in Figure 9.16.

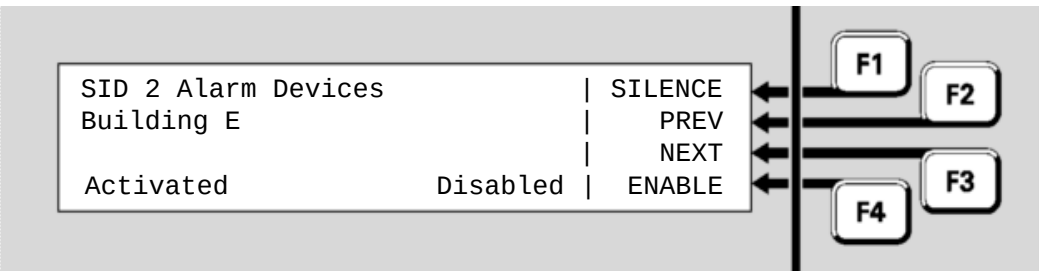

Fig 9-16 – Disabled Alarm Devices Example Display

Press **ENABLE** ←F4 to re-enable the alarm devices. A confirmation screen will be displayed – press OK to confirm the re-enabling of the alarm devices.

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Chapter 10
Buzzer Cadences, LCD Error Messages and Fault Finding

Introduction

This chapter explains the buzzer cadences, some of the error messages shown on the LCD, and provides some fault finding procedures.

Refer to the page number listed in this table for information on a specific topic.

Contents

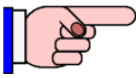
Buzzer Cadences

The following table describes the various buzzer cadences that may be encountered.

Note that in general alarms will override faults, thus when both a new alarm and a new fault condition exist the buzzer will produce the alarm cadence.

Buzzer pulses at 2 Hz	A new alarm exists.
Buzzer steady	A new fault exists.
Buzzer pulses at 0.5 Hz	Abnormal state.
Buzzer volume on high	Panel is at level 1 access.
Buzzer volume on low	Panel is at level 2 access or higher.
No buzzer for alarm or fault	Buzzer may be temporarily muted, or disabled.

Troubleshooting – LCD Messages and Actions



Messages may be presented in upper or lower case depending on the version of *MX1* firmware in use.

The messages are listed here in alphabetical order regardless of case.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"Aborted" CONTEXT: Battery Test menu	Last battery test status is not known; previous test was aborted before test completion.	
"Alarm Devices cannot re-sound due to network silencing" CONTEXT: Silence/Resound Alarms keypress	Alarm devices cannot be un-silenced locally because a remote panel is sending a silence state on the network.	Find the remote panel that has its Alarm Devices disabled and enable them.
"Alarm test is not allowed on this zone" CONTEXT: Zone command	The configuration data file specifies that the zone cannot be tested.	
"Alarm test not allowed" CONTEXT: Point Alarm Test	Point is configured to be "not testable".	If the point needs to be tested, change the configuration data file and use a different profile for the point.
"All points in zone are disabled. Enable at least one point first." CONTEXT: Zone enable menu	Fire alarm standards require that a zone cannot be enabled if all points on that zone are disabled.	Enable at least one point.
"Command is not allowed at this time" CONTEXT: Zone command	The command cannot be applied because the zone is currently in alarm or is currently being reset.	Try again in a few seconds.
"Command is not allowed because all points in the zone are disabled" CONTEXT: Zone command	Fire alarm standards require that a zone cannot be enabled if all points on that zone are disabled.	Enable at least one point.
"Command is not valid for this zone" CONTEXT: Zone command	This can happen if an operate command was applied to a zone.	
"Command not sent. Queue is full" CONTEXT: Point or zone command to a remote panel.	There may be a problem with the network connection.	Check the network connection is working. Re-starting the local *MX1* panel might help.
"Command not accepted. Not supported" CONTEXT: Command to remote point or zone.	The remote panel does not support the command that was sent to it and doesn't know how to execute it.	Check that the point or zone number has been entered correctly.
"Command not accepted. Not allowed" CONTEXT: Command to remote point or zone.	The remote panel does not allow commands to be sent to it from this panel. This is determined by the configuration data file in the remote panel.	Check that the point or zone number has been entered correctly.
"Command failed. All points are disabled. CONTEXT: Command to remote zone	Fire alarm standards require that a zone cannot be enabled if all points on that zone are disabled.	Enable at least one point on the zone.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"Command not accepted. Device is busy" CONTEXT: Command to remote point or zone.	The remote panel is unable to execute the command at this time, probably because it is still executing a previous command.	Try again in a few seconds.
"Disable is not allowed on this zone" CONTEXT: Zone disable	The configuration data file specifies that the zone cannot be disabled.	
"ERROR: CRC TEST FAILED" "*MX1* Keyboard VX.XX" "Calc CRC: 0xXXXX Stored CRC: 0xXXXX" CONTEXT: LCD/Keyboard start-up	Microprocessor cannot read from flash (microprocessor is faulty) , OR	Replace LCD/Keyboard PCB.
	Problem with LCD/Keyboard program download, OR	Download LCD/Keyboard program again.
	Invalid program binary file was downloaded.	Check and re-download LCD/Keyboard program.
"ERROR: CANNOT COMMUNICATE WITH MAIN BOARD" "*MX1* Keyboard VX.XX" CONTEXT: LCD/Keyboard start-up	LCD/Keyboard cannot communicate with Controller.	Check that the FRC is correctly inserted into J8 of Keyboard and J30 of Controller.
	Controller is having its firmware programmed.	Check that Controller indicators B and C are flashing to show normal processing.
	No valid configuration data file in panel (e.g., after updating Controller firmware.	Press SILENCE buzzer and recheck when programming is completed. Reload configuration data file.
	System restarted on "No Database".	Download the configuration data file.
	Faulty loom.	Replace.
	Faulty Controller/LCD/ Keyboard.	Replace.
"Error processing command" CONTEXT: Alarm Devices Test operate Alarm Devices enable/ disable	Configuration data file corrupt or memory corrupt.	Use Smart Config to extract the active database and check it matches the master file. Check that point 241.1 is present in the database and has a "check" in the "can be disabled" column. Restart the panel. Contact service company.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"ERROR: RAM TEST FAILED" "*MX1* Keyboard VX.XX" CONTEXT: LCD/Keyboard start-up	Internal RAM failed test at keypad start-up. Microprocessor is probably faulty. Point 1.7 (ram test) on the keypad equipment is probably also indicating fault unless the fault is intermittent.	Re-start the keypad. Contact service company. Replace LCD/Keyboard PCB.
"ERROR: UNABLE TO RECEIVE CONFIG DATA" "*MX1* Keyboard VX.XX" CONTEXT: Message is displayed on LCD in response to a fault in the *MX1*.	LCD/Keyboard comms are OK but Controller won't send a valid config message to the Keyboard. Likely cause is that LCD/Keyboard and Controller board firmware versions are incompatible.	Install compatible firmware versions in LCD/Keyboard and Controller. Contact service company.
Shows --Invalid-- on lines prompting for user name and PIN. CONTEXT: Login Display	User code and PIN do not match what is in the active configuration data file.	Check the valid user code and PINs for the active data file.
"Invalid entry" CONTEXT: Entering a number	The number is out of range.	Check that the point, zone or SID number you are entering is valid.
Display stuck at "Loading Keyboard Information…" CONTEXT: Memory menu	Keyboard not responding to a request for information. If the keys and LCD are actually functional then this may indicate memory corruption or software problem.	Power *MX1* down and up again. Check correct LCD/Keyboard firmware version is installed.
"Local database disallows sending commands to this SID" CONTEXT: Point or zone command menu.	The configuration data file specifies that this panel may not send commands to the remote panel.	
"Long Battery Test" CONTEXT: Battery Test menu	Automatic battery test is currently active.	
"Loop is busy. Try again later" CONTEXT: Device diagnostic poll scan on the *MX* loop status menu.	A diagnostic poll scan is active on another display by another operator.	Wait for the other operator to exit the *MX* loop status menu.
"Manual Test" CONTEXT: Battery Test menu	Manual battery test is currently active.	None.
"Not alarm testable" CONTEXT: Point alarm test	The point is configured as "not testable". Check the configuration data file.	

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"No History to View" CONTEXT: History Log menu	There is no stored history. This could happen if the history is reset with a command on the diagnostic terminal.	None. To check if the history is working, close and open the door and some events should be logged.
"No Items found" CONTEXT: Point/Zone range reset/ enable/ disable menus	There are no points/ zones in the specified range to which the command can be applied.	
Not all points disabled Not all points enabled Not all zones disabled Not all zones enabled CONTEXT: Enable/ disable command to a range of points or zones.	The command was not applied to one or more points or zones in the specified range. There are several things that can cause this, including that a point/ zone may have been configured to not allow a disable command or that a zone was in alarm.	Use point or zone recall commands to check which points or zones did not obey the command.
"Not in Test" CONTEXT: Battery test menu	Battery test is not active.	
"Not Started" CONTEXT: Battery test menu	There have been no battery tests done since the panel was last re-started or was powered on.	
"Operate test not allowed" CONTEXT: Point operate test	The point is configured to be not testable.	
"Point not configured in database" CONTEXT: Point recall	The SID specified by the point number that has been entered, does not appear in the list of SIDs in this panel's configuration database.	If you need to recall a point from the specified SID from this panel, you need to add the SID to the configuration data file.
"PreAlarm" CONTEXT: Zone recall menu	One of the points that is mapped to the zone is in pre-alarm.	Use the history display to determine which point is in pre-alarm. Use the off-normal recall menu to find points in pre-alarm. Check analogue values of the point in pre-alarm using the values menu.
"Point not testable at this time" CONTEXT: Point alarm test	Some devices (e.g., 814CH) cannot be tested again after a test, until a delay has elapsed.	Wait 60 seconds and try again.
"Remote panel did not respond" CONTEXT: Point or zone command	Communication with the remote panel may have been lost or it has been taken offline.	Check for communication faults and that the remote panel is still online.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"SID xx not responding, retry yy" CONTEXT: Recall of remote point or zone.	The remote panel SID xx is not responding. The yy value indicates how many attempts have been done. There may be a fault in the network or the panel may be offline.	Check that the remote panel is online and that there are no network faults.
"SID xx is busy, retry yy" CONTEXT: Recall of remote point or zone.	The remote panel SID xx is busy and unable to provide the requested information at present. It may be busy with a prior request.	Try again in a few seconds.
"Test in progress. ## mins left" Also showing *[Battery voltage]* *[Battery Current]* CONTEXT: Battery test menu	There is currently a manual or long-term automatic battery test in progress. Minutes to completion is shown.	
"Test Pass" CONTEXT: Battery test menu	Last battery test succeeded. Signifies that the battery voltage has stayed above the minimum voltage acceptable for the duration of a long-term or manual battery test.	
"The command handler is busy. Please wait a few seconds and try again" CONTEXT: Zone commands for local zones.	This indicates that a previous command is still being executed. If the previous command was a range command for a large number of local zones, there may be a delay while all of the associated events are sent on the network.	Try again in ten seconds.
"This point cannot be disabled" CONTEXT: Point disable menu	The point is configured so that it cannot be disabled by the user.	
"This zone cannot be disabled" CONTEXT: Zone disable menu	The zone is configured so that it cannot be disabled by the user.	
"Unable to Test: Alrm Routing Error" CONTEXT: Battery test attempted.	A manual battery test is not permitted while *MX1* is signalling an alarm.	Wait until the alarms have been reset.
"Unable to Test: Battery busy" CONTEXT: Battery test attempted.	A manual battery test cannot start while an automatic battery test is in progress.	Wait until the automatic test is completed.
"Unable to Test: Battery charging" CONTEXT: Battery test attempted.	The battery is allowed to charge for twice the length of the previous battery test. This message indicates the charging period is underway.	Wait until the charging period has finished.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"Unable to Test: Battery low" CONTEXT: Battery test attempted.	The battery voltage is so a battery test is not permitted.	Wait for the battery to re-charge.
"Unable to Test: Mains failed" CONTEXT: Battery test attempted.	Battery tests are not permitted while mains power is failed.	Wait until mains power is restored.
"Unable to Test: No battery" CONTEXT: Battery test attempted.	There is no battery connected or the battery is completely discharged or faulty.	Connect good batteries and try again, or wait until the batteries have charged.
"-Verified-" CONTEXT: Logon display	The user code and PIN entered matches that contained in the active configuration data file.	
"Zone not configured in database" CONTEXT: Zone recall	The SID specified by the zone number that has been entered, does not appear in the list of SIDs in this panel's configuration database.	If you need to recall a zone from the specified SID from this panel, you need to add the SID to the configuration data file.
#74 Pvar dataflash fail #75 zone disables dataflash fail #76 pnt disables dataflash fail #77 History dataflash fail CONTEXT: Software fault point status display	Persistent variables, zone disables, point disables and event history are stored in non-volatile "data-flash" memory. These faults indicate that the panel tried to write data to the dataflash and failed or that the history stored in the dataflash was found to be invalid at start-up.	Contact the service company. Replace the main board.

Quick Reference – Alphabetical List of Possible LCD Messages

This section sets out the LCD messages that may be encountered during service operations. The messages are listed in alphabetical order.

Due to ongoing changes to system software (firmware), these lists are subject to change without prior notice.

LCD Messages		
Message	**Occurs In**	**Meaning**
`Invalid`	Logon Display	User code and/or password entered do not match that contained in the active datafile.
`Next is OLDEST`	History recall	User has pressed the 'next' button to view a newer history event, however there is none. The menu therefore wraps round and displays the oldest history event.
`No History to View`	History recall	There is no stored history.
`No offnormal zones found`	Zone recall	There are no off-normal zones.
`No offnormal points found`	Point recall	There are no off-normal points.
`Zones not found`	Zone recall	There are no zones set up as "Show in Sequential Recall".
`No faults found`	Fault recall	There are no zones or points in fault.
`No disables found`	Disables recall	There are no zones or points disabled.
`No TESTS in progress` `No Tests Found`	Tests recall	There are no zones or points currently under test.
`Previous is NEWEST`	User has pressed the 'previous' button to view an older history event, however there is none.	The menu therefore wraps round to display the newest history event.
`Test cannot start at this time.`	Point Test Screen – performing operate, alarm test normal, alarm test fast.	Point is not configured to perform the test requested.
`This point cannot be disabled`	Point disable display, Point Test Screen, Point Recall Screen.	Configuration does not permit this point to be disabled by operator.
`This zone cannot be disabled`	Zone isolate display, Zone Test Screen, Zone Recall Screen.	Configuration does not permit this zone to be disabled by operator.
`Wrapping to first in list`	Recall screens	The next item is the first in the list.

Chapter 11
Mounting and Wiring Instructions

Introduction

This chapter contains instructions for installing the *MX1* and wiring it to *MX* Loop devices, alarm devices, and ancillary equipment.

Further wiring and gear plate drawings are included in the *MX1* Wiring Diagrams Manual (LT0442) included with each *MX1* panel.

In this Chapter

Wiring must comply with AS/ACIF S009 and be installed by an ACMA-registered installer.

Remove power to the *MX1* panel before plugging in or disconnecting modules such as 16 Zone LED Displays, LCD/Keyboard, *MX* Loop Cards, etc.

Cabinet Installation

MX1 is available in 8U and 15U cabinets that simplify installation by provision of:

- appropriate mounting holes and mounting template
- space for cabling, including knockouts in the cabinet for top/bottom cable entry and slots in the gearplate for entry from behind the cabinet

- pre-punched holes or saddles for fitting trunking to the gear plate, for fitting the supplied push-fit cable tie mounts, and for looming using cable ties directly to the gearplate.

The *MX1* cabinet is designed to be easily surface mounted on a wall or inset in a wall cavity.

The cabinet location should:

- Be dry, with a moderate ambient temperature, 45°C absolute maximum.
- Not be subject to outdoor conditions without suitable protection.
- Allow the LCD to be at typical eye level (see Figure 11-1).
- Have clear access and viewing for fire firefighters and operators.
- Allow for the door to open at least 120°.

The cabinet must not be installed in hazardous areas as defined in AS/NZS 3000.

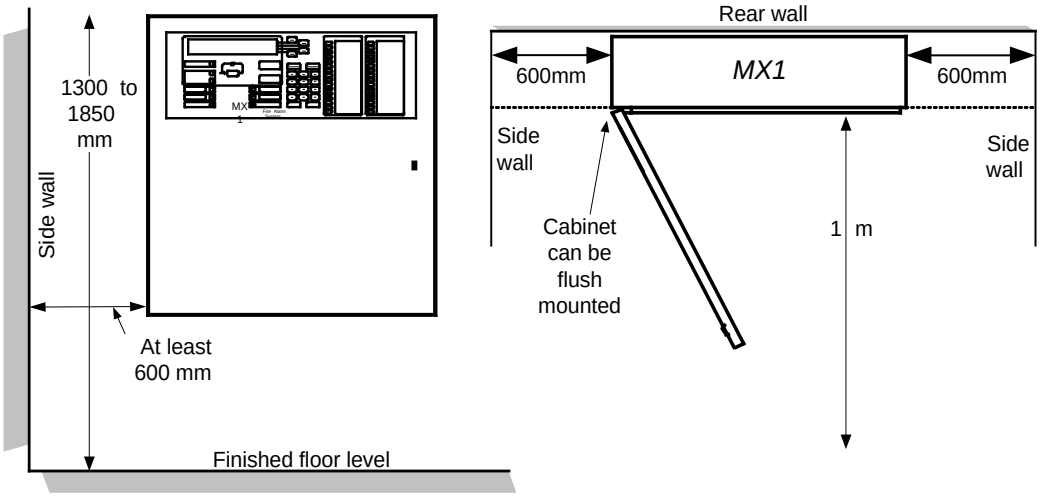


Figure 11-1 – Recommended clearances

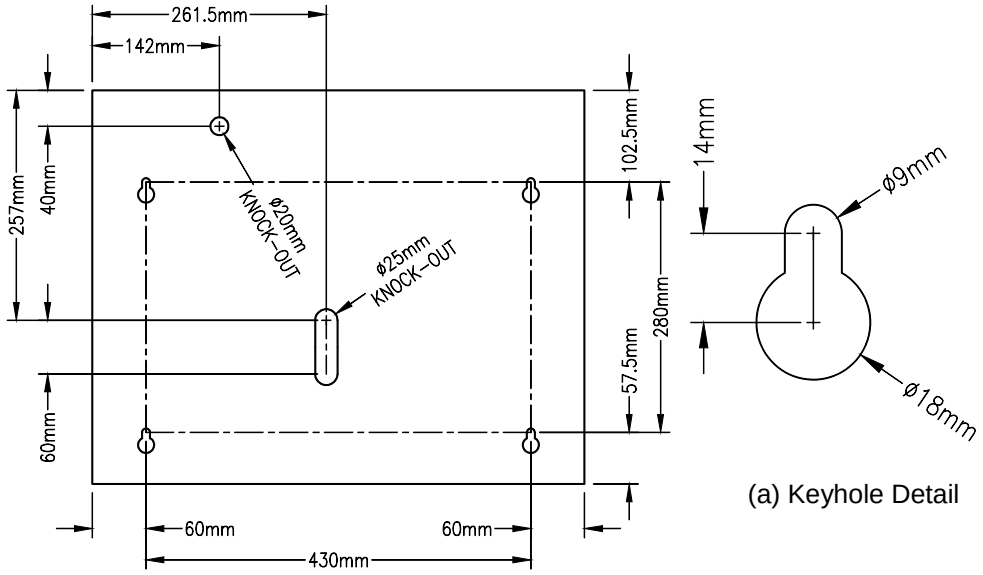
Wall Mounting – 8U / 15U Cabinet

The cabinet is supplied predrilled with four keyholes suitable for mounting screws of not more than 8mm shaft diameter and 11mm head diameter. A drilling template is supplied with each unit. Refer Figure 11-2 and 11-3.

The cabinet has two knockouts in the back of the cabinet. One ø20mm knockout is behind the mains socket and a larger oval knockout is behind the slot in the gearplate. See Figures 11-2 and 11-3.

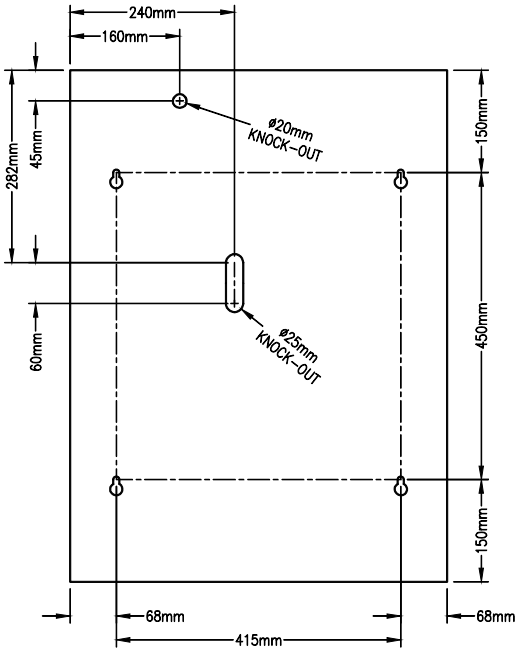
If any drilling or filing is required inside the cabinet, it is recommended to first remove the gear plate containing the PCBs and power supply. Unplug the MCP/door switch loom (from J3) and the 10-way loom from the LCD/keyboard (from J30) before removing the gear plate.

Clean out all swarf from the cabinet before replacing the gear plate and power supply.



(a) Keyhole Detail

(b) 8U Cabinet

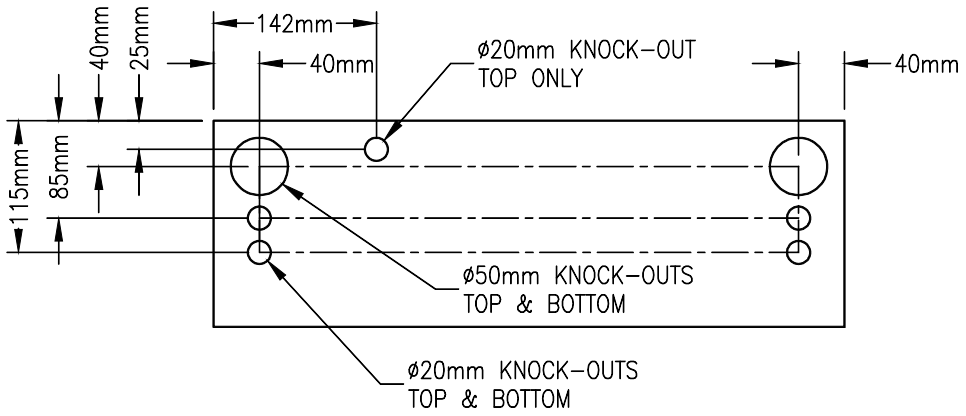


(c) 15U Cabinet

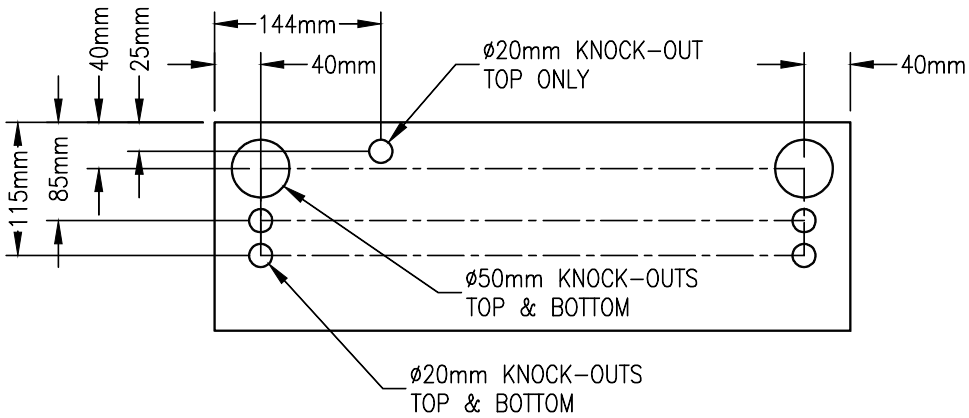
Figure 11-2 – Keyhole Pattern for Mounting Cabinet

External Wiring

Cable Entry



(a) 8U Cabinet



(b) 15U Cabinet

Figure 11-3 – Knockout positions at top and bottom of the cabinet

The cabinet has two 50mm knockouts in the top and bottom and five 20mm knockouts in the top and four in the bottom. Plus there are two knockouts in the rear wall. Other entry holes can be drilled as required.

To prevent water entering the cabinet, seal unused knockouts and any top cable entries. Where possible, use bottom cable entry with cables going down 100 mm below the cabinet before rising.

The gearplate has precut slots behind the mains outlet and beside the controller board to facilitate cable entry from the rear of the cabinet. The cabinet has matching knockouts in these positions.

Mains Wiring

The cabinet must be supplied with a dedicated mains feed direct from a main switchboard (refer AS/NZS 3000). A 10A circuit breaker is required for a system with the standard MX1 5A PSU.

The termination of the mains cable into the mains outlet inside the *MX1* and at the distribution board must be done by a suitably qualified electrician. If the mains cable is routed inside the cabinet, the outer sheath of the cable must be maintained unbroken until after the cable enters the mains outlet. The PSU module power lead plugs into the mains outlet.

Mains Wiring – 8U / 15U Cabinet

Wherever possible the mains cable should be routed through the back of the cabinet using the gearplate slot and cabinet knockout inside the mains outlet. Alternatively, route the mains cable through the bottom left-hand side of the cabinet – this reduces the possibility of water ingress and provides an acceptably short wiring path. The mains cable should be routed up the left-hand side of the cabinet and terminated in the mains outlet on the gearplate. This is to minimise electrical interference between the mains supply and the other circuits connected to the electronics.

A mains socket, mounting block and mounting hardware (two x M4 x 10 screws) are supplied fitted. Remove and cut the mounting block to allow cable entry and fit to the gearplate as per Figure 11.4. Connect the incoming mains into the mains socket (ensure correct wiring) and mains earth wire into the earth terminal on the gearplate, then re-fit the switch plate using the supplied screws. Do not remove the earth wire between the gearplate and the GPO.

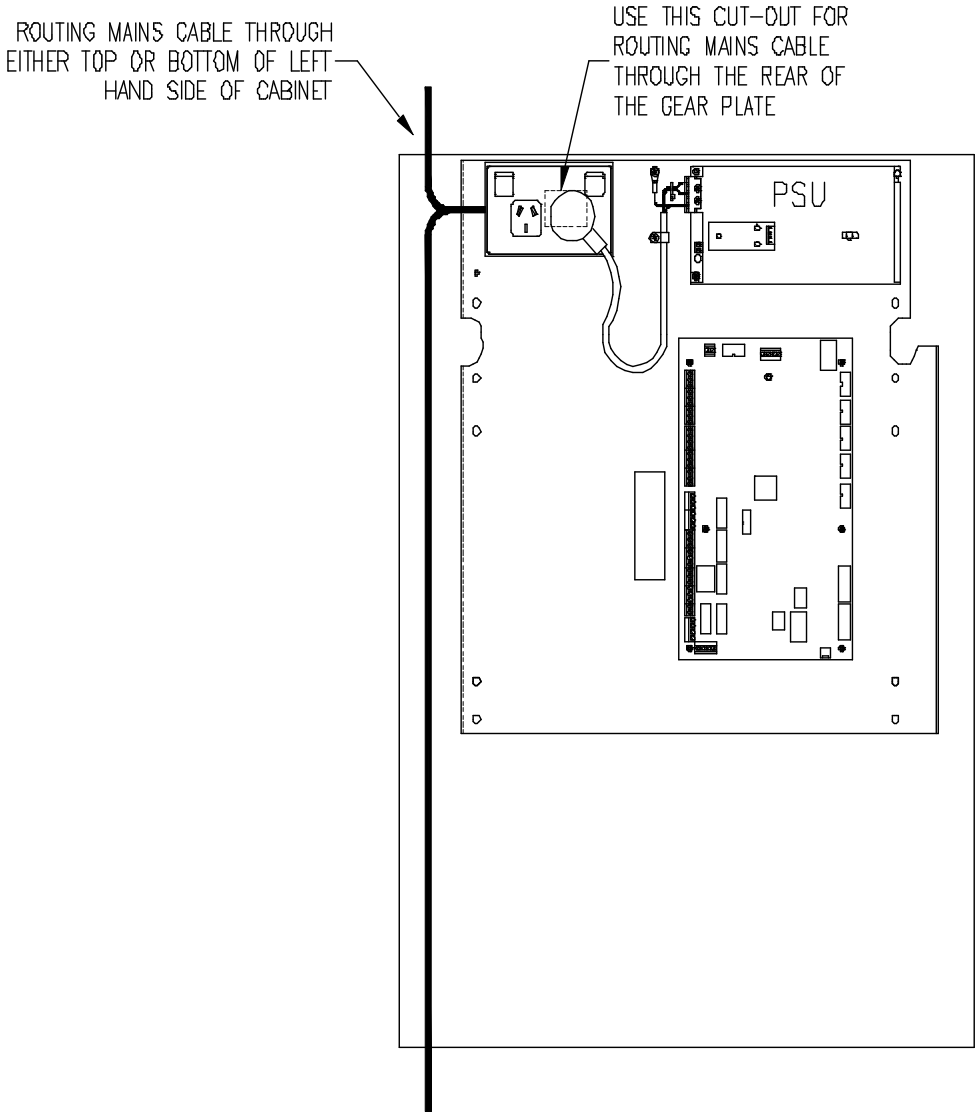


Figure 11-4 – Recommended Mains Cable Routes within 15U Cabinet

Battery Wiring

The 8U cabinet has space for a pair of 12V batteries up to 17Ah. The 15U cabinet has space for a pair of 12V batteries up to 40Ah.

Many non-brigade-connected systems will require larger battery capacities to meet the 72 hour standby operation requirements.

Batteries greater than 40Ah (or 17Ah) will require a separate battery box, which must be located adjacent to the *MX1* cabinet.

The wiring between any external battery cabinet and the *MX1* should use 4mm^2 cable to minimise voltage drop. The lead interconnecting the two batteries is provided with the panel and includes an inline 20A blade fuse.

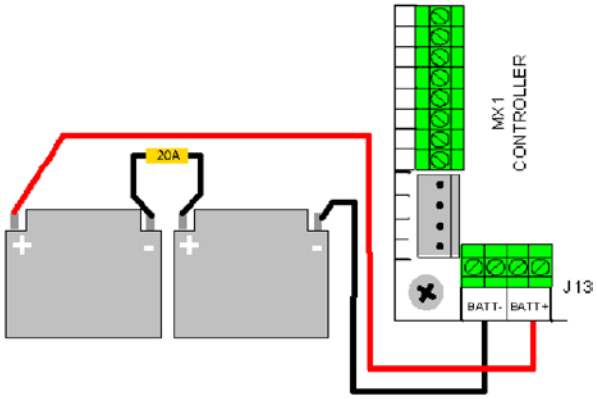


Figure 11-5 – Battery Wiring to *MX1* Controller

MX1 Controller Wiring

Controller Wiring Connections

The *MX1* Controller provides most of the field wiring connections. Figure 11-6 shows the Controller and its various connection points.

Examples of wiring the external devices to these points are covered in the following sections.

Factory Fitted Wiring

The factory-fitted wiring includes:

- The LCD/keyboard FRC plugs into J30.
- The PSU loom plugs into J14.
- The MCP/door switch plugs into J3.
- Battery leads terminated in J13.

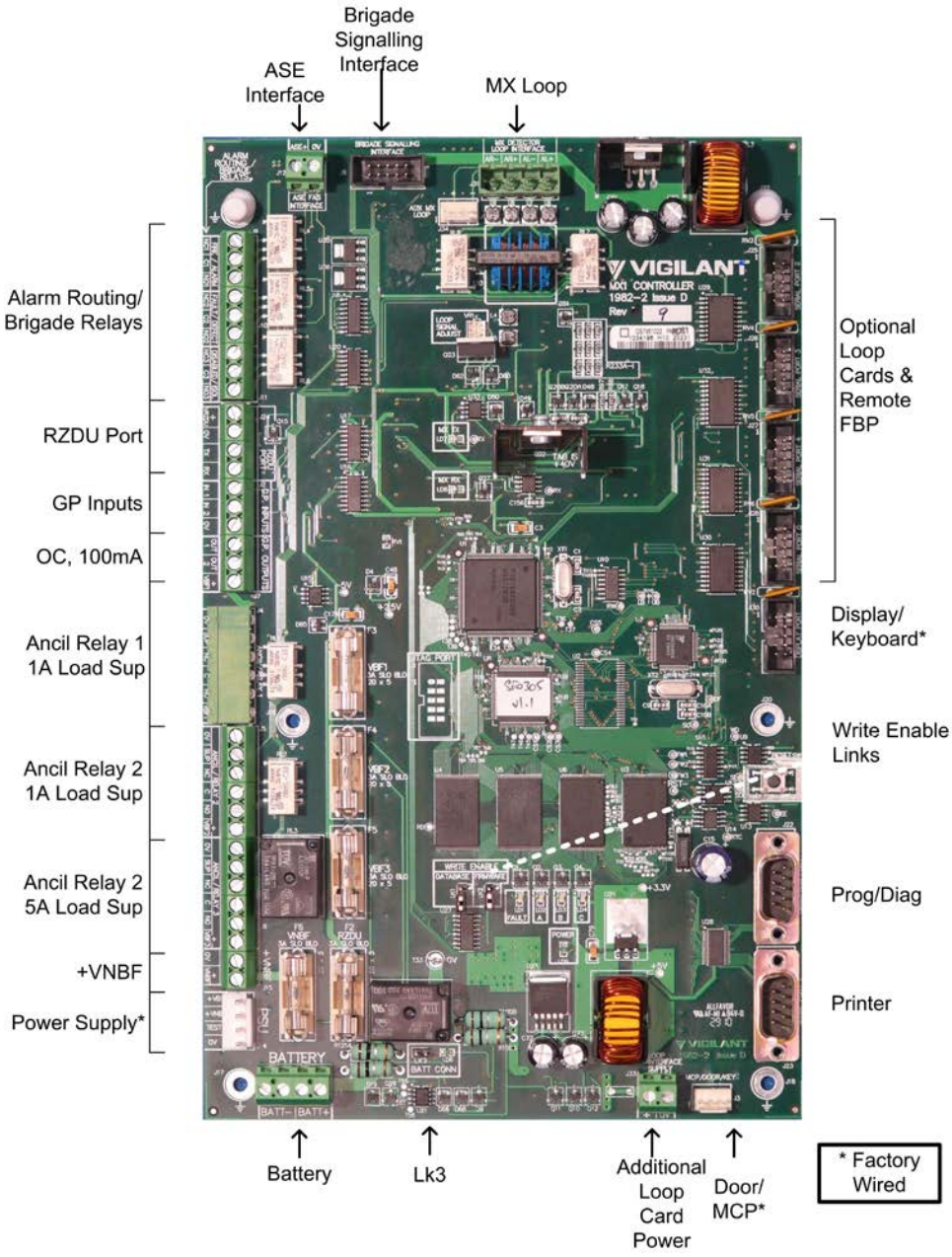


Figure 11-6 – Controller Wiring Connections

MX Addressable Loop Wiring

Figure 11-7 shows the general form of the *MX* addressable loop wiring from the *MX1*.

The screw terminals on the controller board can accommodate loop wire up to 2.5mm^2 in size.

Correct polarity must be maintained around the loop as the *MX* devices are polarity sensitive.

AS 1670.1 Clause 2.6 requires that Short Circuit Isolators be located around the loop such that no more than 1 zone or 40 devices are adversely affected by a short circuit.

850 series detectors have built-in short circuit isolators if fitted to 4B-C bases. The detectors plugged into an isolator base (4B-I or 5B-I) or on the spur connection of the line isolator module (LIM800) are not affected by a short circuit on either side of the isolator.

Each device in parallel on an input or output module should be counted as one device.

Refer to the installation instructions supplied with the *MX* devices for their wiring details, or to LT0442 *MX1-Au* Field Wiring Instructions.

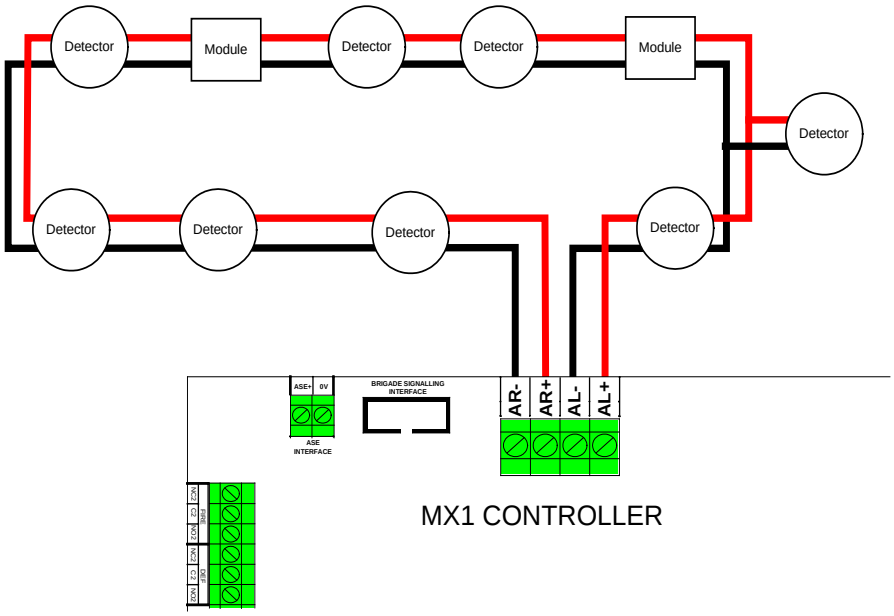


Figure 11-7 – Addressable Devices on *MX* Loop

It is strongly recommended that the cabling requirements should be calculated for each installation. The MX1Cost program can be used for this purpose.

Additional Loop Cards

Additional *MX* Loop Cards (order as FP0950) can be installed to provide more *MX* loops of up to 250 devices each, up to the system limit.

The *MX* Loop Card links and DIP switch must be set during installation.

Full installation instructions are contained in LT0443, "*MX1* Loop Card Installation Guide".

Mounting *MX* Devices

There is a range of brackets available for mounting *MX* modules in the *MX1* panel – usually positioned where the *MX* Loop Cards mount. Refer to the relevant installation instructions LT0557 and LT0591.

AS 1668 Fan Control

AS 1668 Fan Controls are mounted in *MX1* panels by using *MX1* AS 1668 3U 19" rack doors (FP1056) that come with 2 fan controls fitted. Each door can accommodate 12 controls in total by the addition of five FP1057 Fan Control Expansion Kits. Each kit provides 2 fan controls. The *MX1* panel can support up to 126 fan controls (63 boards), although additional cabinets will be required for more than 36 controls in a 15U cabinet.

Installation of the *MX1* Fan Controls is detailed in the *MX1* Fan Controls Install Instructions (LT0587). A copy of LT0587 is included with every FP1056 *MX1* Fan Control 3U 19" rack door and FP1057 *MX1* Fan Controls expansion kit. Wiring is shown in Figure 11-8.

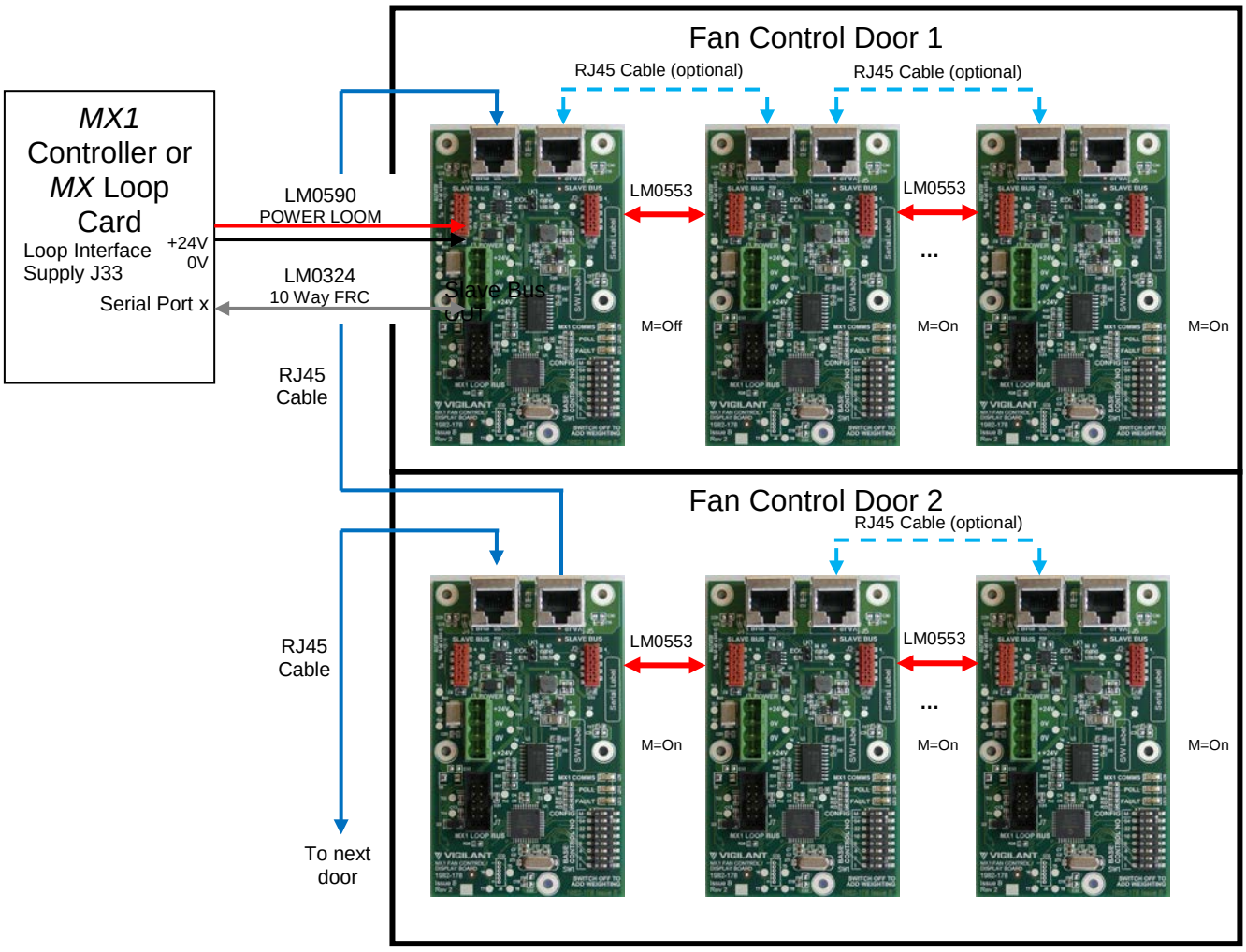


Figure 11-8 – *MX1* Fan Control Boards Wiring Diagram

The DIP switch on each fan control needs to be set to a unique odd number from 1 to 125. All controls must have their 'M' switch set to ON except the Master control which has the 'M' switch set to OFF.

Alarm Devices

Most fire alarm systems using *MX1* will require Alarm Devices – also called “occupant warning system”, “evacuation system”, or EWIS in various standards.

On *MX1*, occupant warning can be provided using one or a combination of:

- A T-Gen2 (T-Gen 60 or T-Gen 120) tone generator or BOWS to drive loudspeakers with tones, digitised speech messages, and, optionally, public address.
- Multiple audible alarm devices (AADs) on a common cable pair that can be arranged in up to three branches.
- Visual annunciation devices (VADs) in selected areas.
- A QE20 EWS or QE90 EWIS.

These are described in the following sections.

Note that the 100V speaker outputs of T-Gen2, QE20 and QE90 are Telecommunication Low-Voltage (LV) cabling and is subject to AS/ACIF S009. The cabling must be double-insulated and separated from ELV customer cabling.

T-Gen2

These instructions describe a basic installation of a T-Gen2 tone generator on the left hand side of an *MX1* 15U gearplate (T-Gen 60 or the T-Gen 120), or right hand side fold (T-Gen 60 only) and wiring it to the usual ANC1 terminals.

Refer to LT0667 T-Gen2 Installation and Operating Instructions and LT0442 *MX1* Wiring Diagrams for installations involving:

- Mounting in other positions on the 15U or BTO gearplates.
- Mounting and use of the 3U T-Gen2 User Interface door.
- Mounting and use of the 100V Splitter or 100V Switcher modules.
- Use of slave T-Gen2 units.
- Connection of paging consoles.
- Configuring the T-Gen2 to use non-default operation.

The T-Gen 60 mounts onto the *MX1* gear plate left hand side in the ‘responder footprint’ position, which has five holes for plastic standoffs and one metal standoff.

The T-Gen 120 mounts onto the *MX1* gear plate left hand side in the ‘responder footprint’ position, but is fixed in place using four M4 screws and the MX Loop card mounting holes.

The T-Gen 60 mounts on the right hand fold of the gearplate using four double-ended plastic standoffs and two metal male/female standoffs.

For a Grade 3 solution, a single T-Gen2 can take its power from the *MX1* Loop Interface Supply Terminal (J33) through a 10A fuse, using the LM0459 and fuse provided with the T-Gen2.

The T-Gen2 can be connected to the ANC1 relay output as shown in Figure 11-9a. The LM0319 included for this purpose plugs in to the 6 way

header on ANC1. If present, remove the red +VBF and black 0V power wires from the LM0319.

This wiring provides complete supervision of wiring open and short circuits, as well as passing the state of the T-Gen2's fault relay to the *MX1* controller.

ANC2 could be used to control the T-Gen2 instead of ANC1, but this will require manual wiring as the supplied loom supports only ANC1, and ANC2 supervision must be set to "Contact".

When the T-Gen2 Alert tone must be controlled by the *MX1*, one of the GP OUT terminals can be connected to the T-Gen2's A/I/E- input, as shown in the diagram. This is not default operation, and the *MX1* must be specially configured.

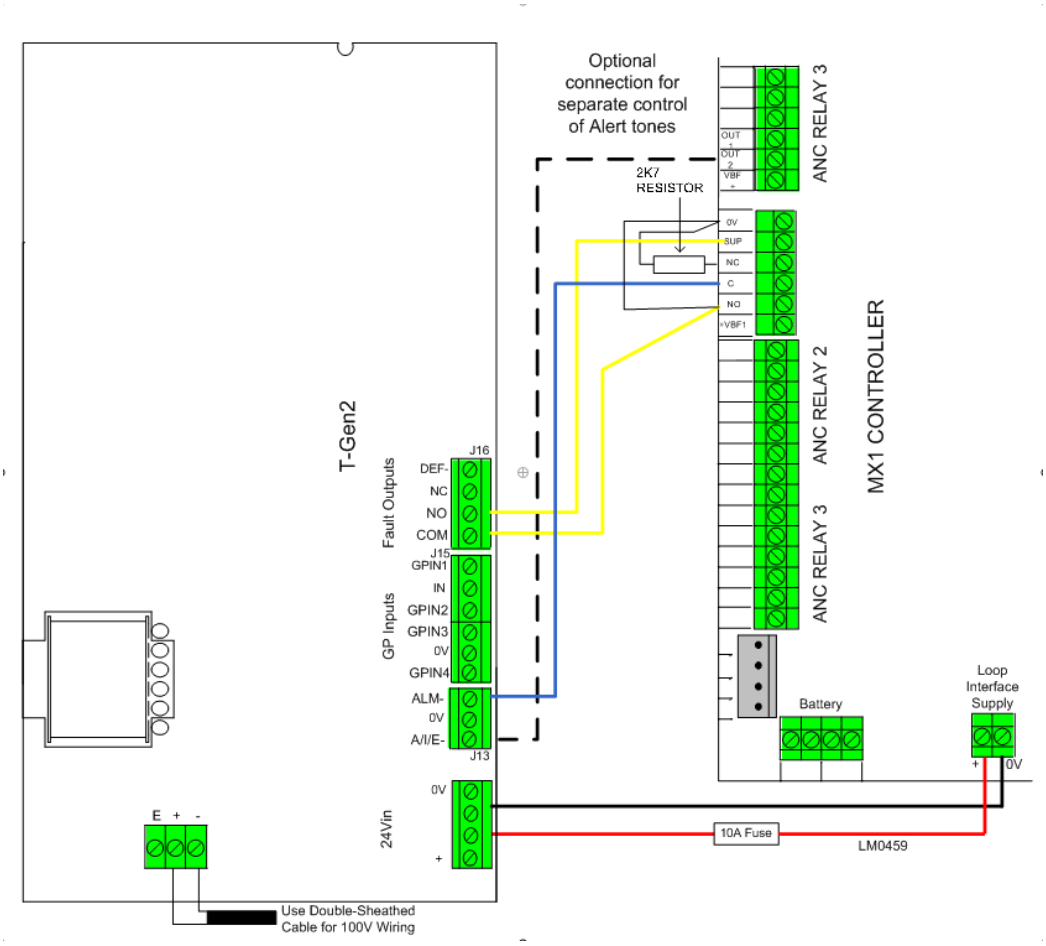


Figure 11-9a – Wiring Ancillary Relay 1 to T-Gen2 – Grade 3

A T-Gen2 can be controlled by the *MX1* ANC3 relay, using the wiring shown in Figure 11-9b. ANC3 supervision is set to “ANC3”.

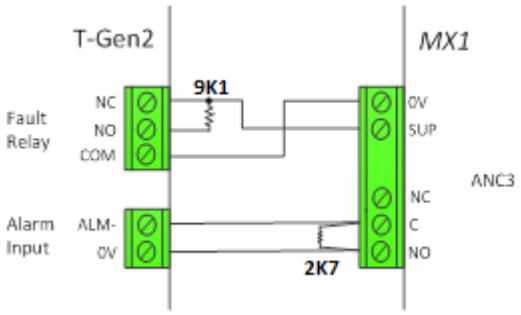


Figure 11-9b – T-Gen2 Wiring Using ANC3

A *Grade 2* solution requires the T-Gen2 to be powered from a separate PSE. FP1129 and FP1130 provide the basics of a self-contained Grade 2 EWS.

For a Grade 2 multi-zone installation there are 3 options to implement the zone selection:

1) Use the 16-way relay expansion board PA0470 that can be connected to the *MX1* LCD/Keyboard and wired to the General Purpose Input connections of the T-Gen2.
2) Use the T-Gen2 HLI board (FP1143) to interface both units, see RZDU section in this document.
3) When no other RZDU devices are present, then a direct RZDU connection between the MX1 panel and T-Gen2 is possible, see RZDU section in this document.

Multiple Branch Loads

Ancillary relay ANC3 can supervise wiring to controlled loads such as compliant sounders (AADs) and beacons (VADs) on up to three branches. This output can switch loads up to 5A resistive at 30V. Figure 11-10 shows the necessary wiring.

Each device must include a reverse polarity blocking diode or one needs to be wired in series as shown in Figure 11-10. A suitable diode for loads up to 1A each is 1N4004.

Inductive loads must have suppression capacitors or diodes fitted as well.

For a single branch, the ELD is 9.1kΩ. For two branches, each ELD is 18kΩ. For three branches, each ELD is 27kΩ. Suitable ELDs are supplied with the *MX1*.

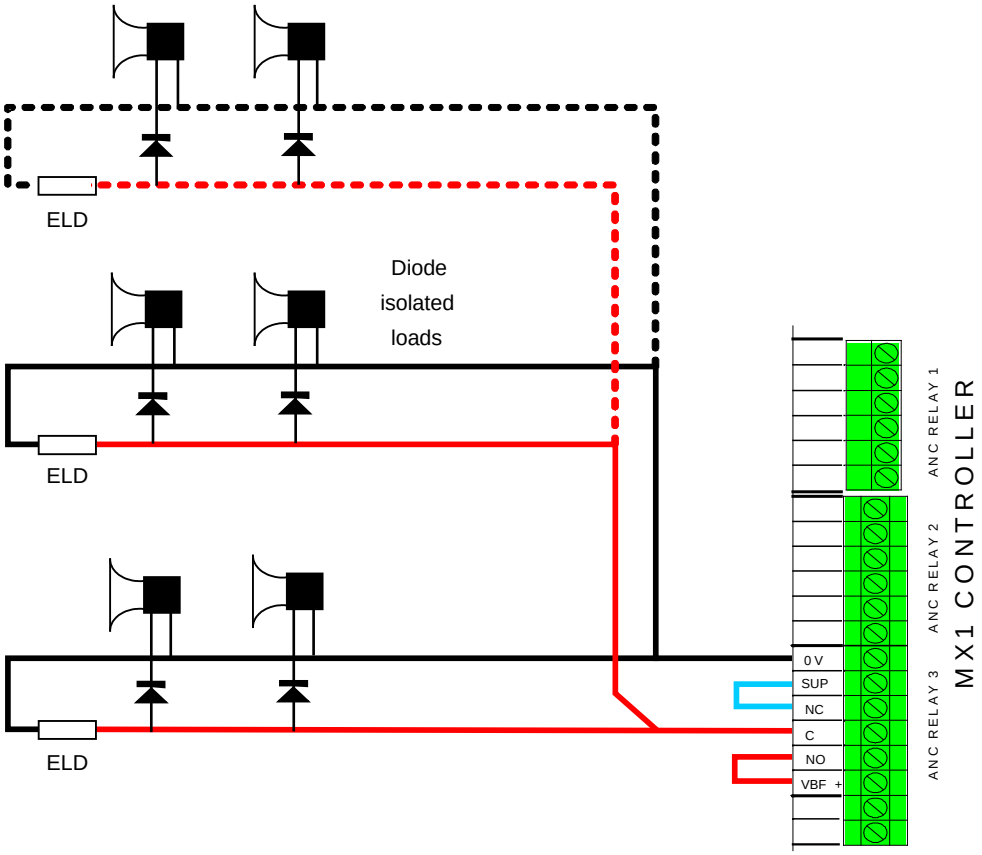


Figure 11-10 – Wiring for Multiple Branched Loads with Supervision

QE20 EWIS

MX1 can activate a QE20 EWS using a variety of methods:

- Single relay output for all evacuate.
- Multiple relay outputs, one for each zone activation.
- RZDU high level link for individual zone activations.
- Network connection for individual zone activations.

Single Relay for ALL Evacuate

The *MX1* ANC1 relay and supervision input (or ANC2) can be used for all evacuate if the *MX1* and QE20 are co-located (adjacent panels or a combo). Figure 11.11 shows the wiring.

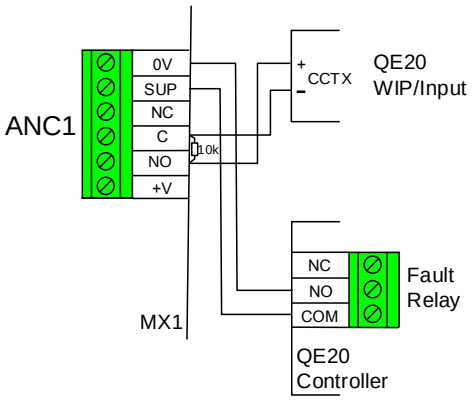


Figure 11.11 – Wiring MX1 ANC1 to QE20

Multiple Relays, One for Each QE20 Zone

If the *MX1* and QE20 are not co-located, or multiple zone inputs to the QE20 are required, then separate relays must be used for each QE20 zone alarm and a supervised fault input is needed on the *MX1*.

A 16-way relay board can be fitted to the *MX1* to provide multiple relay outputs. The GP1 or GP2 input needs to be configured for Ext Fault. Figure 11.12 shows the wiring between the MX1 and QE20.

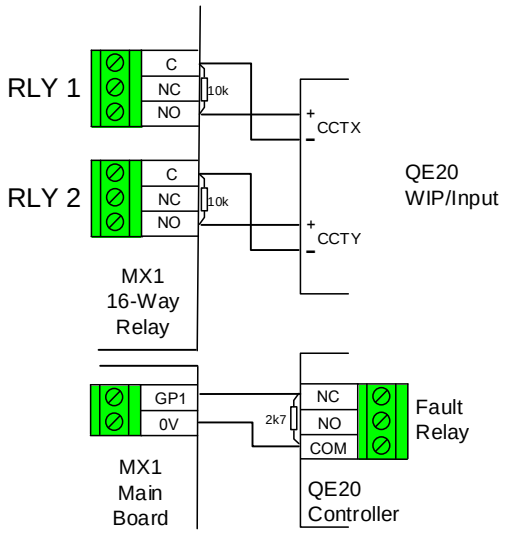


Figure 11.12 – Multiple *MX1* Relays to QE20

RZDU High Level Link for Individual QE20 Zones

The RZDU output can be used only when the QE20 and *MX1* are co-located, since a single fault on the RZDU wiring will stop all zone alarm signals from working. With this setup the RZDU wiring must not extend beyond the *MX1*/QE20 cabinets (i.e., externally to other RZDU products like NSA or IO-NET) as a short circuit on the external wiring could stop the alarm signalling to the QE20.

If RZDU wiring to field devices is required, then the FP1143 HLI Interface Module needs to be added to provide a short-circuit isolated field RZDU connection.

Refer to drawing 1976-181 Sheet 139 in LT0442 for the wiring details. Note a connection is not required from the QE20 Fault relay, as the *MX1* RZDU communications will create a fault if the QE20 powers down, is disconnected, or is in the fault condition.

MX1 Configuration

First, in SmartConfig create zones with **ACZ** profiles (say zone 301 up) for the QE20's evacuation zones. Then write the logic equations to activate each ACZ when the required *MX1* zone(s) is in alarm and the Alarm Devices are on.

```
;create “zones” for QE20 to look at
Z301OP = Z1AL AND $ALARM_DEVICES_ON
Z302OP = Z2AL AND $ALARM_DEVICES_ON
Z303OP = Z3AL AND $ALARM_DEVICES_ON
Z304OP = Z4AL AND $ALARM_DEVICES_ON
```

Note that each alarm zone’s profile needs to activate the alarm devices in order for this logic to work. By including the alarm devices it allows them to be disabled to stop an alarm from triggering the QE20, e.g., during testing. Note though, that this will not STOP the QE20 once it has been triggered as the alarm inputs latch within the QE20.

On the System Page enable the RZDU number that will be assigned to the QE20 and set the Maximum Zones of Information value in the RZDU section to the highest zone number to be sent to an RZDU device (RDU, QE20 or whatever is connected to the RZDU data bus).

The QE20 will need to be configured using QEConfig for RZDU HLL Inputs; enter the assigned RZDU number (address) and map each *MX1* ACZ zone to the required emergency zone FIP input using Hx, where x is the *MX1* ACZ number.

Network QE20 Connection

If a QE20 and *MX1* panel are connected to the same Panel-Link network, they can be configured so that the *MX1* can activate evacuation zones on the QE20 and monitor the fault state of the QE20 over the network.

The standard method to convey alarm information to a QE20 via a Panel-Link network is to create ACZs and write a logic equation for each ACZ that combines the alarm states of the appropriate fire zones together with the Alarm devices being on.

First, in SmartConfig, create zones with the **QE90 Status Transfer** profile (say zone 301 up) for the QE20’s evacuation zones. Then write the logic equations. For example,

```
;create “zones” for QE20 to look at
Z301OP = Z1AL AND $ALARM_DEVICES_ON
Z302OP = Z2AL AND $ALARM_DEVICES_ON
Z303OP = Z3AL AND $ALARM_DEVICES_ON
Z304OP = Z4AL AND $ALARM_DEVICES_ON
```

Note that each alarm zone’s profile needs to activate the alarm devices in order for this logic to work. By including the alarm devices it allows them to be disabled to stop an alarm from triggering the QE20, e.g., during testing. Note though, that this will not STOP the QE20 once it has been triggered as the alarm inputs latch within the QE20.

The MX1 has to be configured for networking and to broadcast the status of its zones out on to the network (the default network operation).

On the SID Points page the SID number assigned to the QE20 needs to be set to a Type of QE90, and the SID Config Profile set to QE90. This will make the MX1 generate a fault if the QE20 does not respond over

the network, or if the QE20 sends a MAF Status message with System Fault present. Wiring of the QE20 Fault relay to the MX1 is thus not required.

The QE20 will need to be configured for networking, and each MX1 ACZ zone entered as the FIP input using Hx.y (where x = MX1 SID, y = ACZ number) for each QE20 emergency zone.

For further details refer to:

LT0564	MX1 Network Design Manual
LT0726	QE20 Design Manual.

QE90 EWIS

MX1 can activate a QE90 EWIS in one of several ways:

- Single relay output for all evacuate.
- Multiple relay outputs, one for each zone activation.
- RZDU high level link for individual zone activations.
- Network connection for multiple zone activations.

The RZDU method will be described as it is the usual interface (refer 11-13). The other methods can be arranged by using clean-contact relay outputs from *MX1* (for example, Anc 1 or 2, or relays controlled by GP Out 1 and 2 or even the 16 open-collector outputs on the LCD keyboard). Supervision of the QE90 for faults can use a GP Input as shown in Figure 11-13.

Wiring

Using the RZDU output is allowed only when the QE90 and *MX1* are co-located, since a single fault on the RZDU wiring will stop all zone alarm signals from working.

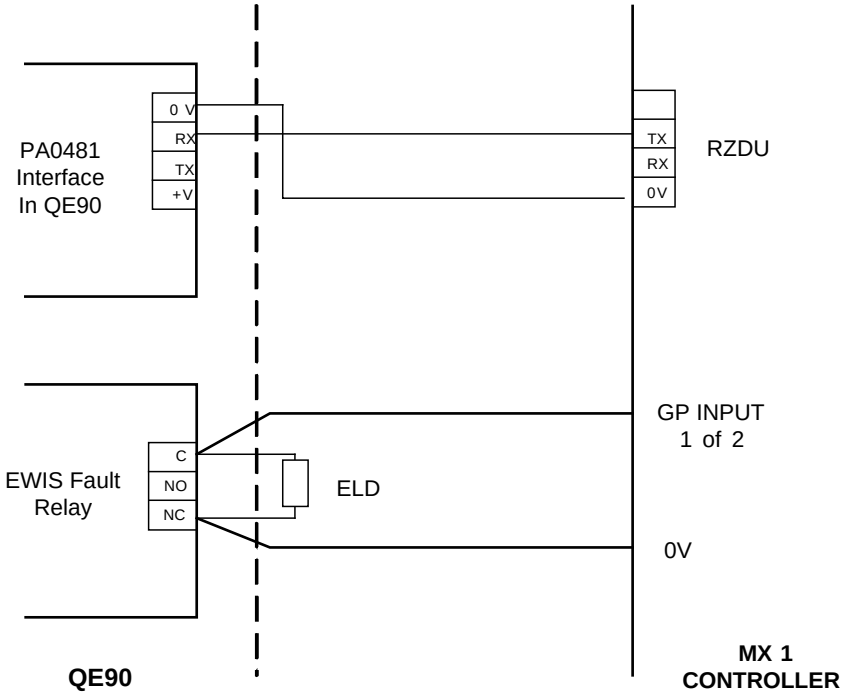


Figure 11-13 - *MX1* to QE90 Wiring Using RZDU and EWIS Fault Relay

The GP Input ELD can have any value between 1.5kΩ and 3.3kΩ. 2.7kΩ ELDs are supplied with *MX1*.

Refer to the QE90 Installation Manual (LT0088) Chapter 22.2 for details of how to provide the RZDU input in QE90 using the PA0481 Interface Module. The *MX1*'s RZDU TX and 0V outputs are wired to the RX and 0V inputs respectively on the PA0481. Note an FP1143 HLI Interface Board will be required if the MX1 RZDU connection is also wired to external RZDU devices. Refer RZDU wiring later.

The QE90's general fault relay (normally energised) C and NC terminals can be wired to one of the *MX1*'s GP inputs for fault supervision as shown in Figure 11-13.

Other *MX1* Input and Output Wiring

Ancillary Relay Load Supervision

Ancillary relays ANC1 and ANC2 can each be used to control a single load such as a an external brigade alarm (VAD), relay solenoid, or actuator, and supervise the wiring for short and open circuit faults, using the wiring shown in Figure 11-14. Note, if old-style strobes are being used these may have a high in-rush current on power on, and this must be limited, e.g., by installing a series resistor. A 5E6 (included in the *MX1* bag of parts) is suitable for the 40020 Fire strobe. This must be installed at the strobe when ANC1 or 2 is used to control it (or other strobes).

The "Solista" range of VADs do not require the resistor.

The load can be wired directly if its resistance is 400Ω to 18kΩ. Loads of

less than 400Ω require a series diode for correct supervision. A suitable 3A diode is 1N5404. The minimum allowable load resistance is 25Ω.

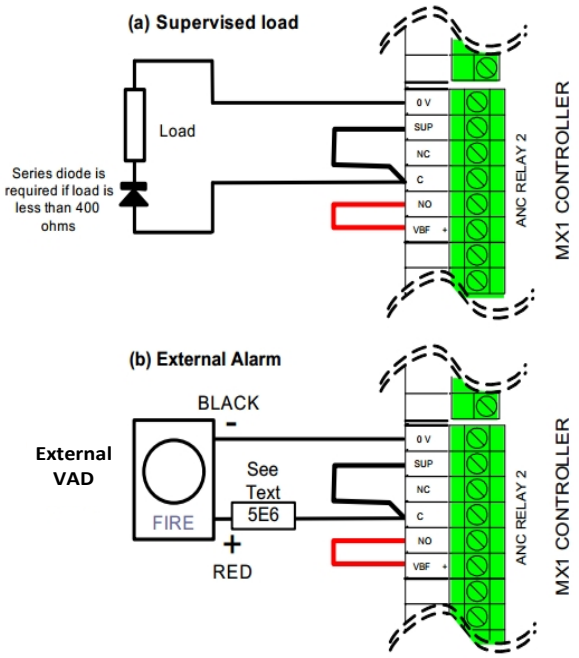


Figure 11-14 – Wiring for Switched Load with Supervision

Door Holders

Figure 11-15 shows a method of connecting normally energised loads such as door holders to the ancillary relays, powered from the non-battery-backed supply VNBF, and with wiring supervision.

This method supervises both supply leads, and can be used with either ANC1 or ANC2 relays. The two ELDs must have the same value, but this can be anything between 2.7kΩ and 27kΩ. The 18kΩ or 27kΩ ELDs provided with the *MX1* are suitable.

Inductive loads such as door holders must have a suppression diode connected as shown. A suitable 3A diode is 1N5404.

Note that the ANC1 and ANC2 contacts are rated at 1A inductive at 30V.

The *MX1* must be configured to have the supervision input operate in “door holder” mode.

If supervision is not required, simply leave off the ELD resistors and the return wiring to SUP.

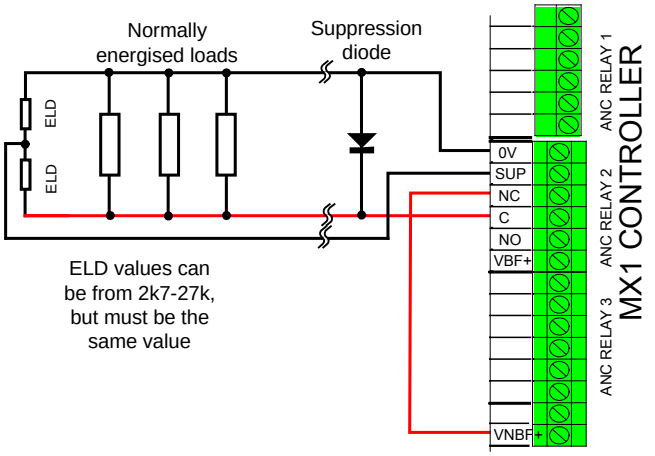


Figure 11-15 – Wiring to Normally Energised VNBF Loads with Supervision

General Purpose Inputs (IN1, IN2)

MX1 has two identical protected inputs which can be used for supervised connections to clean contacts or open collector style outputs of other equipment, e.g., sprinkler flow switch. They could also be used for external fault signals, such as from a power supply or QE20/QE90 system.

Figure 11-16 shows examples of connection to normally-open contacts. IN1 is wired so that short circuit generates a supervision fault. The diode can be any general purpose silicon diode such as 1N4004. If short circuit fault supervision is not required, the diode can be omitted, i.e., wired through.

IN2 is wired to normally-open contacts, which could be an open-collector output (joins the other equipment to the *MX1* power supply).

If supervision is not required, the ELD can be omitted.
The *MX1* site-specific configuration must have appropriate input supervision modes and zone mapping for these inputs to produce any effect. There is no default action.

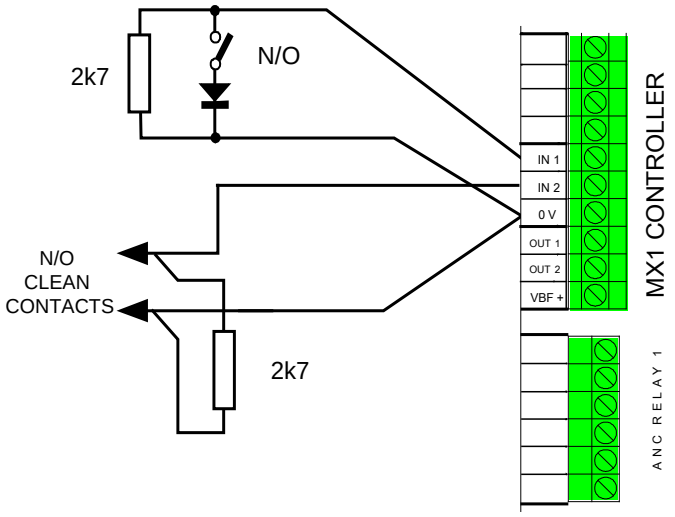


Figure 11-16 – Wiring General Purpose Inputs

General Purpose Outputs (OUT1, OUT2)

MX1 has two protected open collector outputs which can be used for driving low-current loads, e.g., external buzzers or relays.

Figure 11-17 shows examples of connection to a fault buzzer and an external relay. The maximum load current is 500mA for each output, i.e., 54Ω minimum load resistance. The relay back-emf suppression diode can be any general purpose diode such as 1N4004.

Each output can be configured for open circuit fault detection if this is required.

The *MX1* site-specific configuration must have output logic or a zone mapping for these outputs to operate. There is no default action.

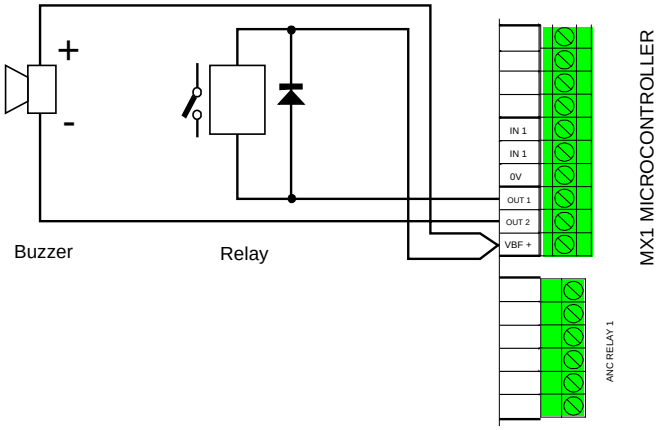


Figure 11-17 – Wiring General Purpose Outputs

Routing Equipment

The *MX1* provides a number of options for interfacing to fire brigade Alarm Routing Equipment (alarm signalling equipment).

- J12 - Integrated relays and ELD resistors for signalling alarm, fault, and disable to the FAS input of a Centaur ASE. Note that the Centaur ASE resistor network FP0740 ELD device is not required.
- Clean contact changeover relay for each of alarm, fault and disable on J9, J10 and J11 respectively.
- SGD interface on J8 provides power and alarm and fault signals to a compatible SGD. Currently no suitable devices are available for use in Australia.

The routing signals on the J8 SGD interface, J12 Centaur ASE interface and the J9, J10, and J11 relays operate together. They cannot be used independently.

If a Power Fail output is needed for the ASE then a relay will need to be organised that is normally energised and drops out on power loss.

If the J8 SGD interface, J12 Centaur ASE interface and the J9, J10 and

J11 relays are not required for alarm and fault routing equipment, the relays can be used as general purpose unsupervised relay outputs by suitably programming the site-specific configuration.

RZDU or Remote Displays

Up to eight Remote Display Units or Alarm Display Units (Nurse Station Annunciator or Compact FF) can be connected to the RZDU interface on the MX1. Other RZDU protocol devices (e.g. T-Gen2, IO-NET, QE20/ QE90 EWIS) can also be connected to the MX1 via the RZDU bus.

RZDU devices that are separately powered should not be connected to the +VRZDU line, but must be connected to the 0V line.

The TXRZDU and RXRZDU signals must “cross-over” between the MX1 panel and the first RZDU device, as shown in Figure 11-18A. There must not be any wiring crossover between subsequent RZDU devices.

Wiring between RZDU devices can be a daisy chain or a star format.

The cable can be a single four core type or a pair of twin core types.

If a Master T-Gen2 is added this changes the wiring arrangement.

The Master T-Gen2 is connected to the RZDU bus as the first device using the FP1143 High Level Interface (HLI) board. All field RZDU devices along with other RZDU protocol devices such as IO-NET controllers must be connected to the RZDU Field connection (J4) on the HLI board.

Power +V and 0V is connected from the *MX1* to the RZDU FIP connection on the FP1143 HLI Module. The TX and RX signals must “cross-over” between the MX1 panel and the HLI Module. The RZDU FIELD connection to the first RZDU device must cross-over too, as shown in Figure 11-18B. The FP1143 HLI Module is connected to the T-Gen2 using a 10-way ribbon cable from J2 of the HLI board to J29 on the T-Gen2.

A direct connection can be made from the MX1 to the T-Gen2 when there are no field RZDU devices and a spare serial port (2, 3 or 4) on MX1 is available. Connect J29 of T-Gen2 to the appropriate serial port on the MX1 to match the serial port assigned to the RZDU port in the MX1 configuration.

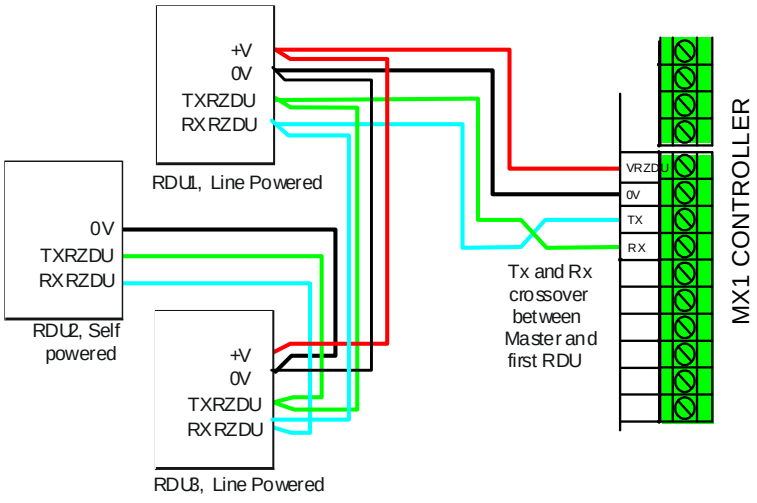


Figure 11-18A– MX1 RZDU Wiring to RZDU Devices

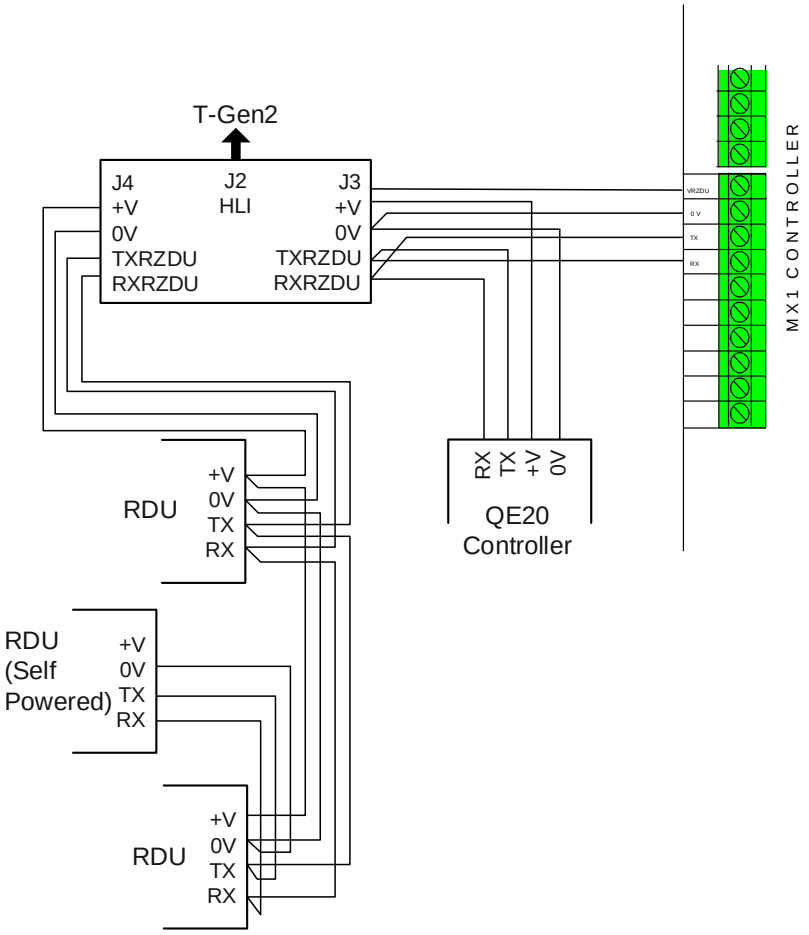


Figure 11-18B– Wiring to RZDU Devices – FP1143 (HLI)

Remote FBP

One Remote Fire Brigade Panel (RFBP) may be connected to the *MX1* panel. An RS485 board and fuse loom need to be mounted in the *MX1* cabinet to provide power and communications. Refer to the Remote FBP Installation Instructions LT0532 for detailed instructions.

Zone LED Displays

The *MX1* cabinet has provision for 32 zones of LED displays using two *MX1* 16 zone display modules (FP1002). No displays are included as standard. In the 15U cabinet additional zone LEDs can be provided by the 4U 80 zone module (ME0457), multiple *MX1* 16 zone display modules (FP1002), and additional 26 way FRCs.

Figure 11-19 shows the wiring for one zone display board.

The FP1002 kit comes with 1 x LM0339 for connection to the LCD/keyboard (when needed) and 1 x LM0291 for connection to an adjacent zone LED Display board.

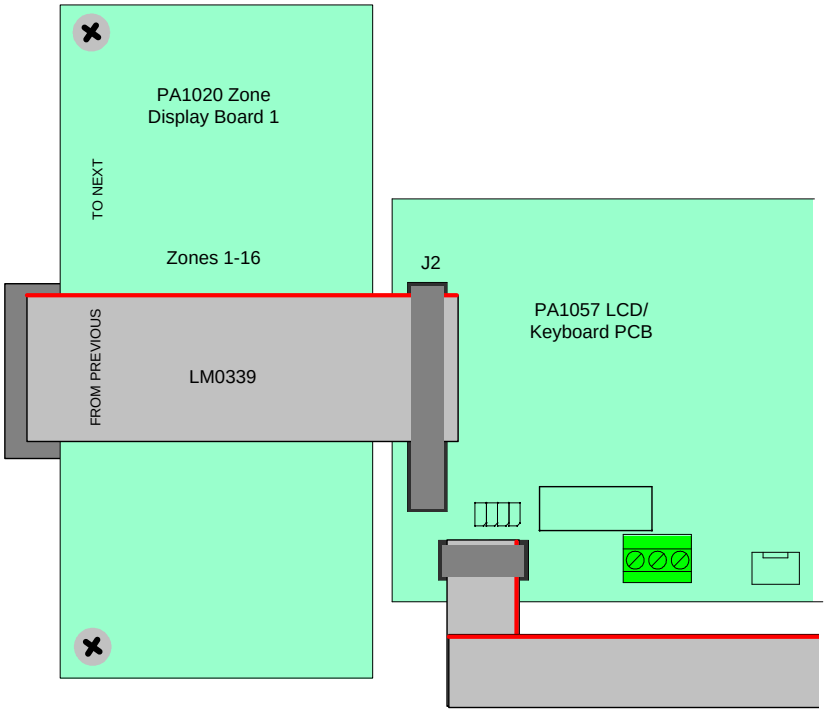


Figure 11-19 – Single Zone Display on front panel (rear view)

A second zone display board (part number FP1002) can be fitted, as shown in Figure 11-20. The display board with the lowest zone numbers is cabled furthest from the *MX1* LCD/Keyboard.

Note that the LM0339 FRC loom from the LCD/keyboard must be moved from the first display board to the second display board, and the second display board connected to the first display board with the LM0291 FRC loom provided with the zone display kit.

With additional display boards the LCD/Keyboard is wired to the board with the highest numbered zones through to the last board showing (nominally) zones 1-16, following the From Previous - To Next pattern.

Drawing 1982-88 shows representative arrangements of positioning and cabling.

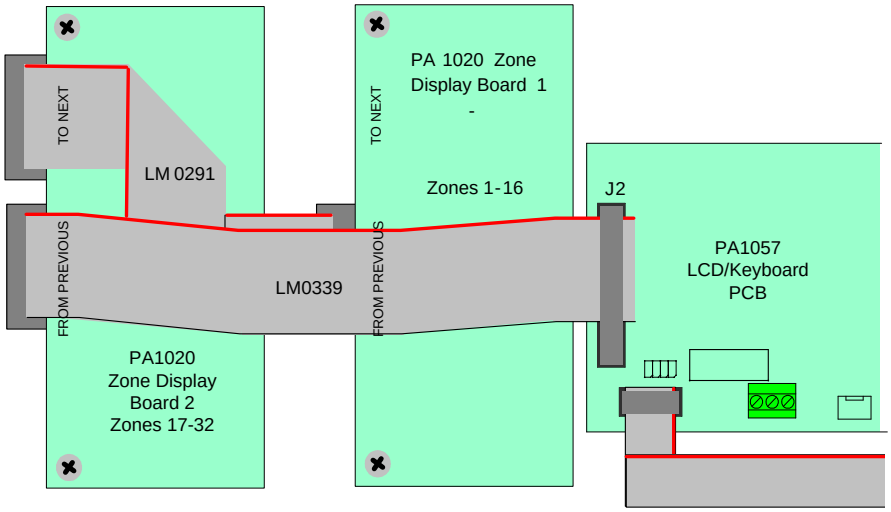


Figure 11-20 – Double Zone Displays on front panel (rear view)

Zone Display Labelling

Zone displays mounted on the front panel can be labelled with strips of card slipped through the slot in the panel above each display. A pre-printed set of labels on grey card is available as LB0600 (5 strips per sheet).

Alternatively, the labels can be printed directly from SmartConfig.

MX1 Networking

MX1 panels can be networked together in a variety of ways normally using copper data cable or fibre optic cable. Depending on the system design requirements the network interface will either be Intelligent Hubs (I-HUBs) or Panel-Link IP Bridges (PIBs). I-HUBs are usually interconnected in a ring using RS485 data copper cable, but can also be interconnected with fibre optic cable with the addition of OSD139 Fibre Optic modems (not ActiveFire listed to AS 7240.2). PIBs are usually used with Fibre Optic switches, Ethernet Extenders, or shielded Ethernet (STP) cables. This section covers the most common applications and includes the mounting of the I-HUB and PIB in the 8U and 15U cabinets, the wiring between the I-HUB / PIB and the *MX1* Controller board, and the mounting and wiring of OSD139 Fibre Optic modems for use within I-HUB and the mounting and wiring of Moxa Fibre Optic Ethernet switches for use with the PIB.

For additional wiring details please refer to: *MX1*, AUSTRALIA FIELD WIRING INSTRUCTIONS (LT0442).

Ring Networking Using I-HUBs

For detailed information on mounting, wiring and programming of the I-HUB including use in other configurations and network topologies please refer to: Panel-Link Intelligent I-HUB User's Manual (LT0229).

The I-HUB can be used in a number of different network configurations. It is recommended to use the "RING" configuration shown in Figure 11-21.

The I-HUB comes pre-configured for ring operation, with Port 5 (J4) connected to the *MX1* serial port configured for networking.

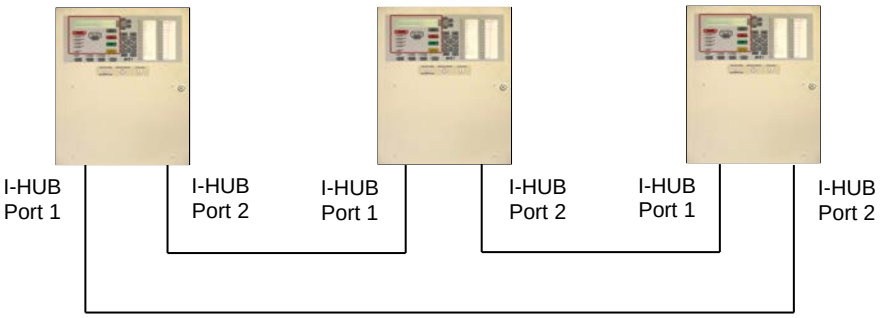


Figure 11-21 – Network Ring Example

I-HUB Wiring

The I-HUB is powered by one of the *MX1*'s +VBF supplies. This supply must not be used for any directly-connected field wiring, to ensure that fuse failure caused by an external wiring fault does not disable the network. Alternatively, the I-HUB (and fibre modems if included) could be powered off the Loop Interface Supply terminals J33 using a fused power lead (e.g., a spare LM0459 supplied with an *MX* Loop Card). The I HUB's J4 TTL serial port is connected using loom LM0152 to whichever serial port (0, 2, 3 or 4) is configured in the *MX1* for networking as shown in Figure 11-22.

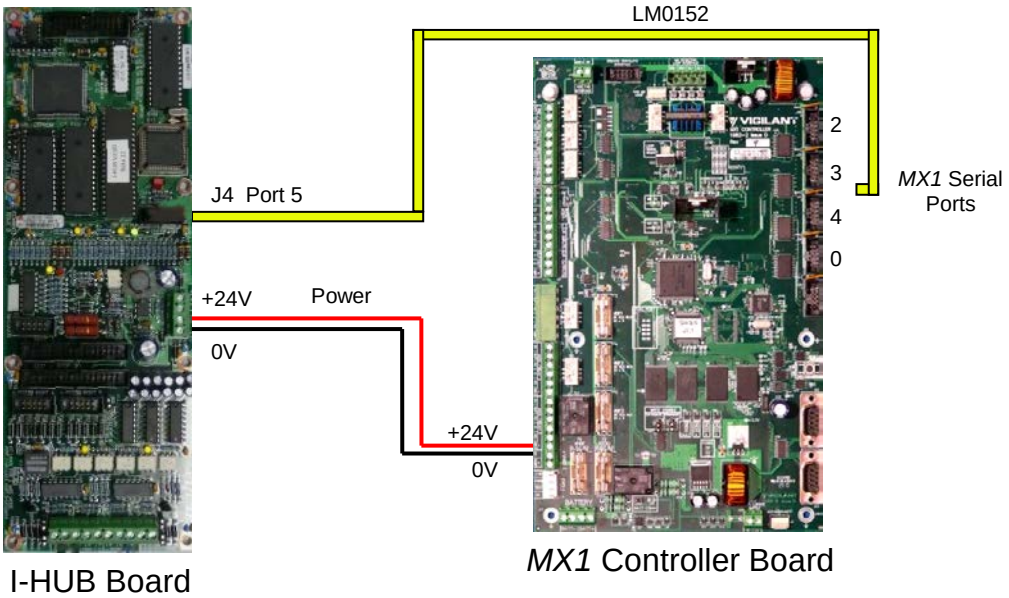


Figure 11-22 – I-HUB to *MX1* Wiring

I-HUB Copper Ring

The I-HUBs are typically connected in a ring configuration as shown in Figure 11-23.

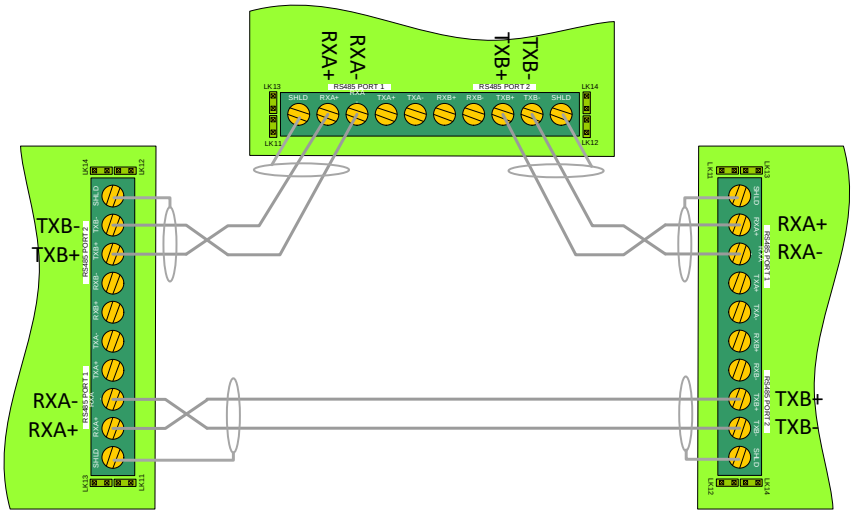


Figure 11-23 – I-HUB Ring Wiring

Links LK11, LK12, LK13 and LK14 must be installed on each I-HUB.

Wire the RS485 ring, preferably using shielded cable, from Port 2 TXB+ and TXB- to Port 1 RXA+ and RXA- on the next I-HUB, repeating around the ring. The cable shields should be wired to the shield terminals. The two shield screw terminals are joined together and are isolated from the chassis and I-HUB power grounds.

In ring mode, the I-HUB network ports 1 and 2 are pre-configured to operate at 57,600 baud. The recommended maximum cable length is 300 meters un-terminated (when using 0.75mm² screened cable). When ports 1 and 2 are terminated, the cable length (0.75mm² screened cable) may be increased to 1,500 meters. Termination is detailed in Section 3.9 of the I-HUB User Manual (LT0229).

I-HUB Fibre Optic Ring

Ports 1 and 2 can be combined to operate in a 2-wire ring arrangement with other I-HUBs using fibre optic modems and fibre optic cable. Fibre optic modems convert the RS485 signal interface into optical signals for transfer via optical cable. Fibre optic transmission is not affected by electrically 'noisy' environments and offers significant advantage where long 'cable' lengths are required.

For fibre segments, I-HUB links LK11 and LK13 (Port 1), LK12 and LK14 (Port 2), (located either side of the screw terminal block) must be removed.

Figure 11-24 shows a wiring diagram for use with OSD139HS or OSD193HSL optical modems. These are the recommended fibre optic modems for use with the I-HUB. These units support a maximum baud rate of 57,600 over two fibres per leg. The DTE/DCE switch needs to be set in the DTE position.

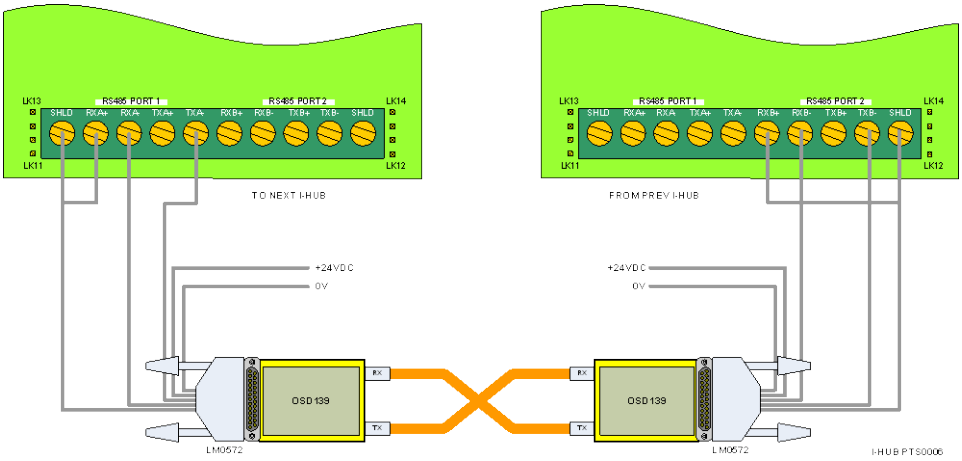


Figure 11-24 – I-HUB Fibre Ring Wiring

The LM0572 cable should have the 10 way FRC connector cut off, and the labelled leads wired into the appropriate terminals of the I-HUB.

The OSD139 fibre optic modem is available in both single-mode (OSD139HSL) and multi-mode (OSD139HS) variants.

Typically, single-mode fibre is suitable for up to 40km and multi-mode for up to 3km. However specific optical loss budget calculations will need to have been carried out for the design of the network.

Note: In Figure 11-24 the isolated RS485 ports 1 and 2 are connected to the I-HUB's 0V and 24V. This could violate the earth isolation system and therefore both the segment on port 1 and the segment on port 2 must use fibre optic cabling. Isolation is still maintained between I-HUBs via the non-conductive nature of fibre cabling.

If an I-HUB requires both copper and fibre connections contact Johnson Controls technical support for details.

I-HUB Mounting

The I-HUB (FP0771) is usually mounted on the right hand wall of the 8U cabinet, or on the right hand gearplate flange of the 15U cabinet (see Figure 11-25). Note that you will have to remove the 15U gearplate from the cabinet to mount the I-HUB using four M4 screws.

Optional OSD fibre modems can be mounted on the *MX1* gearplate in place of *MX1* Loop Cards by using the FP1032 OSD139 Fibre Optic Modem Bracket.

Figure 11-25
I-HUB Mounted on right side Flange

Note: When using fibre cabling you must allow for cable entry and the minimum bend radius in deciding the cable route to the modems

(commonly 60-90mm for field cables, 40mm for patch leads).

Networking Using PIBs

For detailed information on mounting, wiring and programming the PIB, Moxa switch and Ethernet Extender please refer to: PIB User Manual (LT0519).

The PIB comes pre-configured for the recommended “RING” configuration using Moxa fibre switches as shown in Figure 11-26.

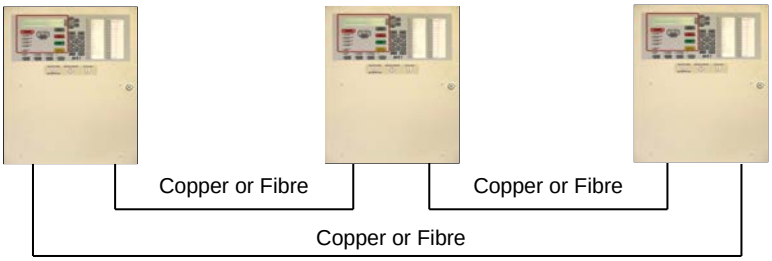


Figure 11-26 – PIB Ring Network

PIB Wiring

The PIB and other network equipment is powered by the *MX1* via one of the *MX1*’s +VBF supplies. This supply must not be used for any directly-connected field wiring. Alternatively, the PIB, Moxa switch, and Ethernet Extender (if present) can be powered off the LOOP INTERFACE supply terminals J33, using a fused lead (e.g., a spare LM0459 supplied with an *MX* Loop Card). The PIB’s J24 serial port is connected using loom LM0576 to whichever serial port (0, 2, 3 or 4) is configured in the *MX1* for networking.

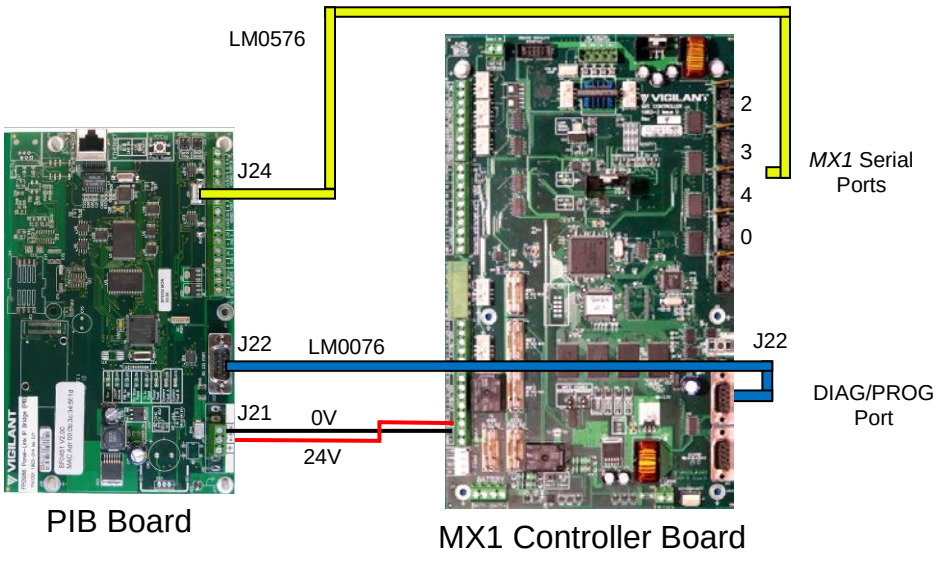


Figure 11-27 – PIB to *MX1* Wiring

To enable the PIB to be used to remotely access the *MX1* for programming, remote diagnostics or remote operation, then a null modem serial cable LM0076 must be fitted between the PIB’s RS232 Port J22 and the *MX1’s* Diag/Prog port J22 as shown in Figure 11-27.

The PIB is connected to the Moxa Fibre/Ethernet switch as shown in Figure 11-28.

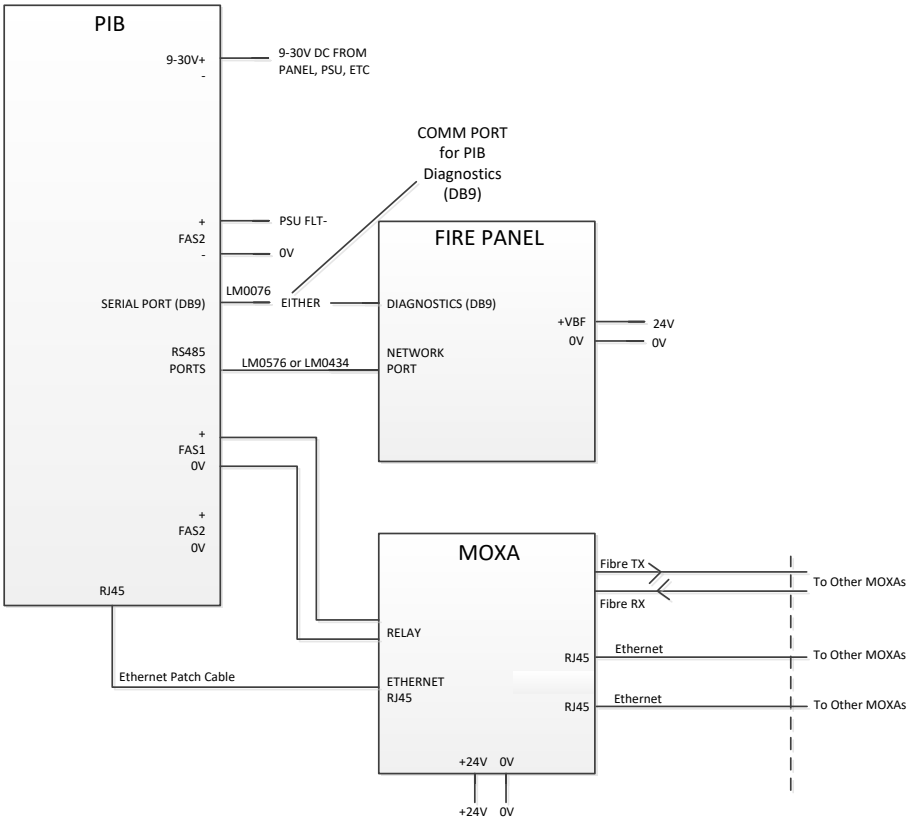


Figure 11-28 – PIB and Moxa Switch Wiring

There are currently 2 listed versions of the Moxa fibre switch:

Part No	Description	Comment
SU0319	MOXA 5 PORT E/NET SW (2 MULTI MODE FIBRE)	This switch has 3 Ethernet ports and 2 multi-mode fibre ports with SC connectors.
SU0320	MOXA 5 PORT E/NET SW (2 SINGLE MODE FIBRE)	This switch has 3 Ethernet ports and 2 single-mode fibre ports with SC connectors.

If shielded CAT3/5/6 copper Ethernet cable (STP) is being used to connect from one Moxa to the next (<100m) refer to the PIB User Manual (LT0519) for installation and wiring details.

A Westermo Ethernet Extender module (SU0328) may be used to provide a bidirectional extension of Ethernet signals over a single cable pair. It is designed for use with telephone cable, but will generally work with other cable types, albeit over a shorter distance for the same speed.

The quoted performance is 9 Mbps over 2,000m or 3 Mbps over 5,000m (0.5mm^2 cable). However the speed achieved will vary depending on the cable. If you propose to use an Ethernet Extender over existing cabling that is not telephone cable, it would be prudent to do some tests before

assuming that the existing cable will be satisfactory.

Note – 3 Mbps is adequate for most fire networks.

See Figure 11-29 for wiring, and refer to the PIB User Manual (LT0519) for configuring the Ethernet Extenders as “CO” (Central Office) or “CPE” (Customer Premises Equipment).

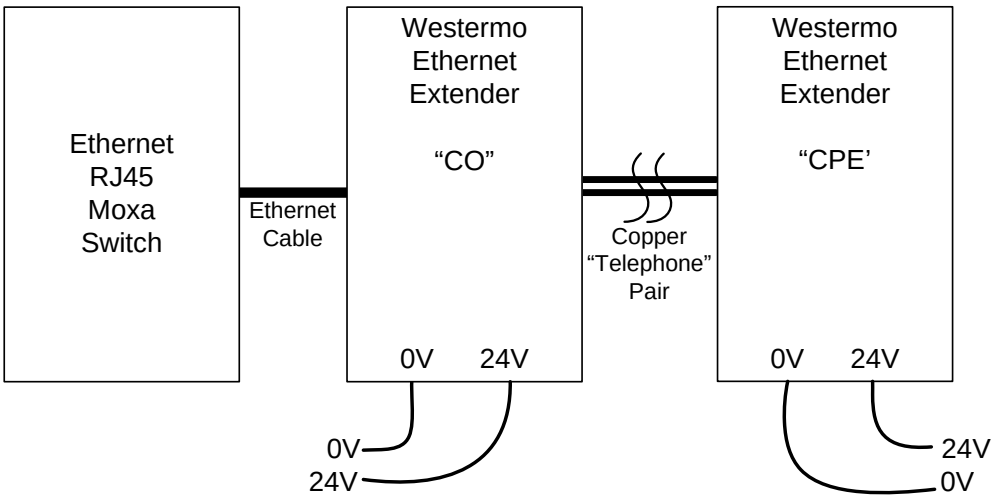


Figure 11-29 – Ethernet Extender Wiring

PIB Mounting

The PIB (FP0986) is required to be earthed and the recommended earthing method is via 2 metal standoffs (J17 and J19) in the positions shown in Figure 11-30. The other standoffs may be plastic or metal. If J17 and J19 are not earthed this way, then earth leads (included with the PIB) must be fitted to the adjacent earth tabs J23 and J25, with the leads electrically connected to the gearplate/cabinet earth.

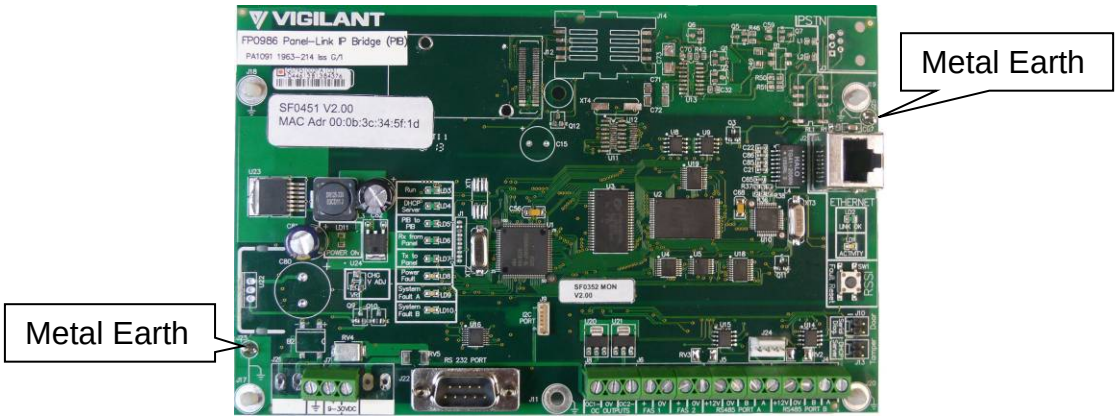


Figure 11-30 – PIB Earthing

Figure 11-31 shows the mounting of the PIB in the 8U cabinet with a Moxa switch mounted on the FP1013 mounting bracket.

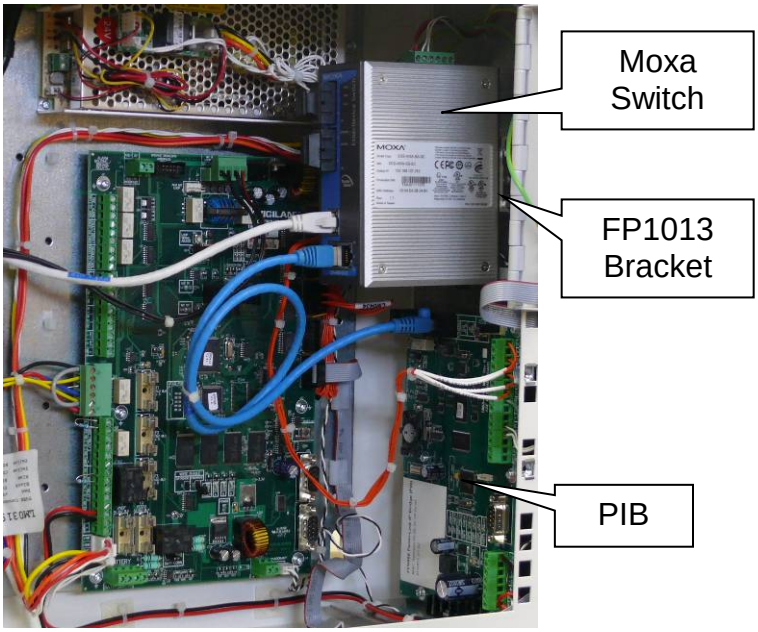


Figure 11-31 – 8U Cabinet PIB Mounting

Figure 11-32 shows the 3 mounting positions for the PIB on the 15U gearplate. Position 1 is recommended because it provides the required earth facilities.

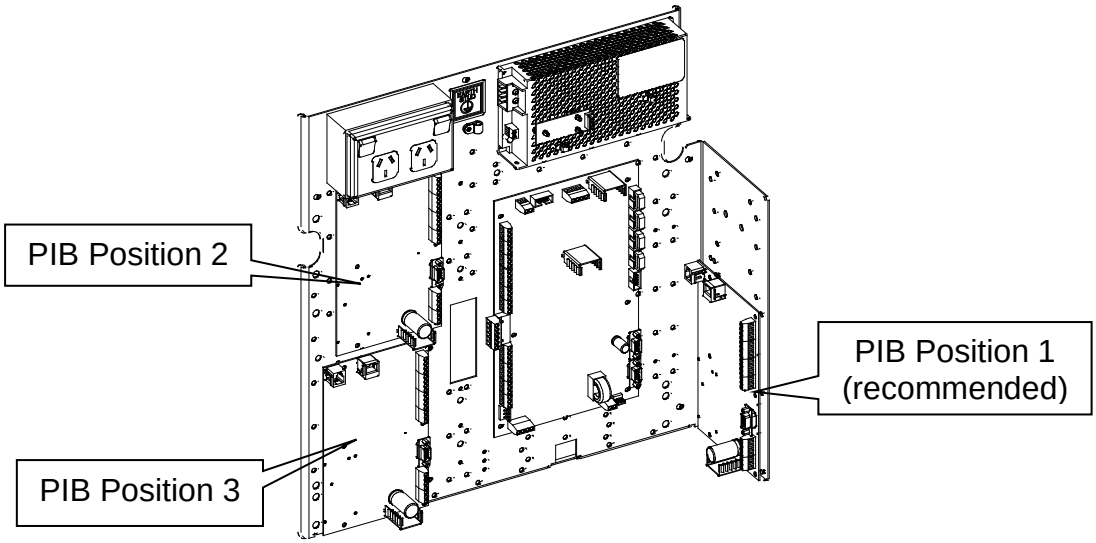


Figure 11-32 – 15U Cabinet PIB Mounting Positions

When mounting the PIB in position 2, earth leads will need to be fitted between earth tabs J23 and J25 and the gearplate. When mounting the PIB in position 3 an earth lead will be required to be fitted between earth tab J25 and the gearplate. No earth lead is required for J23 as there is a metal standoff on the gearplate.

A Moxa switch and one Ethernet extender (or 2 Ethernet extenders) can be mounted using one FP1012 mounting bracket. This bracket is mounted on the left side of the gearplate, as shown in Figure 11-33. Note the Moxa switch needs to be earthed to the cabinet via the earth

screw on its top, and the Ethernet extender requires 10mm of clear air around it for ventilation.

It is also possible to mount the PIB and the FP1012 in the same position to allow room for other devices such as *MX* Loop Cards. But in this case only the Moxa switch or an Ethernet Extender can be mounted on the FP1012 bracket and the PIB LEDs will not be visible.

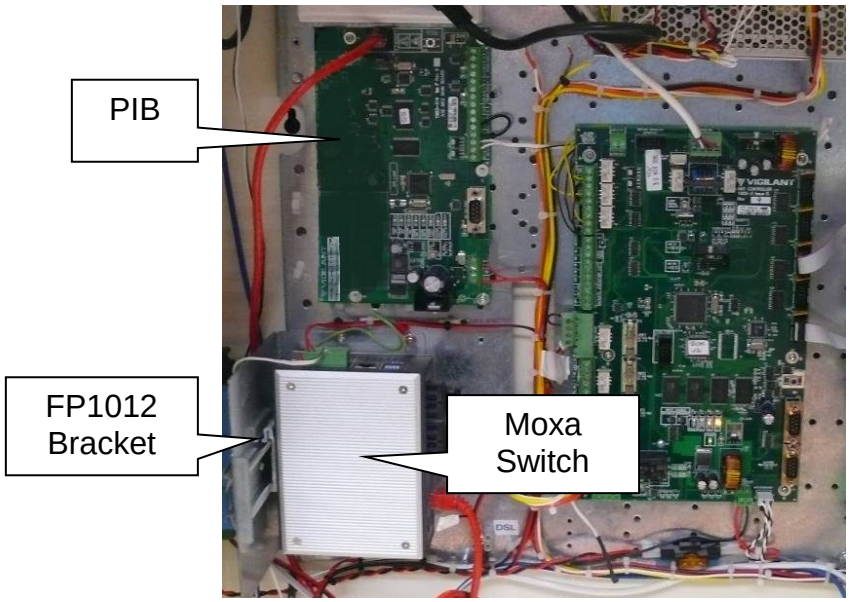


Figure 11-33 – PIB Mounting Example

Note: When using fibre cabling you must allow for cable entry and minimum bend radius in deciding the fibre cable route to the switch (commonly 60-90mm for field cables, 40mm for patch leads).

Initial Power On

The *MX1* is shipped with a factory default configuration loaded. This configuration inverts some fault conditions (e.g., no ELD on Anc 3 is normal) to allow the system to be normalised and causes some relays to turn on or off every 30 seconds. It is not suitable for general use.

Temporarily disconnect all field wiring, if connected, and switch the *MX1* mains switch on.

The green “POWER” LED on the controller should light, and the yellow “B” and “C” LEDs should flash.

The LCD/keyboard will beep, and the LCD will display its firmware version number briefly before changing to the *MX1* display.

Two faults will be generated – battery low and battery fail. Short the BATT CONN link Lk3 on the controller – LD6 should turn on and the faults go away.

The panel should then be in normal. If a fault is generated press

SILENCE BUZZER to stop the noise, then press **FAULTS** to determine the fault conditions present.

If the wiring does not match the ex-factory configuration – for example, the *MX* Loop is connected and wired in a loop, then a fault will be generated.

Connect the battery.

Temporarily connect one of the 0V terminals on the controller to the gear plate. Within 10 seconds, an earth fault should be indicated. Remove the connection. The earth fault should clear within 10 seconds.

Note that connecting a PC to the Diag/Prog serial port may also generate an earth fault (depending on the PC) if the PC is earthed. This is normal and will clear when the PC is disconnected.

Do not connect an earthed PC if there is an existing earth fault. This could damage the PC and the *MX1*. If an earthed PC must be used, it is strongly recommended to use an RS232 to RS232 isolation device.

Final Configuration

The *MX1* site configuration data file is configured off-line and loaded into the *MX1* using the SmartConfig software program.

At this stage, all the field wiring can be connected to the *MX1*. If an earth fault occurs when a piece of wiring is connected, this wiring should be checked and the fault cleared before proceeding further.

LCD Contrast Adjustment

The contrast setting for the *MX1* LCD has been preset in the factory to provide adequate visibility over the *MX1*'s full operating temperature range.

Setting of the contrast to suit a particular installation is possible using control VR1 on the PA1057 *MX1* LCD/Keyboard. However, doing so may result in the LCD not having adequate visibility over the full range of operating temperature.

Chapter 12
Specifications

Introduction

This Chapter contains specification data for the *MX1*.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

General Specifications

General Specifications		
Cabinet	Construction	1.2mm/1.6mm mild steel, zinc coated, colour Dulux Titania Ripple 288 1235Z. Baked epoxy powdercoat finish. 003 key for outer door.
	Dimensions 19" rack	8U: 440 x 550 x 210 mm (H x W x D) 15U: 750 x 550 x 210 mm (H x W x D)
	Shipping weight	8U: 17 kg approx., excluding batteries. 15U: 24 kg approx., excluding batteries.
Environmental	Temperature/Humidity	Operating Temperature -5ºC to 45ºC. Humidity up to 95% RH (non-condensing)
	Cabinet Protection	IP30
Power Supply	Mains Input	230V a.c. (192-253 V a.c.), 50/60Hz, 1.2A rms max
	Charger Output	27.3V d.c. at 20 ºC, 5.0A DC continuous, 5.5A current limit nominal. Temperature-compensated at -31mV/ ºC
	Batteries (Sealed Lead Acid)	8U: 2 x 12V up to 40Ah capacity 15U: 2 x 12V up to 40Ah capacity.
	DC Operating Voltage	19.2V – 28.8V
	Fused Supplies	Three VBF and one VRZDU terminals and one VNBF terminal, wire capacity 2.5mm^2. Each output is fused at 3A (20 x 5 slow blow cartridge type).
Addressable Device Loop	Output loop current	Up to 1.0A continuous. Overcurrent cutout at 1.1A (nominal).
	Terminals	AL+, AL-, AR+, AR-. Wire capacity 2.5mm^2.

General Specifications		
Inputs	GP IN1, GP IN 2	Two transient-protected supervised general purpose inputs suitable for connection to clean contact or open collector outputs. ELD value is 1.5kΩ-3.3kΩ.
Ancillary Relay Outputs	ANC1 and ANC2	Each relay provides a voltage-free set of changeover contacts, rated at 1A inductive or 2A resistive at 30VDC. Configurable contact, load or door-holder mode supervision. ANC1 has a demountable screw terminal header compatible with pre-made loom LM0319 to connect to a T-GEN 50, T-Gen 60 or T-Gen 120 tone generator. ANC2 has 2.5mm^2 capacity screw terminals.
	ANC3	A single set of voltage-free changeover contacts, 5A resistive at 30V. Negative bias supervision of up to three branches of wiring is possible from this relay. ELD values are 9.1kΩ for a single branch, 2 x 18kΩ for a double branch and 3 x 27kΩ for a triple branch.
Other Outputs	GP OUT 1 GP OUT 2	Two transient-protected general purpose open collector 2.5mm^2 outputs which can be used to drive loads of up to 500mA. Load mode supervision (for O/C only) is optional on these outputs. S/C protected.
Serial Ports	Diag/Prog	RS232. Male DB9 connector configured as DTE. For connection to PC for diagnostics, programming, or firmware update. Requires null-modem cable, e.g., LM0076. Can be connected to a modem for remote dial-in access. This requires a straight serial cable.
	Serial Port 1	RS232. Male DB9 connector configured as DTE. Suitable for connection to a logging printer. Requires null-modem cable for printer connection, e.g., LM0076.
	RZDU Port	Four 2.5mm^2 capacity screw terminals, for connection to up to 8 remote supervised display devices using RZDU protocol.
	Serial Ports 0, 2-4	4 “TTL Level” serial ports on J28, J25, J26, J27 suitable for internal connection to *MX* Loop Cards, an RS485 card for a Remote FBP, or a Network Interface module such as an I-HUB, PIB or other suitable device. Port 0 shared with RZDU Port.
Zones	Capacity	Up to 999 zones can be configured.
	LED Indicators	The first 192 zones can be displayed on optional LED displays – 32 on the keypad module and 160 on 2 x 4U modules. Red indicator = Alarm. Amber indicator = Fault (flashing) or Disabled (steady)
Fan Controls	Capacity	126 Fan controls per *MX1*.
	Function	For AS 1668 fan controls or other functions via programming.
Brigade Interfaces	ASE Interface	Isolated and protected screw terminal, 4mm^2 capacity, for 2 wire connection to a Centaur ASE FAS – normally-closed input. Transmits Alarm, Fault and Disable.
	SGD Interface	10 way FRC header suitable for connection to SGD, Super SGD.
	Brigade Relays	Three sets of voltage-free changeover contacts, rated at 1A inductive at 30V, with 2.5mm^2 capacity terminals, for Alarm, Fault, and Disable signalling.

MX1 Analogue Loop Compatible Devices

Ordering Code	Device Type	Description	Max No. Per Loop
516.800.006	801F	Flame Detector	250
516.800.510	814PH	Photoelectric Smoke + Heat detector	250
516.800.513	814H	Heat detector	250
516.800.517	814P	Photoelectric Smoke Detector	250
516.800.511	814CH	CO + Heat multi-sensor detector	250
516.800.512	814I	Ionisation chamber detector	250
516.850.051.E	850PH	Photoelectric Smoke + Heat Detector	250
516.850.052.E	850P	Photoelectric Smoke Detector	250
516.850.053.E	850H	Heat Detector	250
516.850.054.E	850PC	Photoelectric Smoke + CO + Heat Detector	250
Refer 5BI	814IB	Isolator Base (Obsolete)	128
814RB	814RB	Relay Base	250
814SB	814SB	Sounder Base (Low/Med/High volume) (obsolete)	104/83/66
802SB	802SB	Sounder Base (loop powered)	250
516.800.911	901SB	Sounder Base (external power)	250
577.800.006	DDM800	Universal Fire & Gas Detector Module	15 (loop power) / 80 (external power)
DIM800	DIM800	Detector Input Module	250
MIM800	MIM800	Mini Input Module (Hard contact s/c alarm)	250
MIM801	MIM801	Mini Input Module (Hard contact o/c alarm)	250
CIM800	CIM800	Contact Input Module	250
555.800.071	QIO850	Quad Input / Output Module	107
555.800.070	QMO850	Quad Monitored Output Module	107
555.800.073	QRM850	Quad Relay Output Module	250
555.800.063	SIO800	Single Input/Output Module	250
555.800.065	MIO800	Multiple Input/Output Module	250
SNM800	SNM800	Sounder Notification Module	250
RIM800	RIM800	Relay Interface Module	250
577.800.011	LPS800	Loop-Powered Sounder Driver	166
VLC800MX	VLC800MX	VESDA Laser Compact	125
CP820	CP820	Manual Call Point	250
514.800.604	CP830	Manual Call Point (IP65)	250
514.800.611	MCP820	Manual Call Point with isolator	250
514.800.621	MCP830	Manual Call Point with isolator (IP65)	250
516.800.530	801PHEx	Intrinsically Safe Photoelectric Smoke + Heat multi-sensor	250
516.800.531	801CHEx	Intrinsically Safe CO + Heat detector	250
516.800.532	801HEx	Intrinsically Safe Heat detector	250
516.800.066	801FEx	Intrinsically Safe Flame Detector	250
514.800.513	CP840Ex	Intrinsically Safe Manual Call Point	250
514.001.062	IF800Ex	Intrinsically Safe Contact Input Module	250
516.041.004	S271i+	Intrinsically Safe Infra Red Flame Detector	125
516.041.003	S271f+	Flameproof Infra Red Flame Detector	125
516.300.411	FV411f	Flameproof Triple-Infrared Flame Detector	125

Ordering Code	Device Type	Description	Max No. Per Loop
516.300.412	FV412f	Flameproof Triple-Infrared Flame Detector & PAL Camera	125
516.300.413	FV413f	Flameproof Triple-Infrared Flame Detector & NTSC Camera	125
516.800.956	SAB801	Sounder Base Driver with LED Beacon	250
516.800.954	SAM800	Sounder Base Driver	250
545.800.004	LIM800	Short Circuit Loop Isolator Module	250
517.050.018	5BI	Short Circuit Isolator Base	250
517.050.041	4B	Detector Base	250
517.050.042	4B-C	Continuity Base for 850 detectors	250
517.050.043	4B-I	Short Circuit Isolator Base	250
D51MX	D51MX	Duct Sampling Unit (with 4B-C base)	250

The actual maximum number of devices per loop depends on the mixture of types, cable type and cable length.

DDM800 Detector Compatibility

All Cerberus/Olsen detectors listed here for use with the DDM800 are compatible with the Z52B, Z54B, Z54B Mk2, Z56, and Z500 bases. In addition, the T56B heat detector is also compatible with the Z55B, Z56N, and Z500N bases.

Brand	Model	Type	Maximum No. per Circuit
Standard Voltage Detectors			
-	Hard Contact Devices (T54B, B111, etc.)		40
Kidde	Firewire	Linear Heat Detector	5000 metres
Olsen	C24B	Ionisation	40
Olsen	C29B	Ionisation	40
Olsen	P136	Duct Sampling Unit	7
Olsen	P24B	Photo	25
Olsen	P29B	Photo	20
Olsen	R23B	Flame	19
Olsen	R24B	Flame	12
Olsen	T56B	Heat	40
Protectowire	Protectowire	Linear Heat Detector	2000 metres
SAFE	ThermoCable	Linear Heat Detector	5000 metres
Simplex	4098-9601EA	Photo	25
Simplex	4098-9603EA	Ionisation	31
Simplex	4098-9618EA	Heat Type A	31
Simplex	4098-9619EA	Heat Type B	31
Simplex	4098-9621EA	Heat Type D	31
System Sensor	885WP-B	Weatherproof Heat Type B	40
Tyco	601F[1]	Flame	5
Tyco	601FEx[1]	Flame	5
Tyco	614CH	CO & Heat	35
Tyco	614I	Ionisation Smoke	40
Tyco	614P	Photo Smoke	40
Tyco	614T	Heat Type A, B, C, D	29
Tyco	FV411f	IR Flame Detector	3
Tyco	FV412f	IR Flame Detector	3

[1] Not a CSIRO listed combination.

Tyco	FV413f	IR Flame Detector	3
Tyco	SU0600	15V MCP	40
Tyco	T614	Heat Type A, B, C, D	29
Tyco/Minerva	MD614	Heat	25
Tyco/Minerva	MF614	Ionisation Smoke	32
Tyco/Minerva	MR614	Photo Smoke	25
Tyco/Minerva	MR614T	HPO Smoke	21
Tyco/Minerva	MU614	CO	40
Low Voltage Detectors			
-	Hard Contact Devices (T54B, B111, etc.)		40
Kidde	Firewire	Linear Heat Detector	5000 metres
Protectowire	Protectowire	Linear Heat Detector	2400 metres
SAFE	ThermoCable	Linear Heat Detector	5000 metres
System Sensor	885WP-B	Weatherproof Heat Type B	30
Tyco	614CH	CO & Heat	21
Tyco	614I	Ionisation Smoke	25
Tyco	614P	Photo Smoke	25
Tyco	614T	Heat	17
Intrinsically Safe Detectors with IS Repeater			
-	Hard Contact Devices (T54B, etc.)		40
Kidde	Firewire	Linear Heat Detector	5000 metres
Olsen	C29Bex	Ionisation Smoke	24
Protectowire	Protectowire	Linear Heat Detector	2400 metres
SAFE	ThermoCable	Linear Heat Detector	5000 metres
Tyco	601FEx[1]	Flame	2
Tyco	MD601Ex[1]	ROR Heat	18
Tyco	MD611Ex[1]	Fixed Temperature Heat	18
Tyco	MDU601Ex[1]	Enhanced CO & Heat	12
Tyco	MF601Ex[1]	Ionisation Smoke	16
Tyco	MR601TEx[1]	HPO Smoke	7
Tyco	MU601Ex[1]	CO	12
Tyco	S231i+[1]	Flame	2
Tyco	FV421i	Flame	1

DIM800 Detector Compatibility

Brand	Model & Type	Max Qty	External Supply Voltage at DIM800
Tyco	614P Photoelectric Detector	25	20V – 28.7V
	614I Ionisation Chamber Detector	38	20V – 28.7V
	614CH combined CO + Heat Detector	32	20V – 28.7V
	614T Heat Detector Types A, B, C, and D.	23	20V – 28.7V
	601FEx Flame Detector *	4	20V – 28.7V
	S231f+ IR Flame Detector (flameproof)	7	21.0 – 28.7V
	FV411f IR Flame Detector (flameproof)	3	23.0 – 28.7V
	FV412f IR Flame Detector (flameproof)	3	23.0 – 28.7V
	FV413f IR Flame Detector (flameproof)	3	23.0 – 28.7V
Minerva	MD614 Heat Detector	40	20.7V - 28.7V
	MR614 Photoelectric Smoke Detector	22	20.7V - 28.7V
	MR614T HPO Photoelectric Smoke Detector	21	20.7V - 28.7V
	MU614 CO Detector	40	20.7V - 28.7V
	MF614 Ionisation Chamber Detector	30	20.7V - 28.7V
	T614 Heat Type A, B, C, D	23	20.7V - 28.7V
Simplex	4098 – 9603EA Ionisation Detector	24	18.0V - 28.7V
	4098 – 9601EA Photoelectric Smoke Detector	24	18.0V - 28.7V
	4098 – 9618EA,-9619EA,-9621EA Heat Detectors	24	18.0V - 28.7V
Olsen	P24B Photoelectric Detector	24	20.7V - 24.7V
	P29B Photoelectric Detector	20	20.7V - 26.7V
	C24B Ionisation Detector	40	20.7V - 26.7V
	C29B (Ex) Ionisation Detector	40	20.7V - 26.7V
	R23B Flame Detector	20	20.7V - 24.7V
	R24B Flame Detector	3	22.7V - 28.7V
	P136 Duct Sampling Unit	5	19.0V - 28.7V
	T56B Heat Detector (Z56, Z500 bases)	40	18.0V - 28.7V
Cerberus	DO1101 Photoelectric Smoke Detector	16	21.7V - 27.7V
	DLO1191 Photoelectric Beam Smoke Detector	1	22.7V - 28.7V
System Sensor	885WP-B Weatherproof Heat Detector	40	20.0V – 28.7V
-	Hard Contact Devices (T54B, B111, etc.)	40	18.0V – 28.7V
Hard contact devices must be rated for at least 30V and currents up to 50mA.			
* Although detector is Ex rated, this is a direct connection without an IS barrier			

Compatible Batteries

Batteries used in the *MX1* system must meet the requirements of AS 1670.1. Contact your Johnson Controls distribution centre to obtain batteries that are compatible with the *MX1*.

Detector Identification

The following information may help identify installed 814 detectors without removing them from the base.

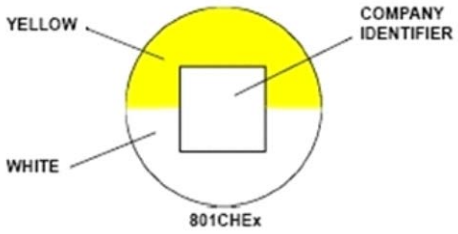
Each detector is identified by a unique label on the top, as shown;

Note that the 850 series detectors have no external visible identification.

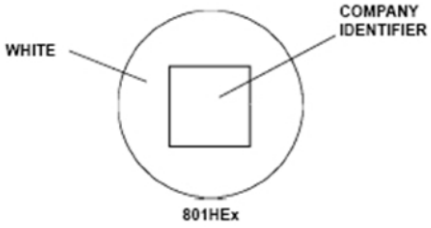
IS Detectors

IS detectors have a label on the top which is colour coded as shown below. IS detectors can also be distinguished from other detectors in that they are marked with their IS approvals and with the text "**CLEAN ONLY WITH A DAMP CLOTH ELECTROSTATIC HAZARD**".

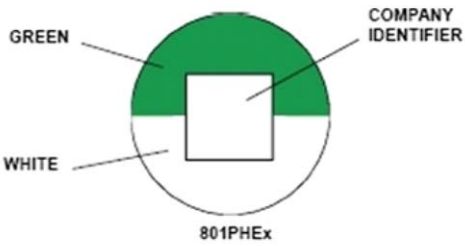
801CHEx



801HEx



801PHEx



Equipment Point Descriptions

Equipment 241 – *MX1* Controller

The following tables list the default Point text and a description of all the in-built points. Some *MX1* configurations may have these points changed or deleted.

Point Number	Point Text	Description
241.1	ALARM DEVICES	This point indicates the Alarm Devices status and is used to enable/disable the Alarm Devices. "Alarm Devices" are devices (e.g. sounders and sirens) that operate to signal to building occupants that a fire is present and the area should be evacuated. The state of the Alarm Devices is controlled by output logic, such that it is operated when there is an alarm on a non-disabled zone that is mapped to the Alarm Devices.
241.2	GPIN1	Provides the status of the G.P IN 1 input (J2-1).
241.3	GPIN2	Provides the status of the G.P IN 2 input (J2-2).
241.4	GPOUT1	GPOUT1 is an open collector output (J7-1) with supervision capability. The Operate state of the output can be controlled by system or user logic. If supervision has been enabled in the configuration then the Fault state is determined and shown by the supervision input point GPOUT1S.
241.5	GPOUT1S	GPOUT1S is the supervision point for GPOUT1. If supervision is enabled on GPOUT1 then the Fault state of the output will show on this point. If GPOUT1 is not used then this point can be used as an input.
241.6	GPOUT2	GPOUT2 is an open collector output (J7-2) with supervision capability. The Operate state of the output can be controlled by system or user logic. If supervision has been enabled in the configuration then the Fault state is determined and shown by the supervision input point GPOUT2S.
241.7	GPOUT2S	GPOUT2S is the supervision point for GPOUT2. If supervision is enabled on GPOUT2 then the Fault state of the output will show on this point. If GPOUT2 is not used then this point can be used as an input.
241.8	ANC1	ANC1 is an ancillary relay with supervision capability (J4). The Operate state of the point can be controlled by system or user logic to energise the relay. If supervision has been enabled in the configuration then the Fault state is determined and shown by the ANC1S (241.9) point.
241.9	ANC1S	ANC1S is the supervision input (J4-5) for ancillary relay 1. If supervision is enabled on ANC1 then the Fault state of the output will show on this point. If supervision is not enabled on ANC1 then ANC1S is a clean contact input with states determined by the configuration.
241.10	ANC2	ANC2 is an ancillary relay with supervision capability (J5). The Operate state of the point can be controlled by system or user logic to energise the relay. If supervision has been enabled in the configuration then the Fault state is determined and shown by the ANC2S (241.11) point.
241.11	ANC2S	ANC2S is the supervision input (J5-5) for ancillary relay 2. If supervision is enabled on ANC2 then the Fault state of the output will show on this point. If supervision is not enabled on ANC2 then ANC2S is a clean contact input with states determined by the configuration.

Point Number	Point Text	Description
241.12	ANC3	ANC3 is an ancillary relay with supervision capability (J6). The Operate state of the point can be controlled by system or user logic to energise the relay. If supervision has been enabled in the configuration then the Fault state is determined and shown by the ANC3S (241.13) point.
241.13	ANC3S	ANC3S is the supervision input (J6-5) for ancillary relay 3. If supervision is enabled on ANC3 then the Fault state of the output will show on this point. If supervision is not enabled on ANC3 then ANC3S is a clean contact input with states determined by the configuration.
241.14.0	FIP Pwr Nml	This point is unused and included for future enhancement only. This point is intended to represent the "FIP PWR NORM-" PIN (J8-7) on the Brigade Signalling Interface. This open collector output is operated when power is supplied to the panel and de-operated when power is removed.
241.14.1	FIP Comms OK	Provides the status of the "FIP COMMS OK-" PIN (J8-6) of the Brigade Signalling Interface. S/C to 0V gives the Normal state and O/C gives the Fault state.
241.14.2	Brigade Disable Relay	The Operate state controls the "FIP ISOL-" PIN (J8-8) on the Brigade Signalling Interface, the DISABLE/ISOL relay (J11) and the isolate component of the ASE+ signal on the ASE Interface (J12).
241.14.3	Brigade Alarm Relay	The Operate state controls the "FIP FIRE" PIN (J8-4) on the Brigade Signalling Interface, the FIRE/ALM relay (J11) and the fire component of the ASE+ signal on the ASE Interface (J12).
241.14.4	Brigade Fault Relay	The Operate state is OR-ed with the Fault state of the points RAM test, DB1 CRC Fault, DB2 CRC Fault, FW CRC, S/W Faults and also a check on whether output logic is running, and then controls the "FIP DEF-" PIN (J8-1) on the Brigade Signalling Interface, the FAULT/DEF relay (J10) and the fault component of the ASE+ signal on the ASE Interface (J12).
241.14.5	Brig Test	Provides the status of the "Brigade Test-" PIN (J8-2) of the Brigade Signalling Interface. S/C to 0V gives the ActiveInput state and an O/C gives the Normal state.
241.14.6	Brig Isol	Provides the status of the "Brigade Isol-" PIN (J8-3) of the Brigade Signalling Interface. S/C to 0V gives the state ActiveInput and an O/C gives the Normal state.
241.14.7	SGD Flt	Provides the status of the "SGD FLT+" PIN (J8-5) of the Brigade Signalling Interface. S/C to 0V gives the Normal state and O/C gives the Fault state.
241.15	Temperature	Point is unused but included for future enhancement.
241.16	LED1	LED1 is the "FAULT" LED (LD1). The Operate state can be controlled with system or user logic to turn the LED on or off. In the event that the system is started with no valid configuration data file then this LED is controlled by the system to toggle every 2 seconds (1/4Hz).
241.17	LED2	LED2 is the "A" LED (LD2). The Operate state can be controlled with system or user logic to turn the LED on or off.
241.18	LED3	LED3 is the "B" LED (LD3). The Operate state can be controlled with system or user logic to turn the LED on or off. This LED is currently used as a diagnostic LED by system logic. It is toggled every 3 passes of logic to indicate output logic is running.
241.19	LED4	LED4 is the "C" LED (LD4). This LED is currently used as a diagnostic LED by the system. It is toggled approximately every 500ms to indicate the system is operating normally. This LED is not available for use by the user.
241.20	CALLPT	Shows the state of the manual call point input (J3-3). Fault is >0.95V (O/C), Normal is 0.35-0.95V (2K7 ELD), Alarm is <0.35V.

Point Number	Point Text	Description
241.21	DOOR	Provides the status of the door input which uses a clean contact switch to monitor the door open/closed status. Normal (closed) is S/C to 0V, ActiveInput (open) is O/C.
241.22	FW WR EN	Provides the status of the "Firmware Write Enable" jumper. ActiveInput when jumper is fitted, Normal when not fitted.
241.23	DB WR EN	Provides the status of the "Database Write Enable" jumper. ActiveInput when jumper is fitted, Normal when not fitted.
241.24.0	Batt Voltage	Point is unused but included for future enhancement.
241.24.1	PSU I	Point is unused but included for future enhancement.
241.24.2	PSU V	Point is unused but included for future enhancement.
241.25.0	Mains	Provides the state of the mains power supply to the panel. This point is placed into Fault when the mains power has failed, and Normal otherwise.
241.25.1	Batt Low	Indicates battery voltage low level. Point will be in Fault when the battery voltage drops below the threshold set in the configuration, and Normal otherwise.
241.25.2	Batt Conn	Indicates battery connectivity. The state is Normal if the battery is found to be connected or Fault if the battery is disconnected or very discharged.
241.25.3	Earth	Indicates earth monitoring fault condition. Point will be in Fault when an earth fault is detected, Normal otherwise.
241.25.4	Battery Test	Indicates battery test state. Point will be in ActiveInput when battery test is active, Normal otherwise.
241.25.5	VBF1 Fuse	Provides the status of the fuse (F3) protecting the ANC1 power supply (J4-1). Normal indicates the fuse is intact, Fault indicates that the fuse has blown or is not fitted.
241.25.6	VBF2 Fuse	Provides the status of the fuse (F4) protecting the ANC2 power supply (J5-1). Normal indicates the fuse is intact, Fault indicates that the fuse has blown or is not fitted.
241.25.7	VBF3 Fuse	Provides the status of the fuse (F5) protecting the ANC3 power supply (J6-1). Normal indicates the fuse is intact, Fault indicates that the fuse has blown or is not fitted.
241.25.8	RZDU Fuse	Provides the status of the fuse (F2) protecting the RZDU power supply (J24-1). Normal indicates the fuse is intact, Fault indicates that the fuse has blown or is not fitted.
241.25.9	Battery Capacity	Indicates that the long-term battery test has failed. Point will be in Fault while test is running and has failed, Normal otherwise.
241.25.10	VNBF Fuse	Provides the status of the fuse (F6) protecting the non-battery backed power supply (J15-1). Normal indicates the fuse is intact, Fault indicates that the fuse has blown or is not fitted.
241.25.11	Charger High	Provides indication of whether the charger voltage is higher than it should be. The threshold is determined by the Charger High voltage setting in the configuration. Normal indicates the charger voltage is less than the specified voltage, Fault indicates that the charger voltage is too high.
241.25.12	Charger Low	Provides indication of whether the charger voltage is lower than it should be. The threshold is determined by the Charger Low voltage setting in the configuration. Normal indicates the charger voltage is higher than the specified voltage, Fault indicates that the charger voltage is too low.

Point Number	Point Text	Description
241.25.13	Battery Fail	Provides indication of whether the battery voltage is at or below the level at which the battery is considered totally discharged. The threshold is determined by the Battery Fail voltage setting in the configuration. Normal indicates the battery voltage is higher than the specified voltage, Fault indicates that the battery voltage is too low, thus the battery is totally discharged and system performance may be affected.
241.25.14	Power Supply Supervision	Provides indication of whether the system voltage is at or below the level at which system operation cannot be guaranteed. The threshold is determined by the System Power Fail voltage setting in the configuration. Normal indicates the system voltage is higher than the specified voltage, Fault indicates that the system voltage is too low, thus system operation cannot be guaranteed.
241.26.0	Loop 1 Left S/C	Indicates a short circuit on the left hand side of the in-built *MX* Detector Loop connector (J31). The point state is Fault if a short circuit is detected between the AL+ (J31-1) and AL- (J31-2) terminals, otherwise the point is Normal.
241.26.1	Loop 1 Right S/C	Indicates a short circuit on the right hand side of the in-built *MX* Detector Loop connector (J31). The point state is Fault if a short circuit is detected between the AR+ (J31-3) and AR- (J31-4) terminals, otherwise the point is Normal.
241.26.2	Loop 1 O/C	Indicates that an open circuit fault has been detected on the in-built *MX* Detector Loop connector (J31). The point state is Fault if an open circuit is detected on either the +ve loop or the -ve loop, otherwise the point is Normal.
241.26.3	Loop 1 Overload	This point indicates an over-current fault on the in-built *MX* Detector Loop (J31). The point state goes to Fault while an *MX* Loop overload induced reset takes place and also if there have been 5 of these resets within the preceding 5 minutes, otherwise the point is Normal.
241.26.4	Loop 1 Polling Rate	Indicates an in-built *MX* Polling loop rate fault condition. A fault state on this point occurs when the *MX1* is unable to communicate with the *MX* loop devices quickly enough, which may affect correct operation of detectors and modules. The fault condition will remain for 30 minutes from when the *MX1* becomes able to communicate quickly enough. The fault condition can also be cleared by resetting this point – if the fault condition remains the point will re-enter the fault condition within a short period of time.
241.26.5	Common Foreign Point	Has a fault status if a device that is not programmed into the *MX1* configuration data file is detected on the *MX* loops. The fault status automatically clears when the presence of the foreign device is no longer detected.
241.26.6	Common Dirty Alert	Has a fault status if there are any non-disabled points with a status of dirty.
241.26.10	IR Mode On	Active when infrared mode is enabled for *MX* loop 1. Places the *MX1* into the off-normal state.
241.27.0	S/W Faults	If the internal checking routines detect an inconsistency then this point is put into fault. Refer to the history and/or printer log for "Sw Fault" events that give more detail as to the type of fault. Note some faults will automatically clear and others may need this point to be reset to clear the fault. Irrespective of this, occurrences of a software fault should be advised to the service company for assessment.
241.27.1	DB1 CRC Fault	Provides the status of configuration data file1. The point state is Fault if a CRC check of configuration data file1 fails, otherwise the state is Normal.
241.27.2	DB2 CRC Fault	Provides the status of configuration data file2. The point state is Fault if a CRC check of configuration data file2 fails, otherwise the state is Normal.

Point Number	Point Text	Description
241.27.3	FW CRC	Provides the status of the controller firmware. The point state is Fault if a CRC check of the firmware fails, otherwise the state is Normal.
241.27.4	RAM Test	Provides the status of the Controller boards RAM. The point state is Fault if an error is detected with the RAM, otherwise the state is Normal.
241.27.5	Auto Test	Point is unused but included for future enhancement.
241.27.6	Self Test	Point is unused but included for future enhancement.
241.27.7	Cold Start	Point is unused but included for future enhancement.
241.27.8	Warm Start	Point is unused but included for future enhancement.
241.27.9	Foreign RZDU	This point indicates that there are one or more foreign RZDUs detected in the system. The point state is Fault if a reply is received from an RZDU with an address that corresponds to an RZDU that is not enabled in the configuration data file. The fault will automatically clear if replies from the foreign RZDU stop being received.
241.27.10	Commission Test	Provides status of the *MX1* Commission Test function, for recall on the LCD and to light the Tests indicator on the keypad. When Commission Mode is active, the status of this point will show ActInput and TestOp. Otherwise it will show Normal.
241.27.11	Startup Flags	This point signals Fault for 12 seconds following restart of the panel. This includes cold starts, user initiated reboots, and system controlled or uncontrolled watchdog restarts. The Startup Flags status can be used to ensure that a fault is sent to the brigade signalling equipment, or not.
241.27.12	Output Logic	This point signals fault if the *MX1* has what appears to be an uncorrupted configuration data file but which contains compiled Output Logic with fatal problems. If this fault is signalled, the ability of the *MX1* to act as a fire alarm is severely compromised. The *MX1* firmware will force the System Fault and Faults indicators on, and will force the fault relay into its de-energised state. This fault can only be corrected by restarting the panel using a configuration data file with output logic compiled without the problem, which could be either the alternative configuration data file stored in the *MX1* or a newly downloaded configuration data file.
241.27.13	Panel Attended	This point signals when the AIF is in attended mode.
241.27.14	Printer output	This point is disabled if the printer output is disabled.
241.28	ISO Sys Fault	Point is unused but included for future enhancement.
241.29.0	Sil Alms	Not used in Australia.
241.29.1	Trial Evac	Not used in Australia.
241.29.2	Services Restore	Not used in Australia.
241.29.3	Auto Dis. Zones Pres	Not used in Australia.
241.30.0	Common Routing	Provides the common status of the routing outputs. The status will show Alarm when the Alarm routing output should be activated, ActInput when the Fault or Disables routing outputs should be activated. It will become disabled when all of the Alarm, Fault and Disables routing points are disabled. It cannot be enabled until at least one of those points becomes enabled.

Point Number	Point Text	Description
241.30.1	Alarm Routing	Provides the alarm routing status. The status will show ActInput when the alarm routing output should be activated, Fault if an Alarm Routing Fault is present, Disable if the Alarm Routing is disabled (in which case the Alarm Routing output is not activated when this point has an ActInput status.)
241.30.2	Fault Routing	Provides the fault routing status. The status will show Active Input when the fault routing output should be activated, Fault if a Fault Routing Fault is present, Disable if the Fault Routing is disabled (in which case the Fault Routing output is not activated when this point has an Active Input status.)
241.30.3	Disables Routing	Provides the disables routing status. The status will show ActInput when the disables routing output should be activated, Fault if a Disables Routing Fault is present, Disable if the Disables Routing is disabled (in which case the Disables Routing output is not activated when this point has an ActInput status.)
241.31.0	Ancillary Disables, Ancil Group 0	The disable status of this point may be used to control the operation of site-specific ancillary functions.
241.31.1	Ancillary Disables, Ancil Group 1	The disable status of this point may be used to control the operation of site-specific ancillary functions.
241.31.2	Ancillary Disables, Ancil Group 2	The disable status of this point may be used to control the operation of site-specific ancillary functions.
241.31.3	Ancillary Disables, Ancil Group 3	The disable status of this point may be used to control the operation of site-specific ancillary functions.
241.32.0	I-HUB Panel Connection	Provides status of the *MX1* connection to the I-HUB. Fault indicates that communication is not possible – usually because the wrong serial port is used, the connection is broken, the I-HUB is turned off, or a non I-HUB device is connected. Refer to **NETWORK CONNECTION STATUS** below for descriptions of the text displayed.
241.32.1	I-HUB - Local PIB	Provides status of local PIB(s) that are directly connected to the I-HUB.
241.32.2	I-HUB - Remote PIB	Provides status of remote PIB(s) reported by local PIB(s) that are directly connected to the I-HUB.
241.32.3	I-HUB - Ring Channel 1 Break	Indicates fault when a ring break is present on I-HUB port 1.
241.32.4	I-HUB - Ring Channel 2 Break	Indicates fault when a ring break is present on I-HUB port 2.
241.32.5	I-HUB - Hardware	Indicates fault if the I-HUB has a hardware fault present (EEPROM checksum fault in the I-HUB).
241.32.6	I-HUB - PSU	Indicates fault if the I-HUB has detected a PSU fault through its PTT input.
241.32.7	I-HUB - Neighbour I-HUB Has No SID	Indicates fault if the local I-HUB has a physically adjacent neighbour I-HUB that has no programmed SID number of its own and has been unable to borrow a SID number from a locally connected *MX1*. This can happen if the neighbour I-HUB's *MX1* has been turned off or there is no *MX1* directly connected to the neighbour I-HUB.
241.32.8	I-HUB - Multi-Drop Port Access	Has an active status if the local I-HUB has detected multiple consecutive message collisions on a multi-drop port and is hence unable to transmit. This can be caused by an overloaded multi-drop network or by a wiring fault preventing the I-HUB from receiving its own transmissions.

Point Number	Point Text	Description
241.32.9	I-HUB - Message Discard	Indicates fault if the I-HUB has discarded a message after not receiving confirmation of reception from the remote device despite multiple retries. This can be caused by a fault or failure of the device connected at the remote end, wiring faults, overloading, or noise. The port number that the fault has occurred on is indicated in a MX1 system event.
241.32.10	I-HUB - Queue Overflow	Indicates fault if the I-HUB has had a queue overflow and message(s) have consequently been lost. This could be due to a wiring fault, device failure, noise, or other network performance problems. The port number that the fault has occurred on is indicated in a *MX1* system event.
241.32.11	I-HUB - Queue Warning	Has an active status if the I-HUB has had a queue exceed the configured queue warning level. This could be due to a wiring fault, or other network performance problems. The port number that the warning has occurred on is indicated in a system event.
241.32.12	I-HUB - Generic Fault	Indicates fault if the I-HUB has a generic fault. This is for use with future versions of the I-HUB firmware – connect to the I-HUB's diagnostic port for more information.
241.32.13	I-HUB - Generic Warning	Has an active status if the I-HUB has a generic warning. This is for use with future versions of the I-HUB firmware – connect to the I-HUB's diagnostic port for more information.
241.33.0	PIB Panel Connection	Provides status of the *MX1* connection to the PIB. Fault indicates that communication is not possible – usually because the wrong serial port is used, the connection is broken, the PIB is turned off, or a non PIB device is connected. This will also indicate fault when a PIB with V1.02 or below firmware is connected. Refer to **NETWORK CONNECTION STATUS** below for descriptions of the text displayed.
241.33.1	PIB - Reserved	Unused.
241.33.2	PIB - Remote PIB	Provides status of remote PIB(s) reported by the local PIB that is connected directly to the *MX1*.
241.33.3	PIB Ring Break (FAS1)	Provides the external fault status (usually wired to indicate a ring break on the IP network) of the local PIB that is connected directly to the *MX1*.
241.33.4	PIB - Remote PIB External Fault (FAS1)	Provides the external fault status (usually wired to indicate a ring break on the IP network) of remote PIB(s) reported by the local PIB that is connected directly to the *MX1*.
241.33.5	PIB - PIB Internal / IP Connection	Indicates fault if the PIB has an internal fault (e.g. checksum failure), or the Ethernet / IP connection has failed.
241.33.6	PIB - PIB PSU	Indicates fault if the PIB has detected a PSU fault (voltage below minimum).
241.33.7	PIB - Reserved	Unused.
241.33.8	PIB - Reserved	Unused.
241.33.9	PIB - PIB PLink Message Discard	Indicates fault if the PIB has had to discard message(s) on the Panel-Link interface. This could be due to a wiring fault.
241.33.10	PIB - PIB Queue Overflow	Indicates fault if the PIB has had a queue overflow. This could be due to a wiring fault, or other network performance problems.

Point Number	Point Text	Description
241.34.0	NIC Panel Connection	Provides status of the *MX1* connection to other network interface devices. Fault indicates that communication is not possible – usually because the wrong serial port is used, the connection is broken, the wrong baud rate is selected, or the network interface, device is turned off. Refer to **NETWORK CONNECTION STATUS** below for descriptions of the text displayed.

NETWORK CONNECTION STATUS	
DISPLAYED TEXT	**DESCRIPTION**
Normal	The connection to the I-HUB, PIB or Other network interface device is working correctly.
Disabled	The connection to the network interface has been disabled.
Fault Type Mismatch	The network interface detected does not match the interface configured in the *MX1* panel's database.
Fault	The connection to the network interface has failed.
Fault Duplicate SID	Another device on the network has the same SID number as the *MX1*.

Equipment 242 – Pseudo Points

The status of these points is generated by specific programming in the configuration.

The default AS1668 logic creates a pseudo point 242.255.0 (AS1668 Common Fault) which will create a fault condition on the *MX1* when any AS1668 control indicates a fault condition.

Equipment 243 – LCD/ Keyboard

Point	Point Description	Description
243.1.0	Scan Fail	This point is placed into fault if the *MX1* does not receive valid replies from the LCD/keyboard.
243.1.1	Enable	This point determines whether the LCD/keyboard will be set up to ignore or accept keypresses from the keypad. If the operate state is true, the keypad will be enabled and accept keypresses.
243.1.2	LED Board	This point is placed into fault when the LCD/keyboard detects an LED board fault.
243.1.3	Keyboard	This point is placed into fault when the LCD/keyboard detects a fault on the numeric keypad.
243.1.4	Ext Fault	This point is placed into fault when the LCD/keyboard external fault input has been activated.
243.1.5	Micro Test	This point is placed into fault when the LCD/keyboard micro test fails.
243.1.6	CRC Fail	This point is placed into fault when the LCD/keyboard program CRC check fails.
243.1.7	RAM Test	This point is placed into fault when the LCD/keyboard RAM test fails.
243.1.8	Channel A	This point is placed into fault when communication channel A is detected to be in fault. Currently not implemented.
243.1.9	Channel B	This point is placed into fault when communication channel B is detected to be in fault. Currently not implemented.

Point	Point Description	Description
243.1.10	Access Level 2	This point determines whether the menu will be in Access Level 2. If the operate state is true, menu level 2 access is enabled.
243.1.11	Alarm Buzzer	This point shows the state of the alarm buzzer on the LCD/keyboard, which is controlled directly by internal logic. It is also sent to any RDUs allowing the buzzer to be mimicked. ActInput indicates that the alarm buzzer is active.
243.1.12	Fault Buzzer	This point shows the state of the fault buzzer on the LCD/keyboard, which is controlled directly by internal logic. ActInput indicates that the fault buzzer is active. It is also sent to any RDUs allowing the buzzer to be mimicked.
243.1.13	LCD Fault	This point is placed into fault when the LCD/keyboard LCD fails.
243.1.14	Buzzer Disable	This point indicates as Disabled when the buzzer has been disabled, and TestOp when the buzzer is muted.
243.2.0 through to 243.19.0	Switch Input n	This point is placed into ActInput if switch input n on the keypad is active.
243.20.0 through to 243.35.0	Open Collector Output n	This point drives the open collector output n. Its operate state can be driven by the mapped zone's operate state or by logic.
243.36.0	FRC Monitor	This point is placed into fault when the FRC to the 26 way Switch Input connector is removed.
243.36.1	Switch Input set 0 Monitor	This point is placed into fault when the end-of-line resistor is missing from switch input set 0, which contains inputs 16-18.
243.36.2	Switch Input set 1 Monitor	This point is placed into fault when the end-of-line resistor is missing from switch input set 1, which contains inputs 1-3.
243.36.3	Switch Input set 2 Monitor	This point is placed into fault when the end-of-line resistor is missing from switch input set 2, which contains inputs 4-6.
243.36.4	Switch Input set 3 Monitor	This point is placed into fault when the end-of-line resistor is missing from switch input set 3, which contains inputs 7-9.
243.36.5	Switch Input set 4 Monitor	This point is placed into fault when the end-of-line resistor is missing from switch input set 4, which contains inputs 10-12.
243.36.6	Switch Input set 5 Monitor	This point is placed into fault when the end-of-line resistor is missing from switch input set 5, which contains inputs 13-15.
243.37.0	Fire Protection Active	When this point is placed into the Operate state by a logic equation the corresponding indicator on the keypad turns ON.
243.37.1	Smoke Control Active	When this point is placed into the Operate state by a logic equation the corresponding indicator on the keypad turns ON.
243.37.2	Spare Indicator	When this point is placed into the Operate state by a logic equation the corresponding indicator on the keypad turns ON.
243.37.3	Spare Indicator A	NOT SUPPORTED
243.37.4	Spare Indicator B	NOT SUPPORTED

Equipment 244 – RZDU Points

Point	Point Desc.	Description
244.x.0	Scan status	This point is in fault if the *MX1* does not receive replies from the RZDU.
244.x.1	Callpoint	This point is in alarm and/or fault if the MCP at the RZDU is in alarm and/or fault.
244.x.2	Batt Low	This point is in fault if the battery voltage is low at the RZDU.

244.x.3	Common Defect	This point is in fault if there is a fault at the RZDU. It will be necessary to review the fault at the RZDU itself.
244.x.4	Batt Fail	This point is in fault if the battery has failed at the RZDU.
244.x.5	Charger	This point is in fault if the charger is out of specification at the RZDU.
244.x.6	Mains	This point is in fault if the RZDU has no mains supply.
244.x.7	Silence Alarms	Not used in Australia.
244.x.8	Trial Evac	Not used in Australia.
244.x.9	Serv Restore	Not used in Australia.
244.x.10	Self Test	This point is in fault if the RZDU has failed its self-test.

Value x is the RZDU number.

Equipment 245 – Additional Loop Cards

Point	Point Desc.	Description
245.x.0	Loop x Left S/C	Indicates a short circuit on the left hand side of the *MX* Detector Loop. The point state is Fault if a short circuit is detected between the AL+ (J1-1) and AL- (J1-2) terminals, otherwise the point is Normal.
245.x.1	Loop x Right S/C	Indicates a short circuit on the right hand side of the *MX* Detector Loop. The point state is Fault if a short circuit is detected between the AR+ (J1-3) and AR- (J1-4) terminals, otherwise the point is Normal.
245.x.2	Loop x Open Circuit	Indicates that an open circuit fault has been detected on the *MX* Detector Loop. The point state is Fault if an open circuit is detected on either the +ve wire or the -ve wire, otherwise the point is Normal.
245.x.3	Loop x Overload	This point indicates an over-current fault on the *MX* Detector Loop. The point state goes to Fault while an *MX* Loop overload induced reset takes place and also if there have been 5 of these resets within the preceding 5 minutes, otherwise the point is Normal.
245.x.4	Loop x Polling Rate	Indicates an *MX* Polling loop rate fault condition. A fault state on this point occurs when the *MX1* is unable to communicate with the MX loop devices quickly enough, which may affect correct operation of detectors and modules. The fault condition will remain for 30 minutes from when the *MX1* becomes able to communicate quickly enough. The fault condition can also be cleared by resetting this point – if the fault condition remains the point will re-enter the fault condition within a short period of time.
245.x.5	Loop x Left Relay Status	Display AL Relay status (open/close).
245.x.6	Loop x Right Relay Status	Display AR Relay status (open/close).
245.x.7	Loop x Communication Status	Indicates whether the loop card is operating or not. “Normal” = operating “Fault” = not operating, or disconnected, or plugged into the wrong port.
245.x.8	Loop x Flash CRC Status	The result of comparing the Expected and Actual CRC of the Loop Card Flash Memory - “Normal” or “Fault”
245.x.9	Loop x RAM Test Status	The result of the most recent RAM test on the Loop Card - “Normal” = passed “Fault” = failed
245.x.10	IR Mode On	Active when infrared mode is enabled for *MX* loop x. Places the *MX1* into the off-normal state.

The above points are repeated for each configured *MX* Loop Card.

Value x is the loop number (2 onwards).

Equipment 245 – Fan Control Boards

245.248.0	Common Scan Fail	Indicates unable to communicate with one or more AS 1668 fan control PCBs that have been configured.
245.248.1	Common CRC Fault	Indicates CRC fault reported from one or more AS 1668 fan control PCBs.
245.248.2	Foreign Control	Indicates unconfigured AS 1668 fan control PCBs detected.

The above points are allocated for AS 1668 fan controls when the equipment number 248 for fan controls or other DSS functions is configured.

Equipment 246 – Remote FBP

Point	Point Description	Description
246.1.0	Scan Fail	This point is placed into fault if the *MX1* does not receive valid replies from the Remote FBP.
246.1.1	Enable	This point determines if the keypad on the Remote FBP is enabled. If the operate state is true, the keypad will be enabled and accept keypresses.
246.1.2	LED Board	This point is placed into fault when the Remote FBP detects an LED board fault.
246.1.3	Keyboard	This point is placed into fault when the Remote FBP detects a fault on the keypad.
246.1.4	Ext Fault	This point is placed into fault when the Remote FBP external fault input has been activated.
246.1.5	Micro Test	This point is placed into fault when the Remote FBP micro test fails.
246.1.6	CRC Fail	This point is placed into fault when the Remote FBP program CRC check fails.
246.1.7	RAM Test	This point is placed into fault when the Remote FBP RAM test fails.
246.1.8	Channel A	This point is placed into fault when communication channel A is detected to be in fault. Currently not implemented.
246.1.9	Channel B	This point is placed into fault when communication channel B is detected to be in fault. Currently not implemented.
246.1.10	Access Level 2	This point determines whether the menu for the Remote FBP will be in Access Level 2. If the operate state is true, menu level 2 access is enabled.
246.1.11	Alarm Buzzer	This point shows the state of the alarm buzzer on the Remote FBP, which is controlled directly by internal logic. ActInput indicates that the alarm buzzer is active.
246.1.12	Fault Buzzer	This point shows the state of the fault buzzer on the Remote FBP, which is controlled directly by internal logic. ActInput indicates that the fault buzzer is active.
246.1.13	LCD Fault	This point is placed into fault when the Remote FBP LCD fails.
246.1.14	Buzzer Disable	This point indicates as Disabled when the buzzer has been disabled, and TestOp when the buzzer is muted.
246.2.0 through to 246.19.0	Switch Input n	This point is placed into ActInput if switch input n on the keypad is active.

Point	Point Description	Description
246.20.0 through to 246.35.0	Open Collector Output n	This point drives the open collector output n on the Remote FBP. Its operate state can be driven by the mapped zone's operate state or by logic.
246.36.0	FRC Monitor	This point is placed into fault when the FRC to the 26 way Switch Input connector is removed.
246.36.1	Switch Input set 0 Monitor	This point is placed into fault when at the Remote FBP the end-of-line resistor is missing from switch input set 0, which contains inputs 16-18.
246.36.2	Switch Input set 1 Monitor	This point is placed into fault when at the Remote FBP the end-of-line resistor is missing from switch input set 1, which contains inputs 1-3.
246.36.3	Switch Input set 2 Monitor	This point is placed into fault when at the Remote FBP the end-of-line resistor is missing from switch input set 2, which contains inputs 4-6.
246.36.4	Switch Input set 3 Monitor	This point is placed into fault when at the Remote FBP the end-of-line resistor is missing from switch input set 3, which contains inputs 7-9.
246.36.5	Switch Input set 4 Monitor	This point is placed into fault when at the Remote FBP the end-of-line resistor is missing from switch input set 4, which contains inputs 10-12.
246.36.6	Switch Input set 5 Monitor	This point is placed into fault when at the Remote FBP the end-of-line resistor is missing from switch input set 5, which contains inputs 13-15.
246.37.0	Fire Protection Active	When this point is placed into the Operate state by a logic equation the corresponding indicator on the Remote FBP turns ON.
246.37.1	Smoke Control Active	When this point is placed into the Operate state by a logic equation the corresponding indicator on the Remote FBP turns ON.
246.37.2	Spare Indicator	When this point is placed into the Operate state by a logic equation the corresponding indicator on the Remote FBP turns ON.
246.37.3	Spare Indicator A	NOT SUPPORTED
246.37.4	Spare Indicator B	NOT SUPPORTED

Equipment 247 – SID Points

Point	Point Description	Description
247.x.0	SID Comms Status	Provides the communication status of the remote SID.
247.x.1	SID MAF Status	Displays the MAF status of the remote SID. Refer to page 9-8 for the MAF Status text displayed.
247.x.2	NIC Fault Status	For SIDs that support this, displays the fault status of the remote network interface (an I-HUB). Refer to the descriptions for the points 241.32.1 through 241.32.13 (earlier in this section) for an explanation of the faults that can appear.
247.x.3	NIC Warning Status	For SIDs that support this, displays the warning status of the remote network interface (an I-HUB). Refer to the descriptions for the points 241.32.1 through 241.32.13 (earlier in this section) for an explanation of the warnings that can appear.

Value x is the SID number.

Ordering Codes

Spare Parts	FP0913	FP MX1 REPLACEMENT LCD MODULE KIT
	FP0950	FP MX1 LOOP CARD KIT
	FP1002	FP MX1 16 ZONE LED DISPLAY EXTENDER
	FP1027	FP MX1 LOOP CARD/MX MODULE MOUNTING BRACKET
	FP1056	FP MX1 3U 12 X AS1668 DOOR C/W 1st BD, LMs, LT & MTG
	FP1057	FP MX1 2 X AS 1668 CNTRL BRD C/W LOOM, LIT & MTG
	FP1062	FP MX1 1982-197 4xDDM800 MTG BRKT
	FP1063	FP MX1 1982-197 4xDDM800 MTG BRKT C/W DDMS
	LB0600	LABEL MX1 BLANK ZONE LABEL GREY (two supplied in panel)
	LM0076	LOOM 1922-25 ECM DB9 (FEM)-DB9 (FEM) NULL MODEM
	LM0103	LOOM 1931-97 F3200 MCP & MICRO SWT LOOM
	LM0169	LOOM FRC 10W STYLE C 400MM
	LM0291	LOOM FRC 26W STYLE B 270mm (between LED zone displays)
	LM0319	LOOM MX1 MAIN BRD TO T-GEN 50 (one supplied with panel)
	LM0324	LOOM FRC 10W STYLE B 900mm (LCD/Keyboard to Controller)
	LM0339	LOOM 1982-28 MX1 LCD/KEYBD TO 1ST ZONE DISPLAY
	ME0448	MECH ASSY 1982-26 MX1 PSU ASSY
	ME0457	MECH ASSY 1982-40 MX1 4U 5 X 16 ZONE DISPLAY DOOR
	ME0464	MECH ASSY MX1 4U DOOR C/W KEYPAD ONLY
	ME0465	MECH ASSY MX1 4U LCD DOOR TESTED
	PA0773	PCB ASSY 1901-139-3 RS485 COMMS BD CMOS FRC ONLY
	PA1081	PCB ASSY 1982-2 MX1 CONTROLLER
	PA1057	PCB ASSY 1982-64 MX1 LCD/KEYBOARD, AS4428.3
	SW0030	F3200 DOOR SWITCH ASSEMBLY
Network Items	FP0771	FP F3200/F4000 I-HUB UPGRADE KIT
	FP0986	FP PIB PANEL-LINK IP BRIDGE
	SU0319	MOXA 5 PORT E/NET SW (2 MULTI MODE FIBRE)
	SU0320	MOXA 5 PORT E/NET SW (2 SINGLE MODE FIBRE)
	SU0328	WESTERMO SHDSL ETHERNET EXTENDER DDW-120
	OSD139HS	FIBRE-OPTIC MODEM FOR USE WITH I-HUB, MULTI-MODE
	OSD139HSL	FIBRE-OPTIC MODEM FOR USE WITH I-HUB, SINGLE-MODE
Literature Items	LT0229	LITERATURE PANEL-LINK I-HUB USER MANUAL
	LT0332	LITERATURE SMARTCONFIG PLUS USER MANUAL
	LT0369	LITERATURE MX1, ZONE DISPLAY LABELLING TEMPLATE (MS Word document)
	LT0439	LITERATURE MX1-Au OPERATOR MANUAL, A5 (supplied with panel)
	LT0440	LITERATURE MX1-Au, SERVICE MANUAL, A4
	LT0441	LITERATURE MX1-Au SYSTEM DESIGN MANUAL, A4
	LT0442	LITERATURE MX1-Au FIELD WIRING INSTRUCTIONS
	LT0443	LITERATURE MX1 LOOP CARD INSTALL INSTRUCTIONS
	LT0468	LITERATURE SMARTCONFIG MANUAL
	LT0519	LITERATURE PIB USER MANUAL
	LT0532	LIT MX1 REMOTE FBP INSTALL INSTRUCTION
	LT0557	LIT MX1 LOOP CARD/MX MODULE INSTALL INSTRUCTION
	LT0564	LIT MX1 NETWORK DESIGN MANUAL
	LT0587	LIT MX1 AS 1668 FAN CONTROL INSTALL INSTRUCTIONS
	LT0591	LIT MX1 4 X DDM MTG BRKT INSTALL INSTRUCTIONS

Software Items	SF0278	SOFTWARE, SMARTCONFIG PLUS INSTALL
	SF0281	SOFTWARE PANELX REMOTE OPERATION INSTALL
	SF0305	SOFTWARE MX1 CPLD V1.00 FLASH
	SF0332	SOFTWARE MX1CAL INSTALL
	SF0392	SOFTWARE MX1 LOOP CARD FLASH
	SF0407	SOFTWARE MX1 FPB KEYBOARD AS 4428.3 FLASH
	SF0412	SOFTWARE MX1 MAIN BOARD V1.50 FLASH
	SF0202	SOFTWARE PANEL-LINK I-HUB EPROM
	SF0432	SOFTWARE SMARTCONFIG INSTALL FILE
	SF0451	SOFTWARE PIB FLASH
	SF0465	SOFTWARE PIB-FINDER (PC APPLICATION)
Presentation Drawings	1982-42	Presentation Drawings for *MX1*-Au 15U
	1982-66	Presentation Drawings for *MX1*-Au 15U Examples
	1982-143	Presentation Drawings for *MX1*-Au 8U

Block Diagram

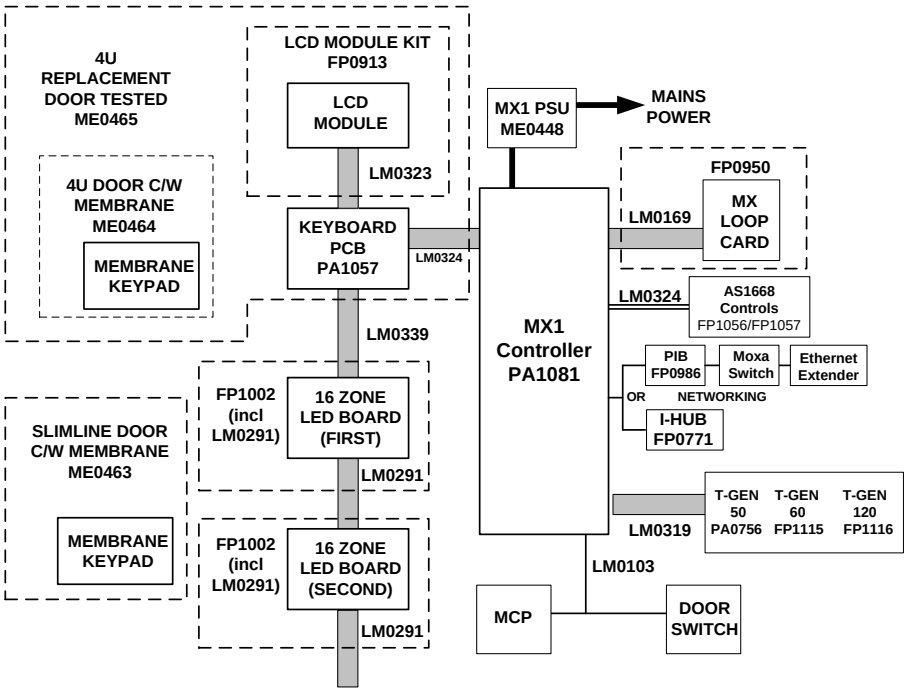


Figure 12-1 – *MX1* Panel Block Diagram

Figure 12.1 shows a block diagram of the *MX1* panel. It identifies the major components, the interconnecting cables, and their part numbers.

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