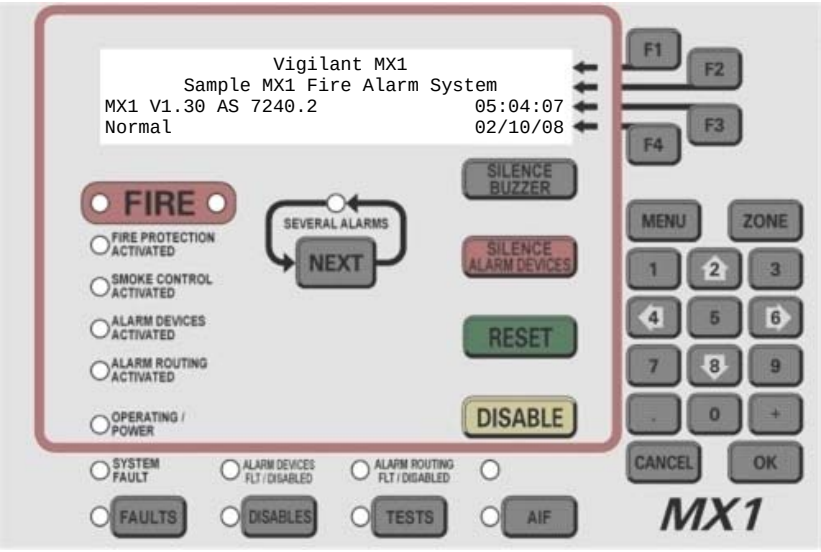
Vigilant *MX1*-Au

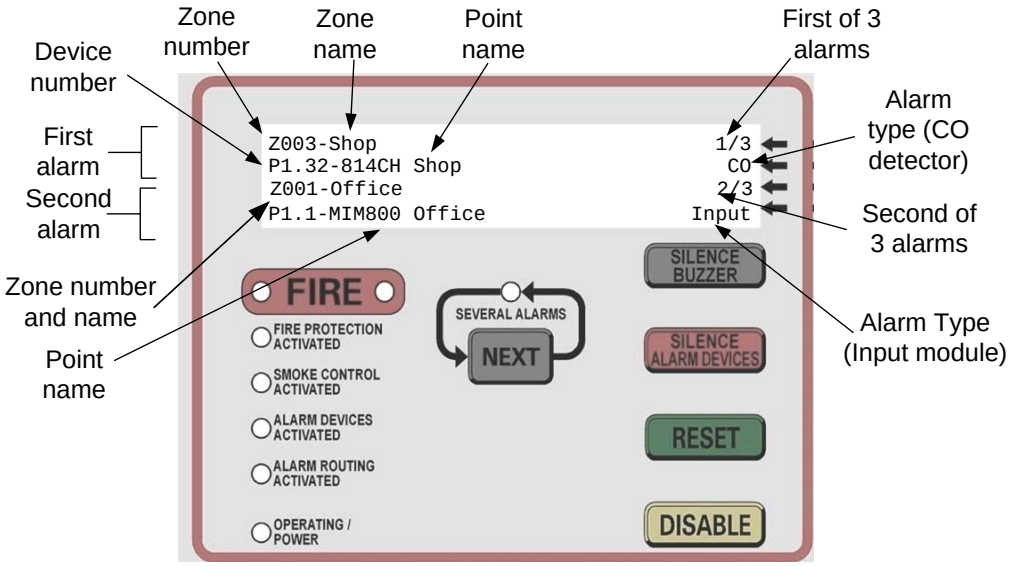
Fire Alarm System

Operator Manual



LT0439
Issue 1.1

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 ALARM DEVICES
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 zones in alarm. If any alarm does not clear it will be re-annunciated.

5. DISABLE
Press this key to disable all zones in alarm 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 single or dual 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. It also complies with International Standard ISO 7240-2:2003. Its support for Tyco *MX* TECHNOLOGY, fuzzy-logic detection algorithms and powerful control functions make it suitable for a wide range of fire protection applications for small to medium size 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:

Tyco Safety Products
47 Gilby Road
Mt. Waverley VIC 3149
AUSTRALIA
Phone: +61 3 9538 7220
Fax : +61 3 9538 7255

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Document

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Amendments

Page 10-3 Add new cabinet keyhole details.
Page 10-8 Add Issue B gearplate mounts 4 x MX modules.
Page 10-18,19 Show LM0339 loom not LM0335.
Page 11-2 Remove pack contents.
Page 11-3 Added ordering codes for all devices.

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

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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 1.30.
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.

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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.

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 4428.3-2004 “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. A second loop of up to 250 *MX* devices may be added to the *MX1* by fitting an *MX* Loop Card. 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. 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.

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 with 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.

Normal Appearance of Operator Interface

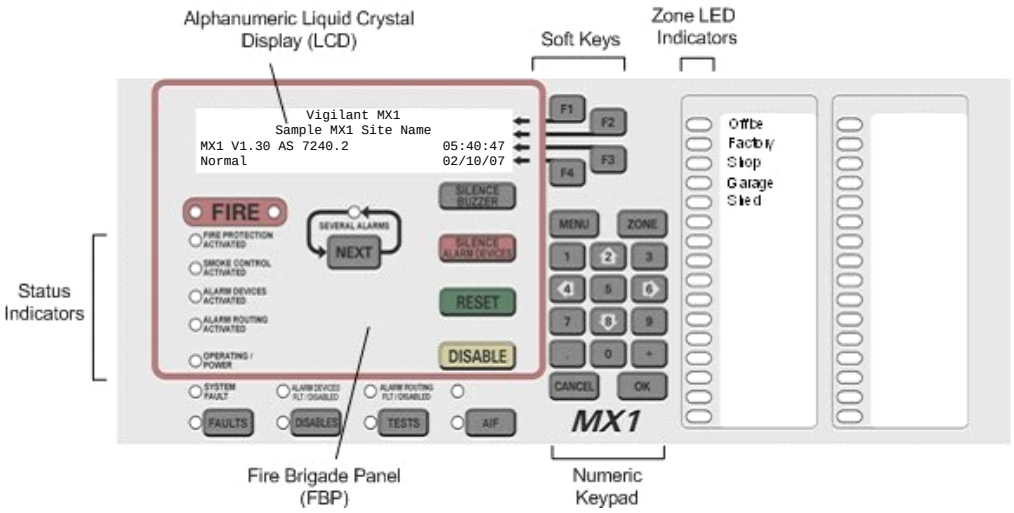


Fig 1-1 Operator Interface

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 2-3 for more detail.
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.

Operator Interface

Description

- 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. 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).

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 fault 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 ALARM DEVICES

This function will silence the alarm devices that have been activated as a result of alarms. Pressing the **SILENCE ALARM DEVICES** 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 ALARM DEVICES** 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. 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 Zones in Alarm" (page 2-6) and "Disabling and Enabling Points" (page 6-6).

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 Fault Conditions" (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 Conditions” (page 3-4) for more information.

TESTS

Pressing the **TESTS** key will display tests that are in progress, or indicate that there are no tests in progress. The display will then 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 function. Refer to ”Displaying Zone or Point Command Menu” (page 6-2) 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 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 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.
- 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.

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.
- **AutoReset –** 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.

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 second loop is 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.

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.

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 – *MX* loop 2 (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 second *MX* loop card itself (if fitted).

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;

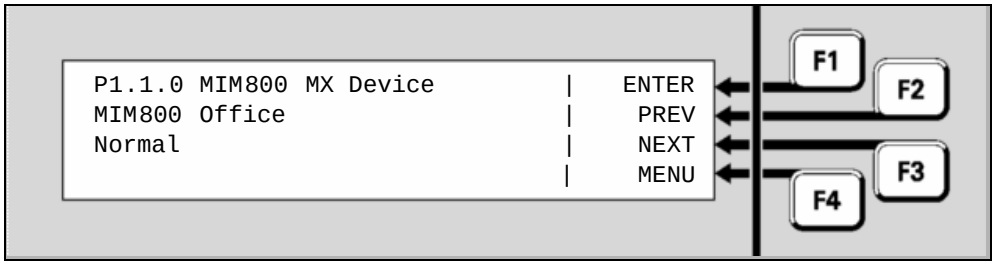


Fig 1-3: Example of Point Display

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.
- **AutoReset** –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.

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 to try to clear the smoke, before the fire brigade is called.
AIF	Alarm Investigation Facility - a configuration that enables a designated responsible person to acknowledge certain alarms and delay calling the fire brigade to enable 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 AS4428.3.
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).

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.

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 1-10, for more information.

MX1 may be configured with AIF (Alarm Investigation Facility) and/or AAF (Alarm Acknowledgement Facility). 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 and AAF alarms may be indicated on the *MX1* LCD. See "Alarm Investigation Facility (AIF)" on page 2-7 or "Alarm Acknowledgement Facilities (AAF)" on page 2-9 for details.

Alarms from other sources, such as sprinkler systems, may be shown on *MX1*. Refer to "Alarms From Other Sources" on page 2-9 for details.

In some installations smoke detector alarms may be programmed for local annunciation only. This is called residential mode. Refer to page 2-10 for further information.

In this Chapter

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

Topic	See Page
Handling Alarms using the Fire Brigade Panel	2-1
Viewing Alarms	2-3
Resetting Zones in Alarm	2-5
Disabling Zones in Alarm	2-6
Alarm Investigation Facility (AIF)	2-7
Alarms From Other Sources	2-9

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.

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 2-4.

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 Alarm Devices. If evacuation of occupants is no longer considered necessary then **SILENCE ALARM DEVICES** 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 ALARM DEVICES** again.

5. Reset the alarm(s). Press **RESET** to attempt to clear all zones in alarm. Refer to “Resetting Zones in Alarm” on page 2-5.

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 all zones in alarm. Once disabled the alarm indication will disappear (the Disables indicator will be lit). Re-enabling zones 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.

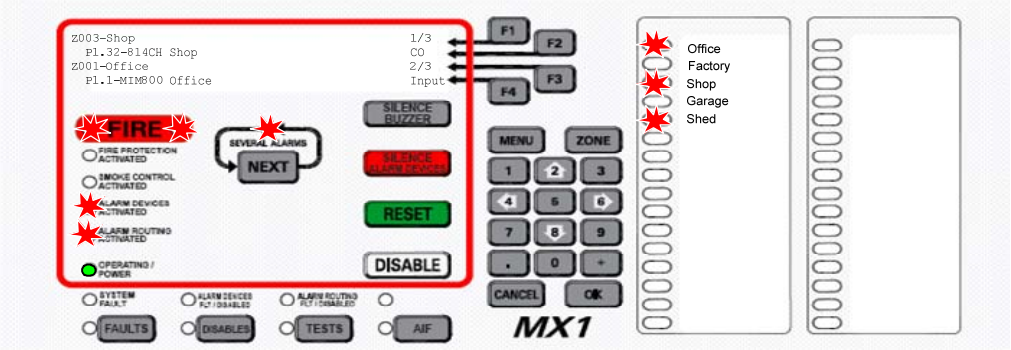


Fig 2-1 Example of an Alarm Display Showing First and Second Alarms

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).

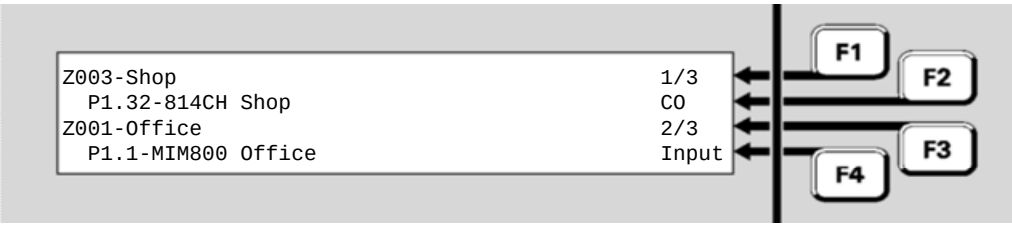


Fig 2-2 Alarm Display Showing Alarms 1 & 2 Out Of 3

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.

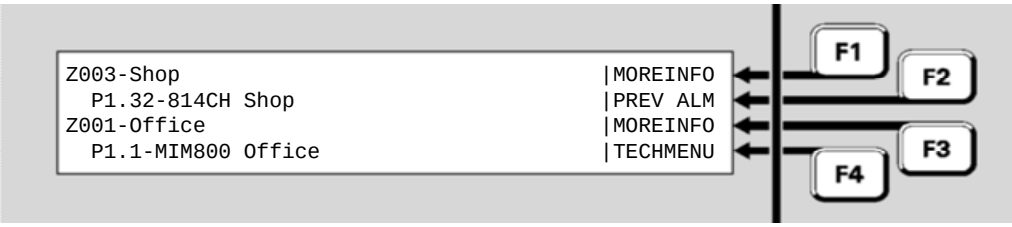
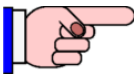


Fig 2-3 Example of Alarm Display Showing Menu



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.

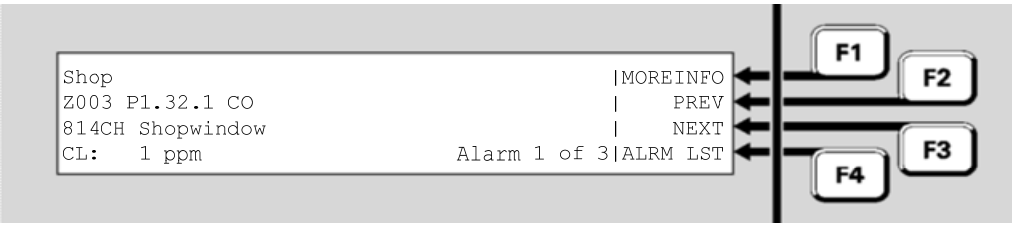


Fig 2-4 Alarm Detail Display

- 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. The buzzer will be silenced. No other output or indication on the fire alarm panel will change.

Silencing 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 ALARM DEVICES** key. However, if it is necessary to re-sound the alarm devices then press the **SILENCE ALARM DEVICES** 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.

Resetting Zones in Alarm

Overview

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

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).

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 Zones in Alarm

Overview

Disabling a zone stops the zone’s 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 Zones in Alarm

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 zones (including any other alarms if the Several Alarms indicator is lit) in the alarm list.

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)

Alarm Investigation Facility

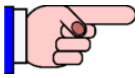
The Alarm Investigation Facility (AIF) provides for a programmed delay between the annunciation of alarm on the LCD and activation of the alarm devices and fire brigade alarm routing outputs. This delay allows a suitably trained operator time to acknowledge the alarm and then investigate the situation 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 2-8). 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.

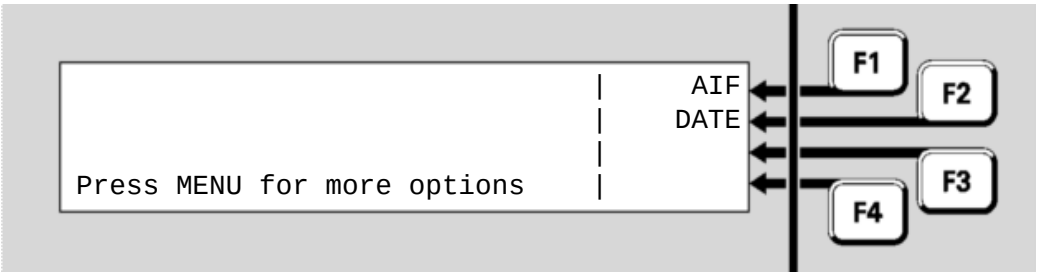


Fig 2-6 Menu Showing AIF Option

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.

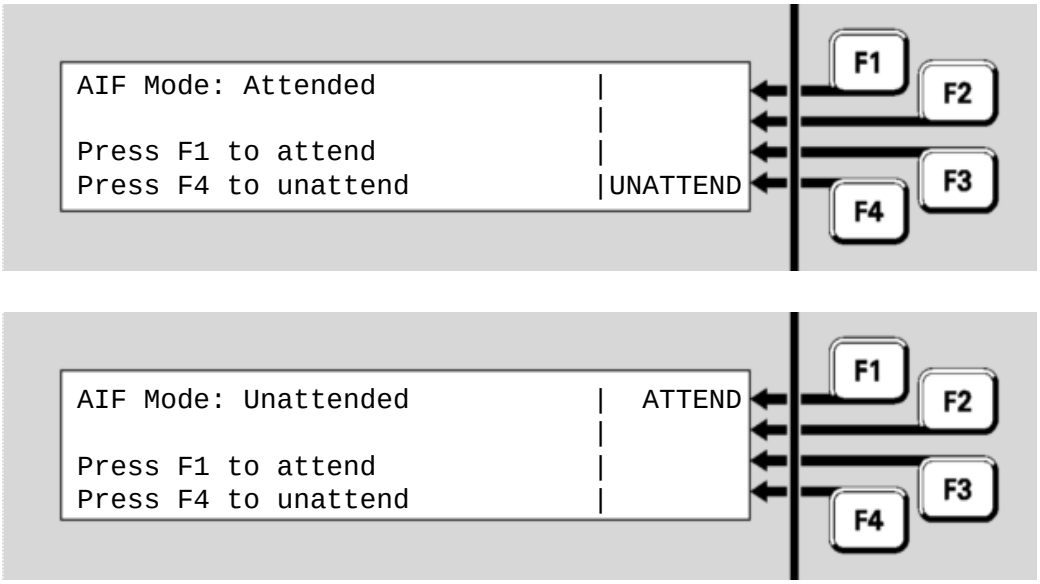


Fig 2-7: Selecting Attended or Unattended Mode

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.

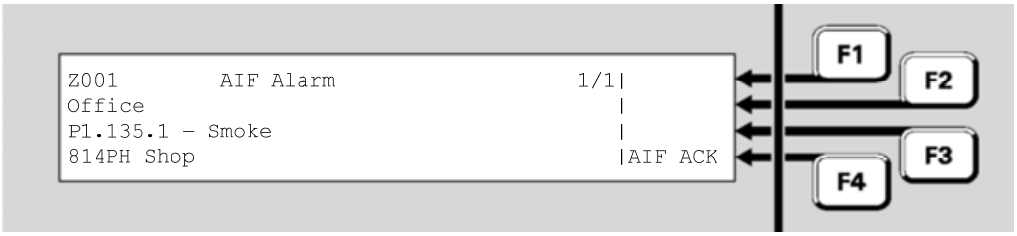


Fig 2-8: Example of a Display Showing AIF Alarm

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 2-5). 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 Facility (AAF)

Alarm Acknowl-edgement Facility

In some situations where nuisance smoke alarms are likely, Alarm Acknowledgement Facilities may be used to allow the occupant to acknowledge the alarm locally and then have time to clear the smoke before the alarm is fully recognised and calls the brigade, etc.

Generally, these alarms will not be indicated on the *MX1* until the alarm is fully recognised. However, in some situations where suitably trained operators are handling alarms on the *MX1*, the initial smoke detector alarm can be indicated.

In this case the initial alarm is shown as a standard alarm, except that the Alarm Type is shown as AAM and the Fire Indicator, alarm devices and Alarm Routing will not be activated. If the alarm is cleared by the occupant 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 indicate 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.

Chapter 3
Managing Faults and Disables

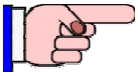
Fault Conditions

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.

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.

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.

Topic	See Page
Viewing Faults	3-2
Viewing Disables	3-4
Disable Menu Options	3-6

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:

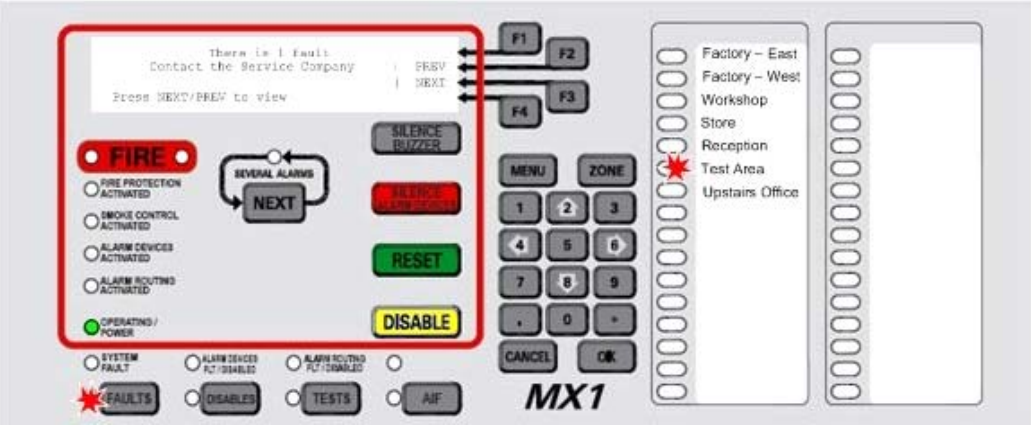


Fig 3-1 Operator Interface Showing Fault Condition

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 9 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.

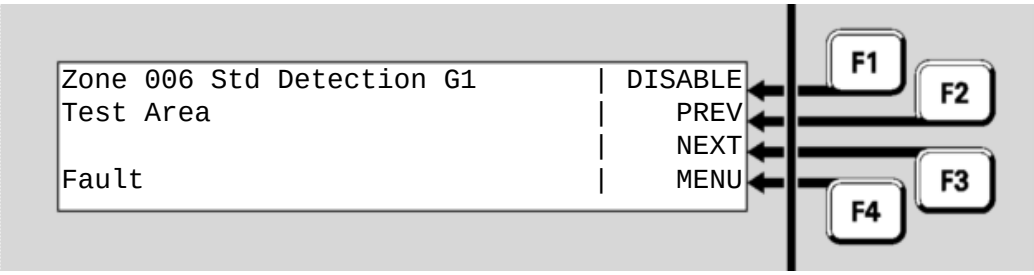


Fig 3-2 *MX1* LCD Showing Zone Fault

"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.

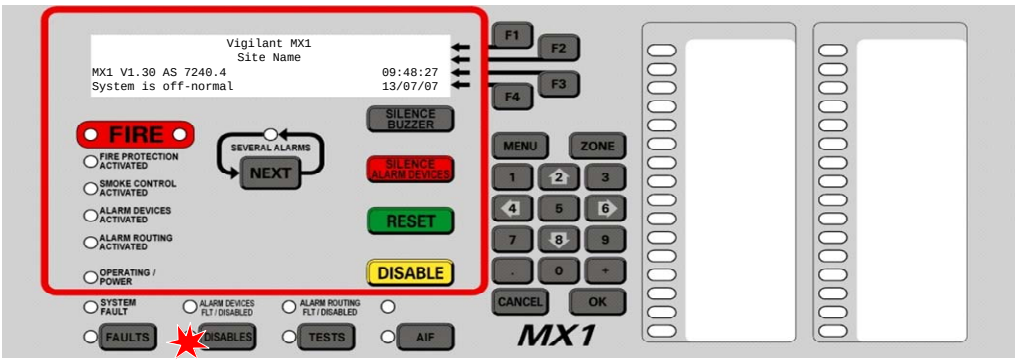


Fig 3-3 Operator Interface Showing Disables Condition

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.

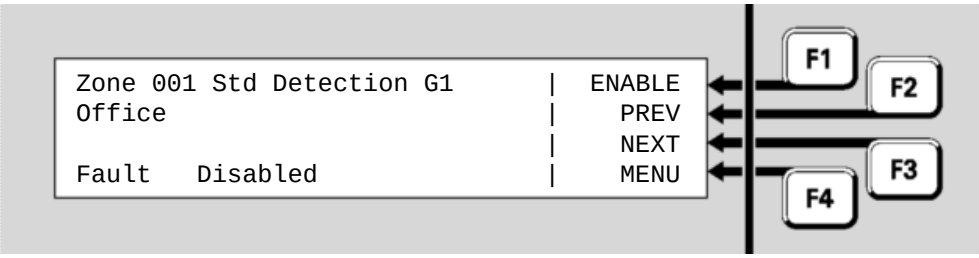


Fig 3-4 – Viewing the Disables List

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 zones in alarm.

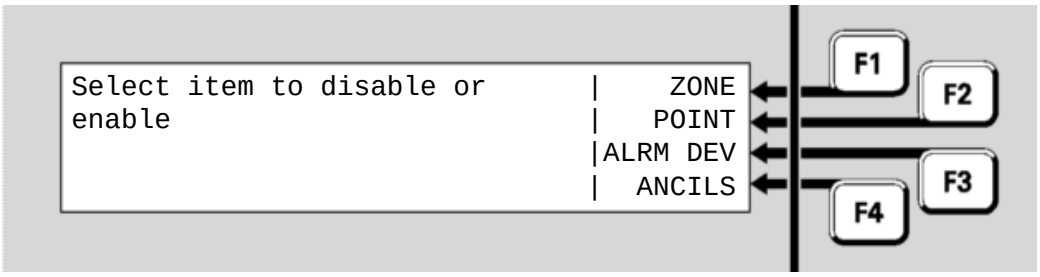


Fig 3-5 – Selecting an Item to be Disabled or Enabled

- **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 6-4).
- **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.

- Press **ALRM DEV←** **F3** again to enable the alarm devices. You will be prompted to press **OK** to confirm.

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.

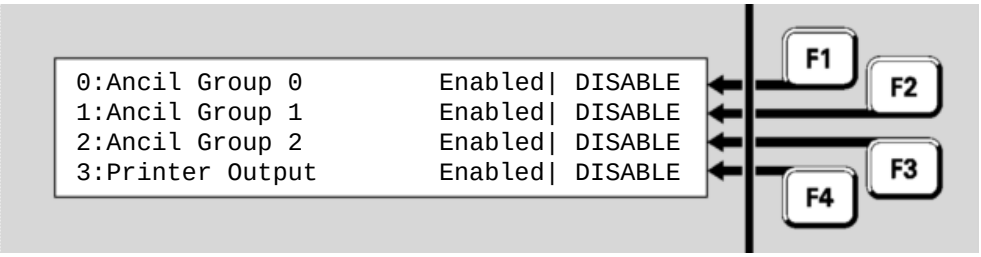


Fig 3-6 – Ancillary Groups Display

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 resent 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

Topic	See Page
General Message Format	4-1
Viewing Event History	4-2
Zone Events	4-3
Point Event	4-5
System Events	4-6

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.

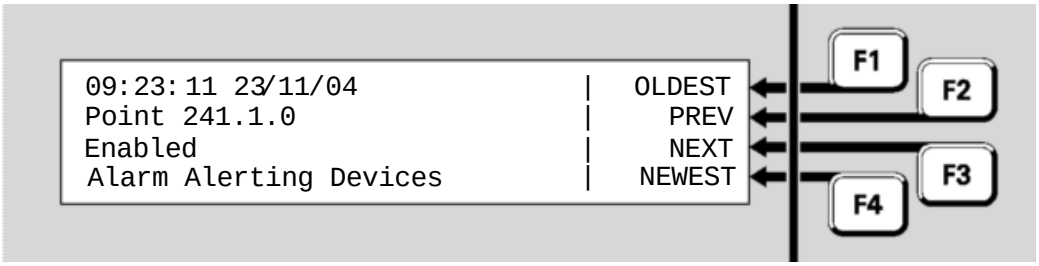

Fig 4-1 – Event History Message

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:

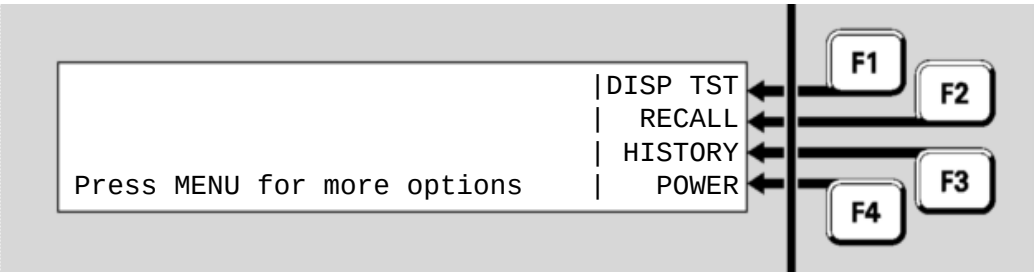

Fig 4-2 – Options Resulting from Pressing the Menu Key

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

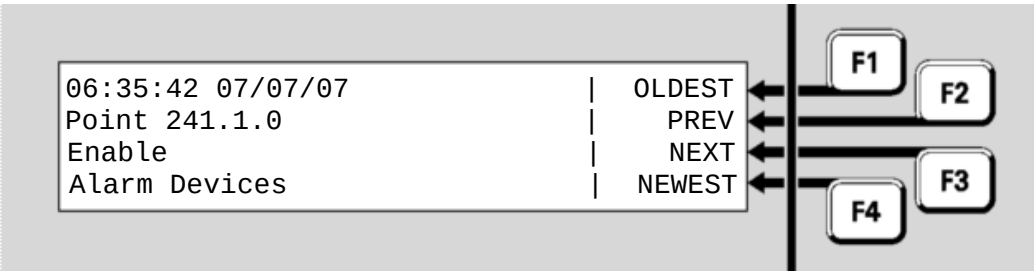

Fig 4-3 – Event History Display

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.

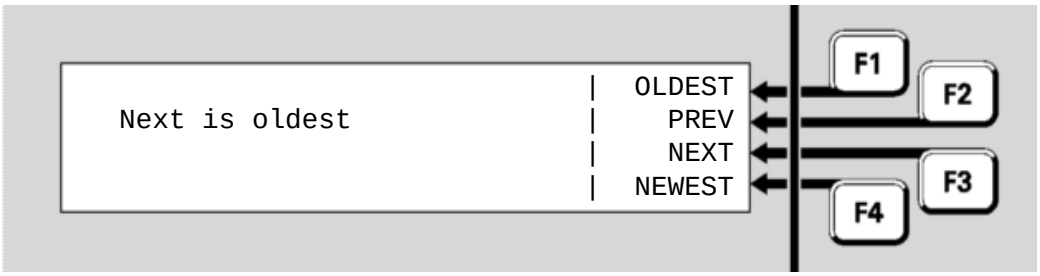

Fig 4-4 – Brief Message Shown Before Displaying Oldest Event

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

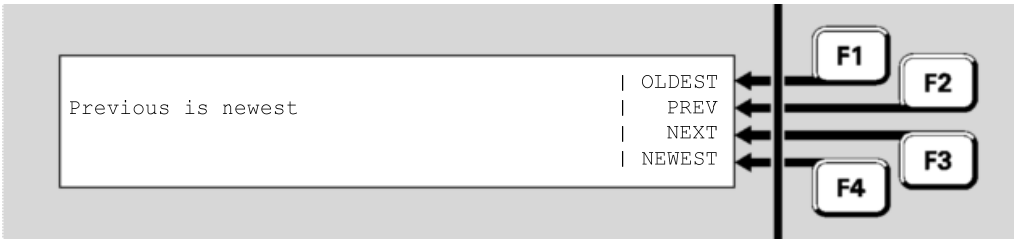

Fig 4-5 – Brief Message Shown Before Displaying Newest Event

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

Zone Events

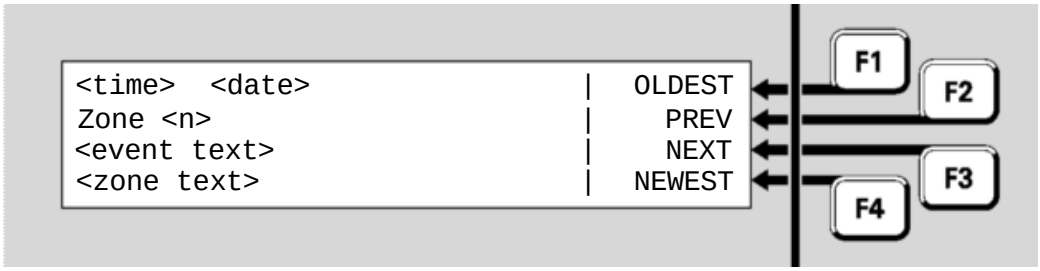

Fig 4-6 - Zone Event Text Format

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

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

Zone Events Text	
Event Text	**Meaning**
Normal	This zone has returned to normal.
Alarm	One or more of the detectors in this zone has gone into Alarm.
Alarm clear	The alarm on this zone has cleared.
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.
Fault	One or more of the devices in this zone is faulty.
Fault clear	All faults on this zone have cleared.
Alarm ACK'D	The alarm on this zone has been acknowledged by a user.
Reset	This zone has been reset by an operator command.
Disable/Enable	This zone has been disabled/enabled by an operator command respectively.
Alarm Test Start	A test of the processing of alarm conditions in this zone has been started.
Fault Test Start	A test of the processing of fault conditions in this zone has been started.
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.
Test Pass	The current test on this zone has passed.
Test Fail	The current test on this zone has failed.
Test Abort	The current test on this zone has been cancelled.
AutoReset Test	Auto-Reset mode has been started for this zone.
AutoReset Timeout	Auto-Reset mode for this zone has been cancelled due to a timeout period with no new alarms.
Input activated Input deactivated	An input point mapped to this zone has become Active (distinct from Alarm) or has stopped being Active, respectively.
Activate	This zone has become Active (distinct from Alarm state). Output points mapped to the zone become operated.
Deactivate	This zone has stopped being Active.
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).

Point Events

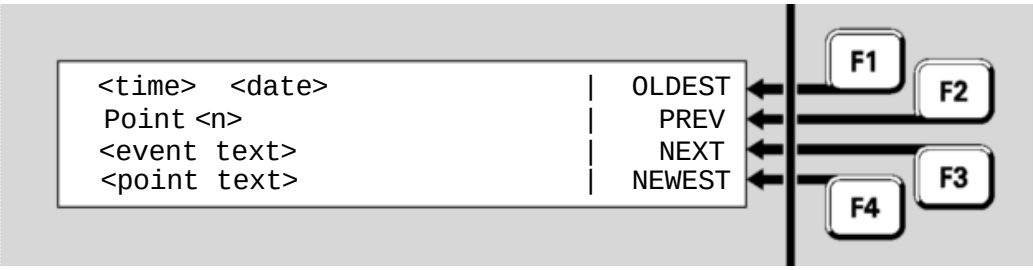

Fig 4-7 – Point Event Message Format

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**
Pre-Alarm	This detector has gone into a pre-alarm condition.
Pre-Alarm clear	The pre-alarm condition on this point (detector) has cleared.
Alarm	This point is in alarm.
Alarm Clr	The alarm condition on this point has cleared.
Fault	This point is faulty.
Fault Clr	The fault condition on this point has cleared.
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.
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.
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.
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.
Window Fault	This flame detector has a dirty window.
Device Fault	This flame detector has a fault other than a window fault.
Normal On	This point was unoperated and faulty, and is now operated and normal.
Normal Off	This point was operated and faulty, and is now unoperated and normal.
Load Supply Fail	The separate supply to this device, for example a DIM800 or SNM800, is faulty.
S/C Fault	An input or output has a short circuit or open circuit in the wiring connected to it.
O/C Fault	
Parameter Error	This device has been incorrectly set up at the factory and requires replacement.
Unstable Input	An input is not stabilising to a well defined state.
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.
Duplicate Device	There is more than one addressable device using this address.
Disable	This point has been disabled.
Enable	This point has been enabled.
Input activated	An input device has changed into or out of an activated condition,

Point Events Text	
Input deactivated	respectively.
Operate	The output device has been switched into or out of an operated condition respectively.
De-operate	
Alarm test start	An alarm test on this point has started or stopped, respectively.
Alarm test stop	
Alarm test fail	This point has failed its alarm test.
Test Operate	This output point has been switched into or out of an operated condition as part of a point test.
Test De-operate	
AutoReset start	Auto-Reset mode for this point (detector) has been started or stopped, respectively.
AutoReset stop	

System Events

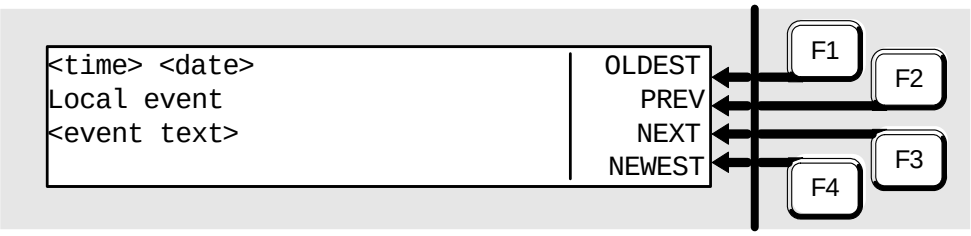

Fig 4-8 – System Event Message Format

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.
Cold start	The *MX1* has been powered up.
Commission Mode On/Off	Commissioning mode has been started/stopped.
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	
History Reset	Non-volatile event messages were all cleared (usually following a restore failure). All previous history events will have been lost.

System Events Text	
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.
Time changed	The system time or date has been changed. The new time/date is used for the event.
Date changed	
System running	This is a daily timestamp, indicating the system is working.
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 11-5.

In this Chapter

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

Topic	See Page
Recall Menu Options	5-2
Recalling Off-Normal Points and Zones	5-3
Recalling Points	5-4
Recalling All Zones	5-5

Recall Menu Options

Requirements

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:

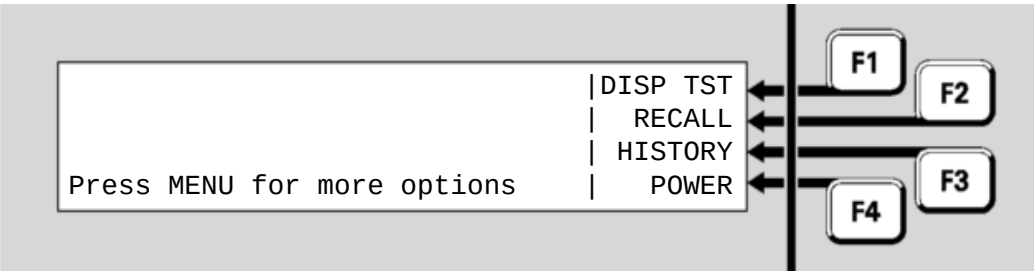

Fig 5-1 –Menu Options

Press **RECALL**←**F2** to see the Recalls menu:

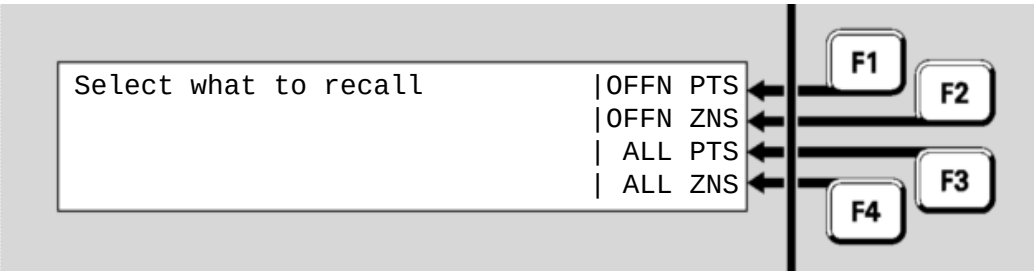

Fig 5-2 – Recalls Menu

- **OFFN PTS**←**F1** shows all points that are not in a Normal state.
- **OFFN ZNS**←**F2** shows all zones that are not in a Normal state.
- **ALL PTS**←**F3** shows the state of all points.
- **ALL ZNS**←**F4** shows 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”.

Excluded Points

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

Off-Normal Points

The points in this list are those in an off-normal condition such as Alarm, Fault, Disabled or Dirty. They are displayed in numerical order, starting with the lowest numbered point.

- 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 1-11 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. ”814PH Shop” is the point description set in the site-specific configuration. It indicates the physical location of the device.

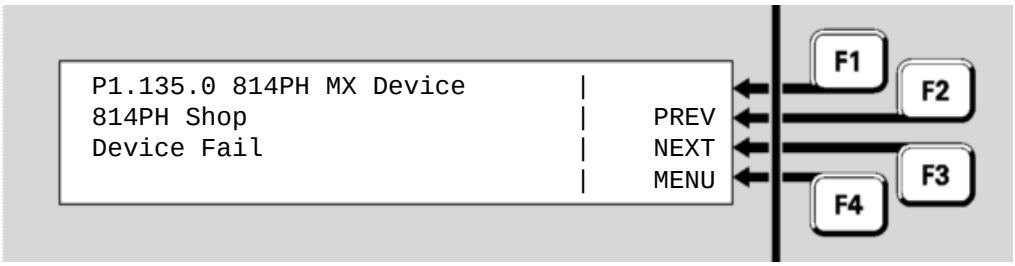

Fig 5-3 – Off-Normal Point Display

From the Off-Normal point display, pressing **NEXT** or **NEXT←F3** steps to the next off-normal 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.

Off-Normal Zones

The zones in this list are those in an off-normal condition (e.g., alarm, fault, disable, etc). They are displayed in numerical order, starting with the lowest numbered.

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.

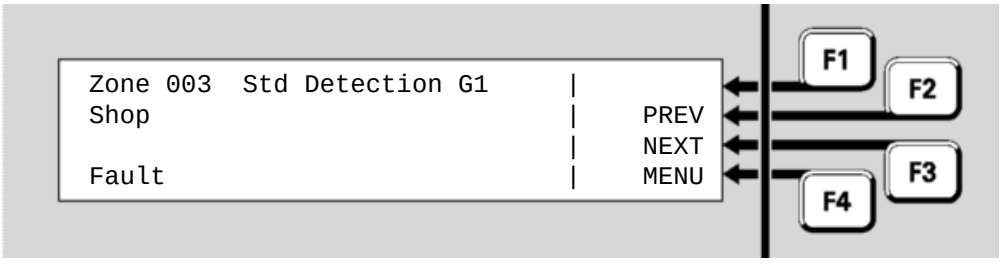

Fig 5-5 – Off-Normal Zone

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

Recalling Points

All Points

The **ALL-PNTS←F3** option in the Recall menu (see Figure 5-2) shows all configured points starting at the lowest numbered point, irrespective of the point condition.

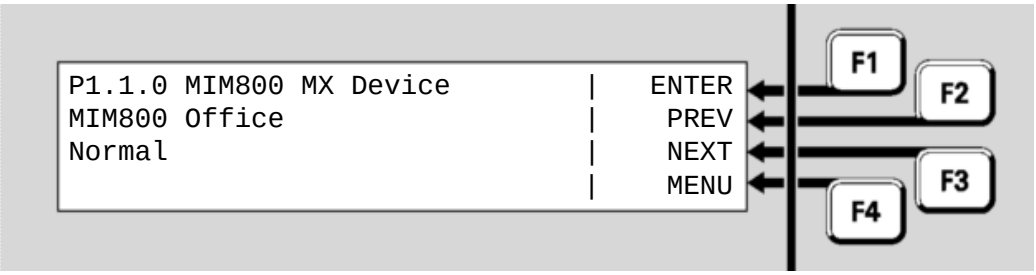

Fig 5-6 – Point Recall Display

Entering Point Numbers

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

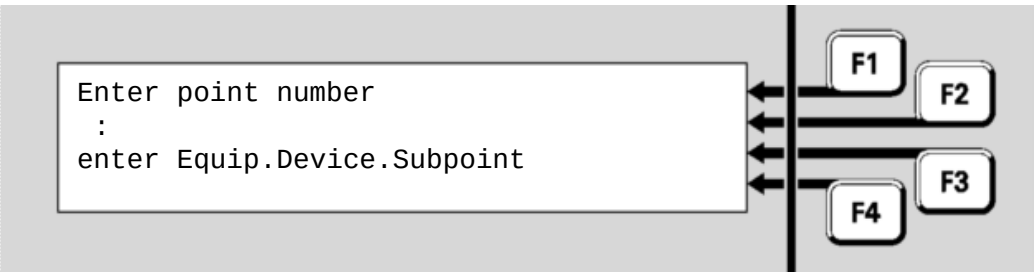

Fig 5-7 – Point Number Entry Display

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

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

Recalling All Zones

All Zones

Pressing **ALL ZNS**←**F4** from the Recall Menu will show the zone status, starting at the lowest numbered zone.

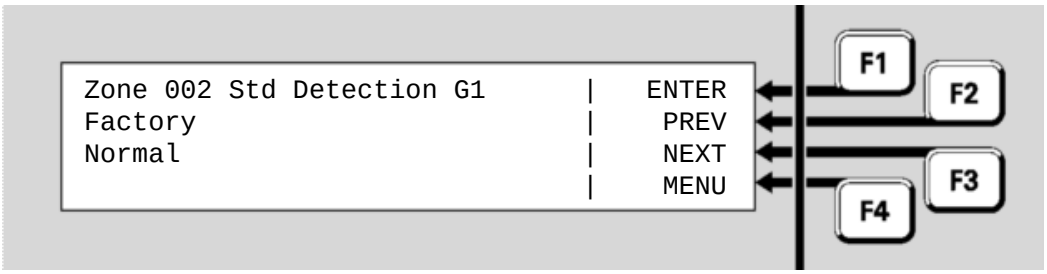

Fig 5-8 – Recall Zone Status Display

"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.

Entering Zone numbers

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:

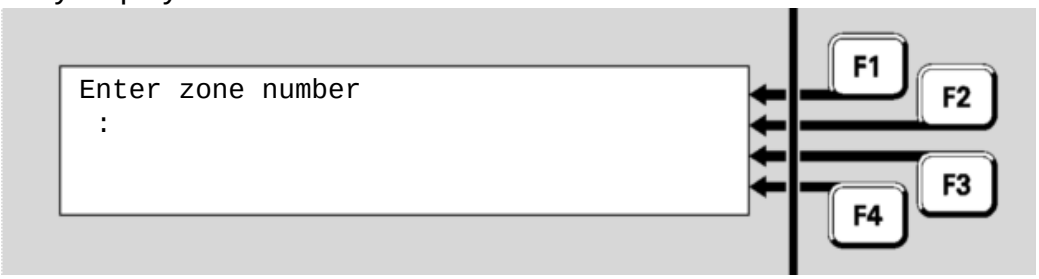

Fig 5-9 – Entering A Zone Number

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

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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 1-10 for more information about Access Levels.

Equipment points are described on page 11-6.

In this Chapter

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

Topic	See Page
Displaying Zone or Point Command Menu	6-2
Resetting Zones or Points	6-2
Disabling and Enabling Points or Zones	6-6
Testing Zones	6-11
Testing Points	6-15
Viewing Point Values and Settings	6-17

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** from the base display or Alarm List, enter the required zone number and press the **OK** key. This will show the recall zone status display for that zone.

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

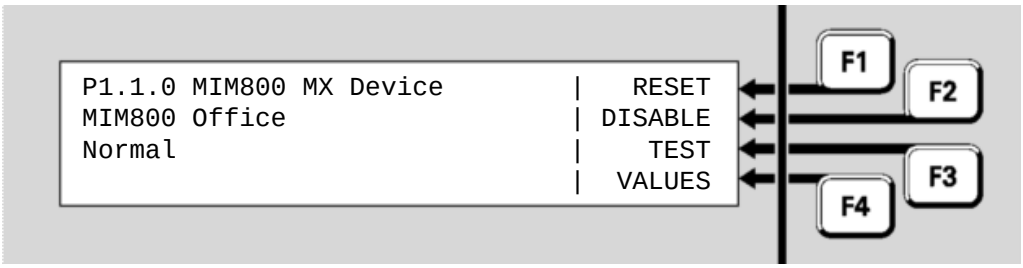

Fig 6-1 – Recall Point Status Display

- **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 6-6 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.

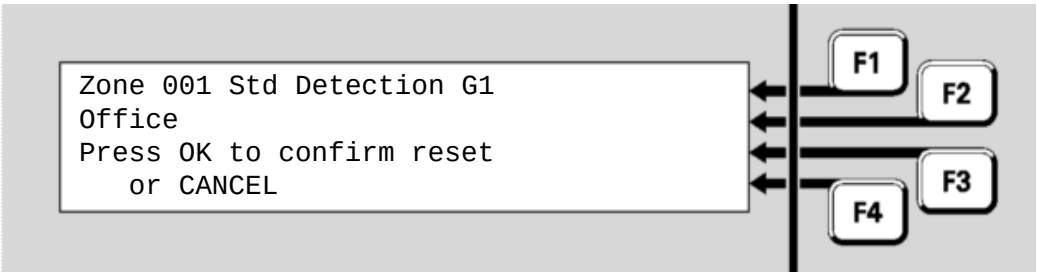

Fig 6-2 – Zone Reset Confirmation Display

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 zones in alarm.

A range of zones can be reset from a base display by using the **RESET** control. From the base display, press the **RESET** key. Reset options are as shown below.

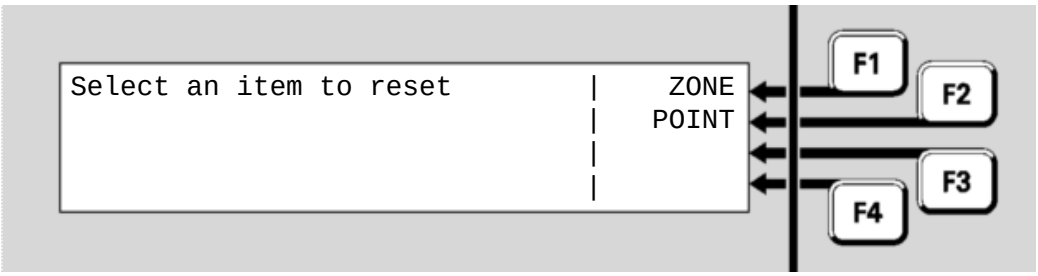

Fig 6-3 –Reset Menu

Press **ZONE←F1**.

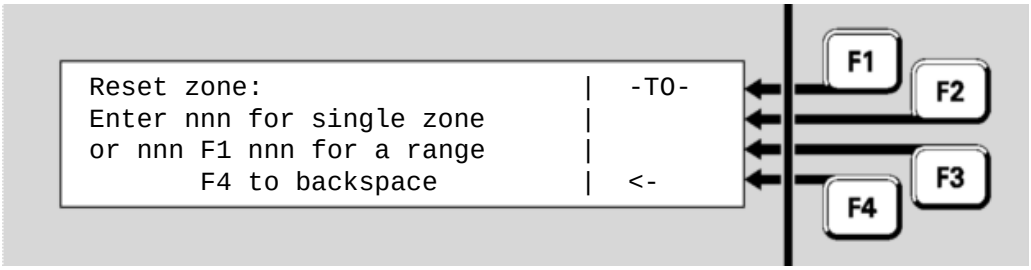

Fig 6-4 – Zone Number Entry Display – Showing Range Option

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.

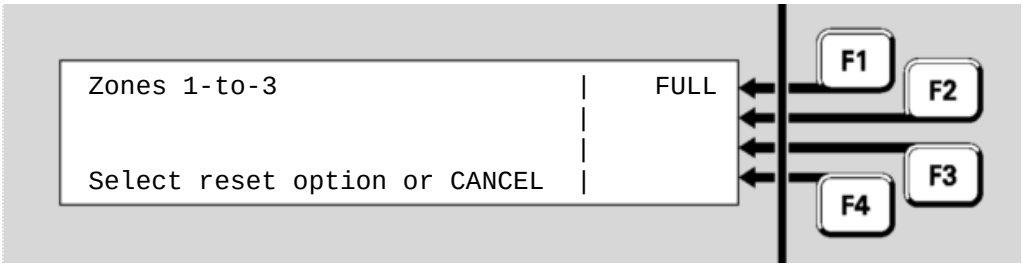

Fig 6-5 – Zone Reset Option Menu

Select the reset type **FULL←F1** and 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:

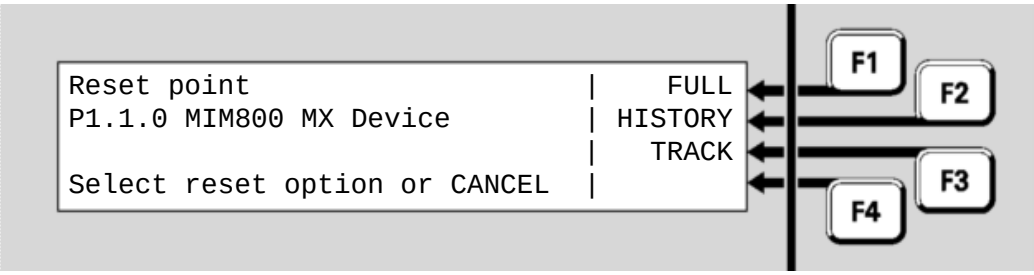

Fig 6-6 – Options For Resetting A Point

- **FULL←F1** is the basic reset to restore a point to a Normal state. Only the point concerned is reset. 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** control. Reset options are as shown below.

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

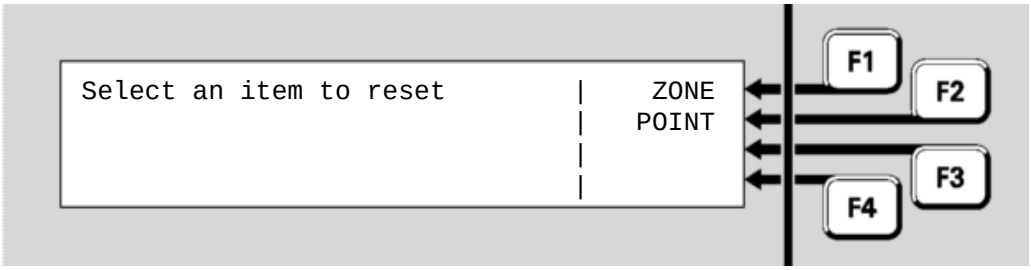

Fig 6-7 – Selecting An Item To Be Reset

Press **POINT**←F2.

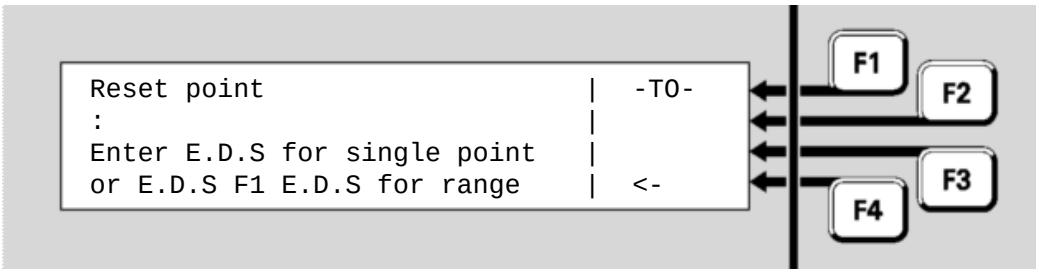

Fig 6-8 – Enter A Point Range To Be Reset

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.

Note that
- a single device or a range of devices, or
- a single point, or a range of points within the same device

may be entered. For information on point numbers and ranges refer to "Point Numbers" (page 1-12). 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 6-4) for details of the point reset options.

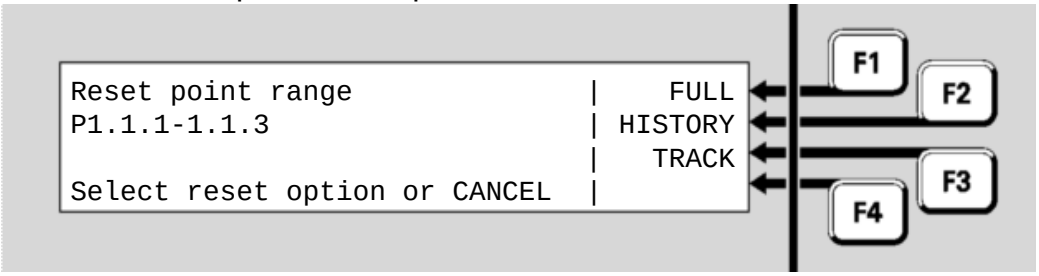

Fig 6-9 – Selecting The Reset Option

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.

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.

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 zones in alarm.

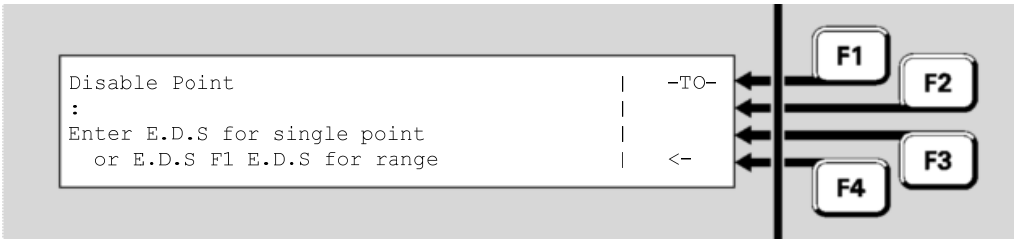

Fig 6-10 – Point Number Entry Display – Disable Points

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 1-12. 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 start 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.

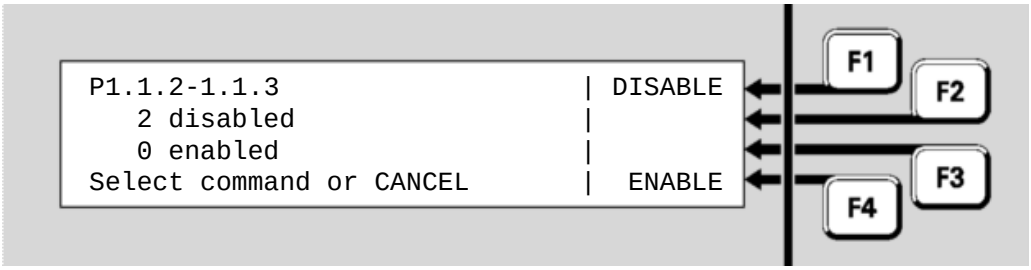

Fig 6-11 –Point Disable/Enable Menu

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.

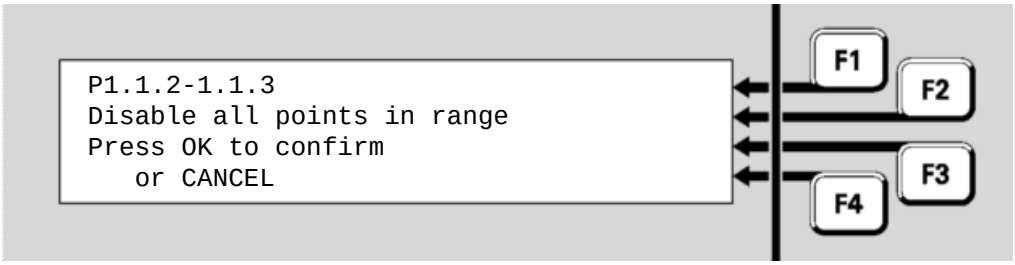

Fig 6-12 – Disable Point Range Confirmation Display

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:

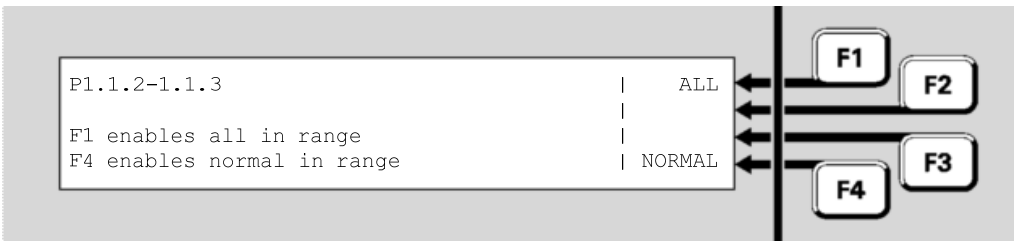

Fig 6-13 – Enable Point Range Choice Display

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.

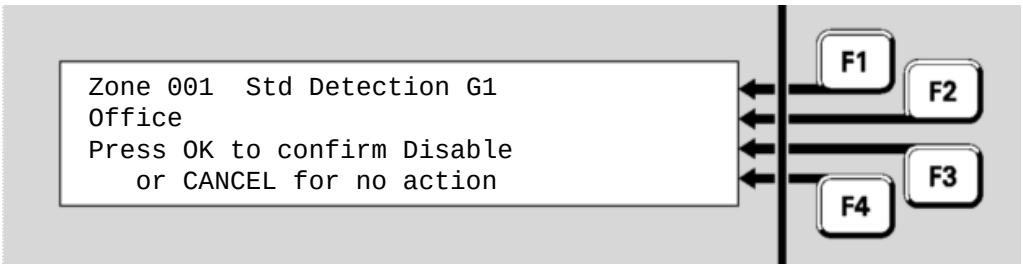

Fig 6-14 – Confirming Zone Disable

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 zones in alarm.

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

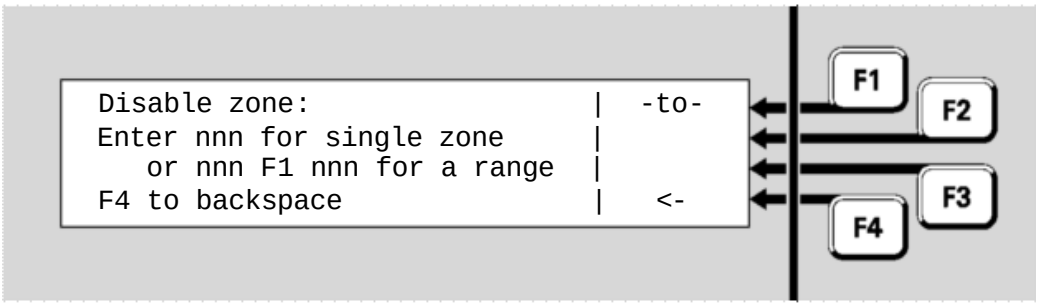

Fig 6-15 – Entering Zones To Be Disabled or Enabled

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;

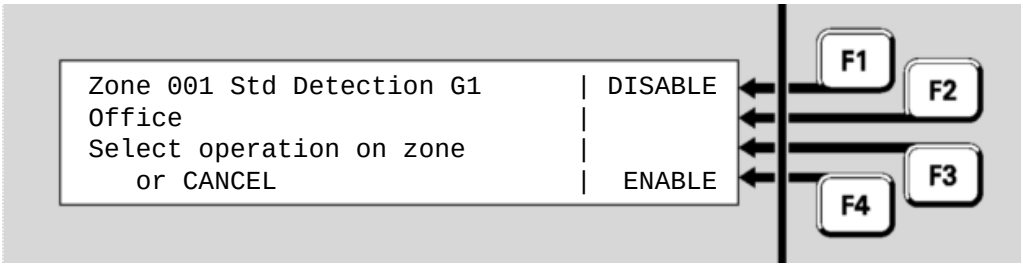

Fig 6-16 – Disabling Or Enabling A Single Zone

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.

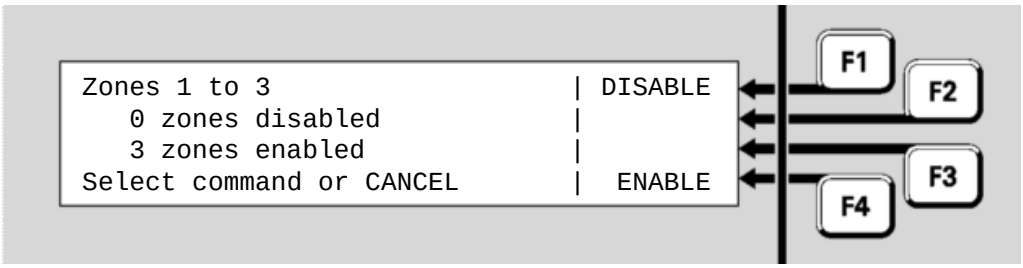

Fig 6-17 – Displaying/Enabling a Range of Zones

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

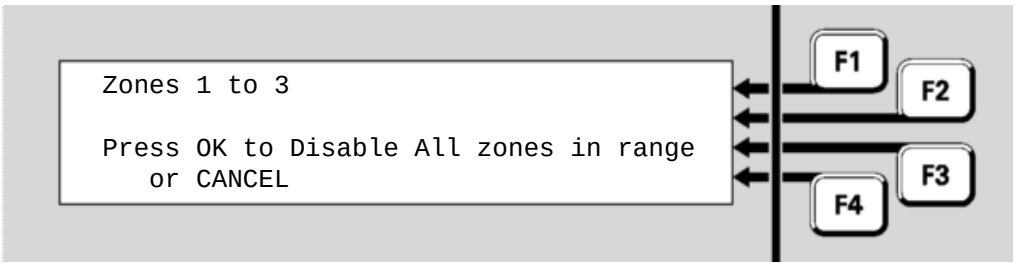

Fig 6-18 – Disabling All Zones In A Range

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 6-16), press **ENABLE**←F4.

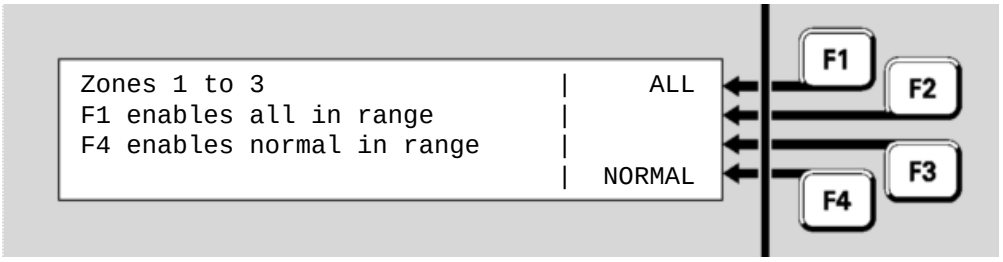

Fig 6-19 – Choice for Enabling A Range Of Zones

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**, **ZONE**←**F1** and enter the zone number.

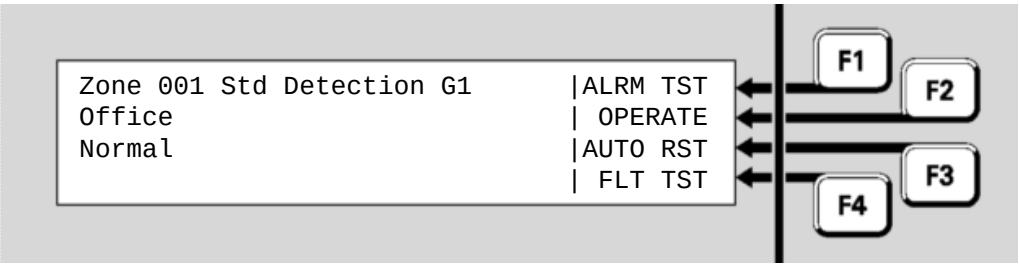

Fig 6-20 – Zone Test Status and Menu

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 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.

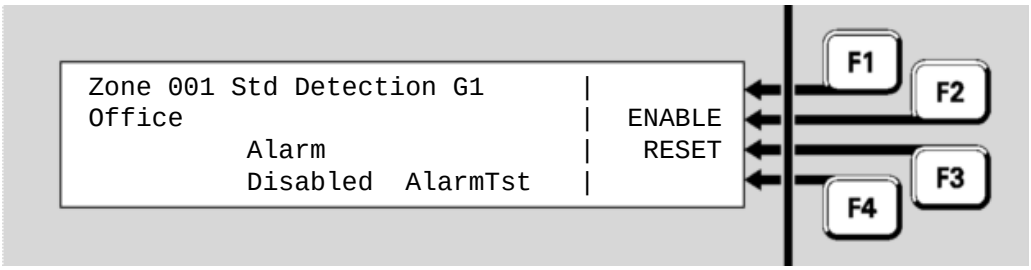

Fig 6-21 – Zone Alarm Test Status and Menu

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).

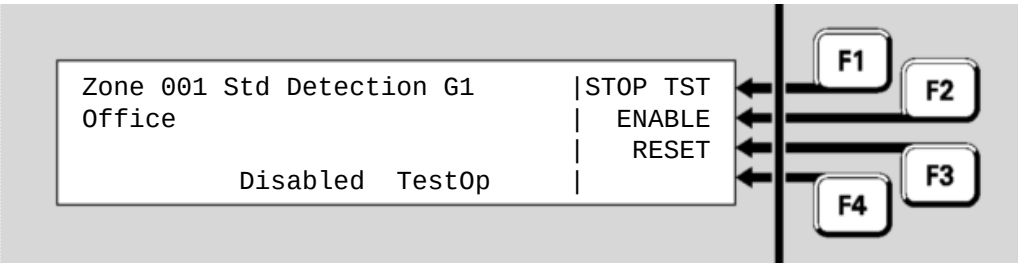

Fig 6-22 – Zone Operate Test Status and Menu

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 actual output points to be 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. However, multiple tests on one point will not operate the alarm devices again until that point has been out of alarm for at least 60 seconds.

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. 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.

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.

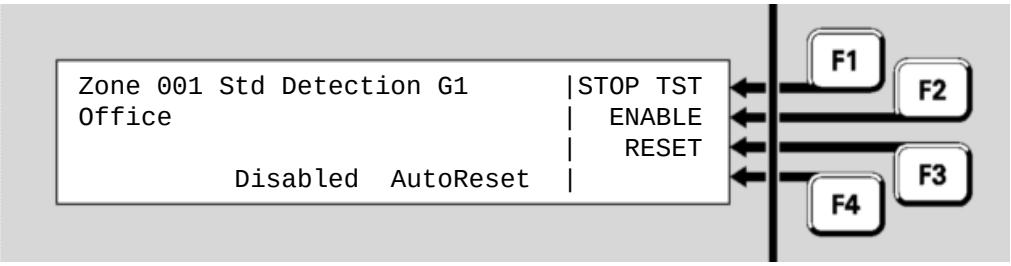

Fig 6-23 – Zone Auto-Reset Test Status Menu

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 after confirming 1-2 minutes after the test is exited that the status 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;

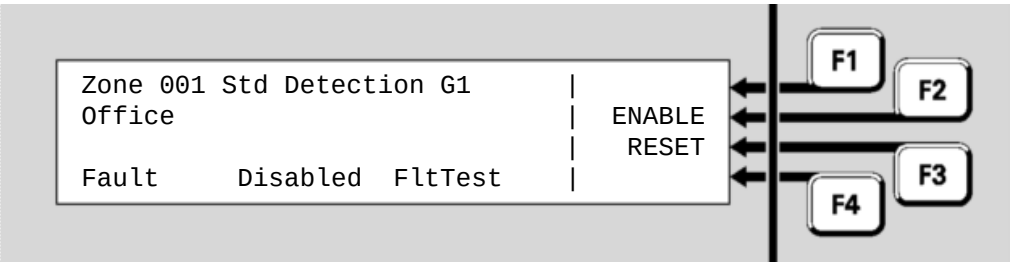

Fig 6-24 – Fault Test Status Menu

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.

Testing Points

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 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:

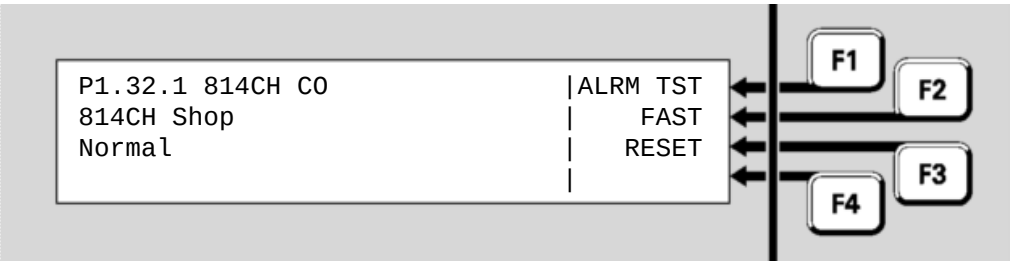

Fig 6-25 –Analogue Input Point Test Menu

- **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 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.

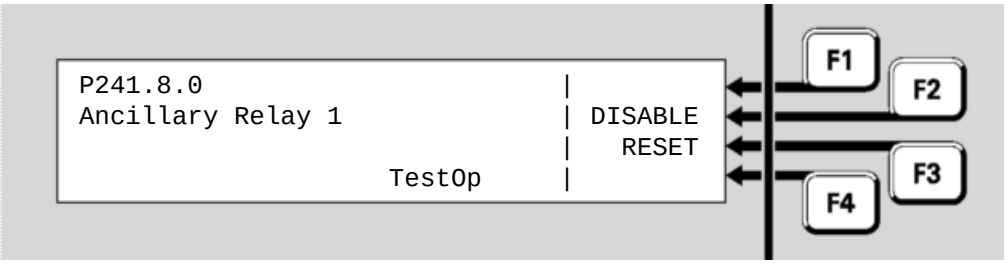

Fig 6-26 – Output Point- Test in Progress

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.

Viewing Point Values and Settings

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, ^{o}C Temperature, % Obscuration, % Alarm) and algorithms for a point can be recalled on the display.

Using Point Value Data

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**:

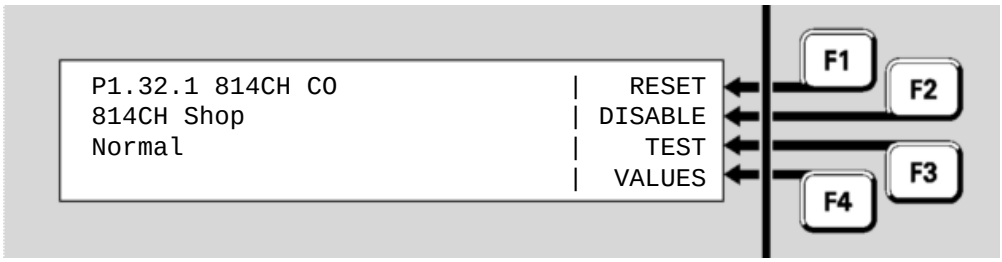

Fig 6-27 – Recall Point Status Display

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.

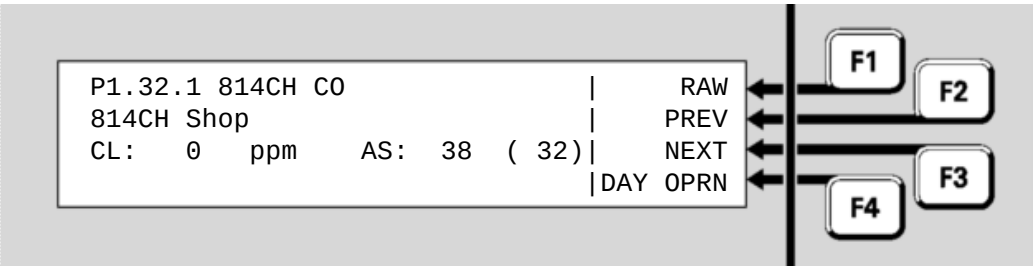

Fig 6-28 – Point Current-Level Display – Physical Values

- 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:

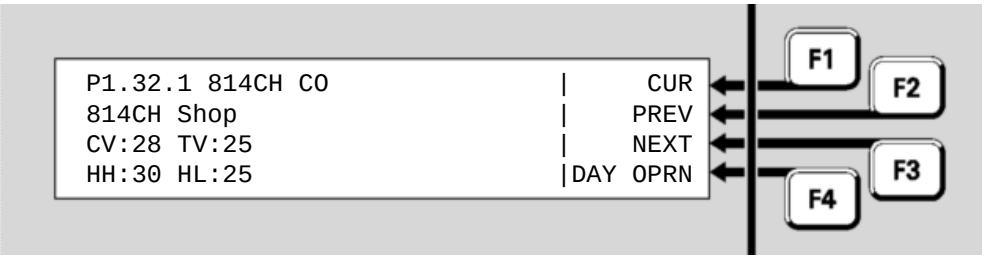

Fig 6-29 – Point Raw-Value Display

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 6-4).
- 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.

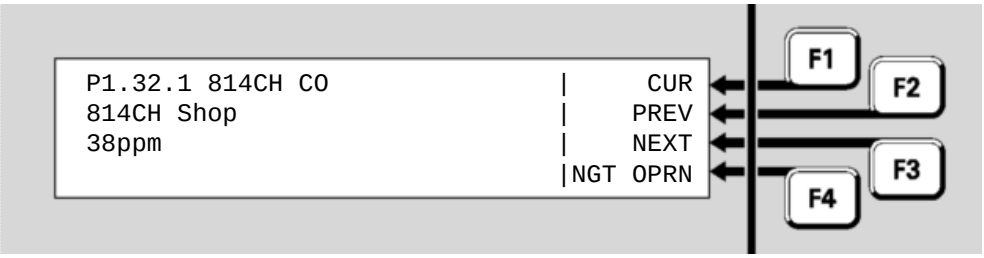

Fig 6-30 – Point Algorithm Settings

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).

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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 1-10.

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.

Topic	See Page
Logging On to Access Level 3	7-1

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.

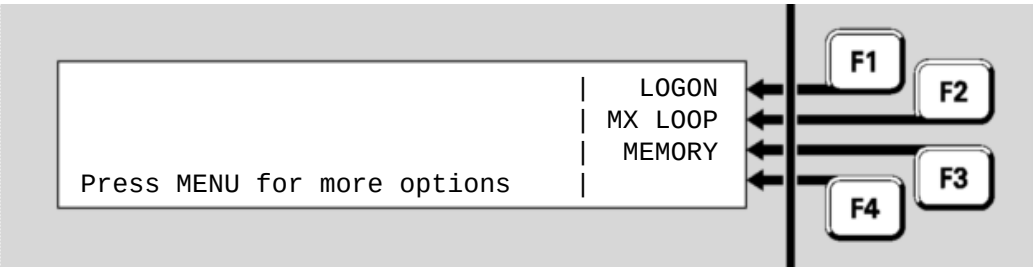


Fig 7-1 – Menu Options-Third Screen

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.

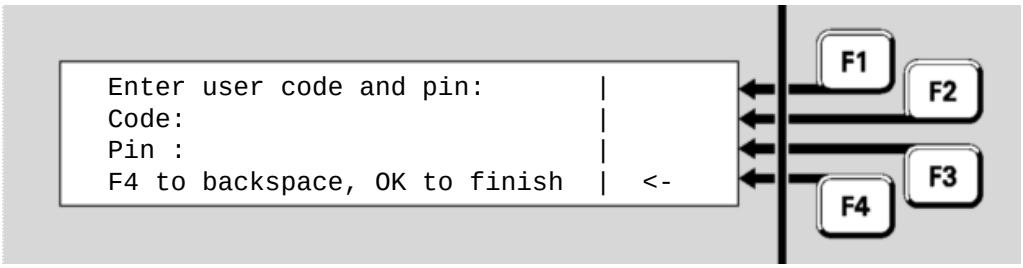


Fig 7-2 – Log On Display

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:

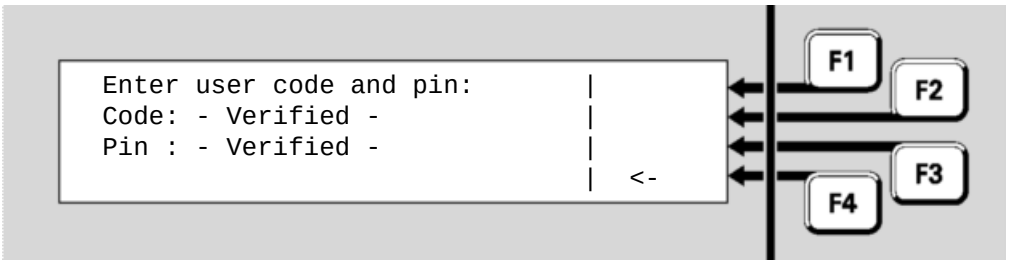


Fig 7-3 – Successful Level 3 Logon

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

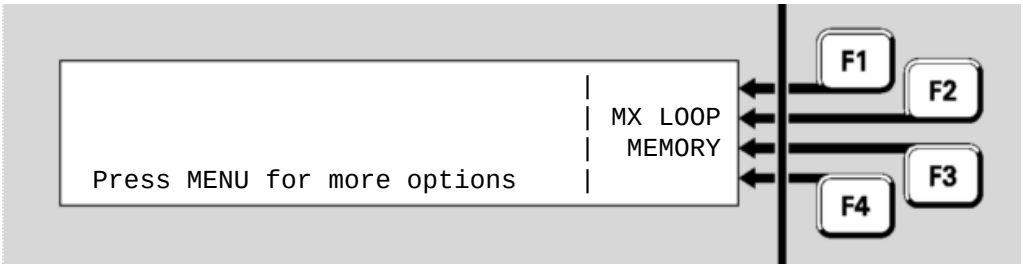


Fig 7-4 – Level 3 Menu Display

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.

Topic	See Page
Front Panel Display Test	8-1
Setting System Time and Date	8-2
Power Supply Status and Battery Testing	8-3
MX Loop Status	8-5
System Memory Status	8-6
Test System	8-8
Test Alarm Devices	8-9
Replacing an MX Device	8-9
Buzzer Disable & Mute	8-11
Commissioning Mode	8-12
Resetting the System	8-13

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.

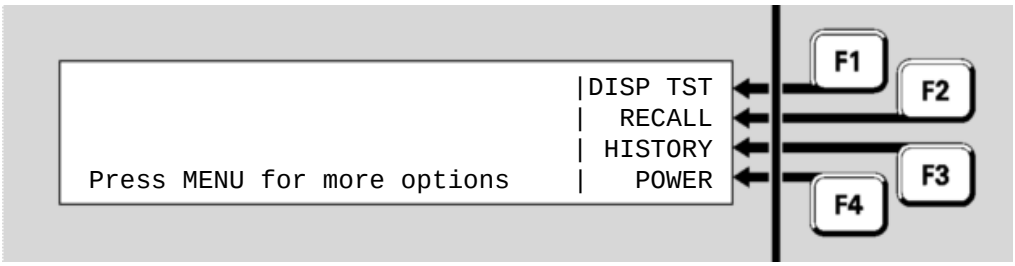


Fig 8-1 – Base Menu

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:

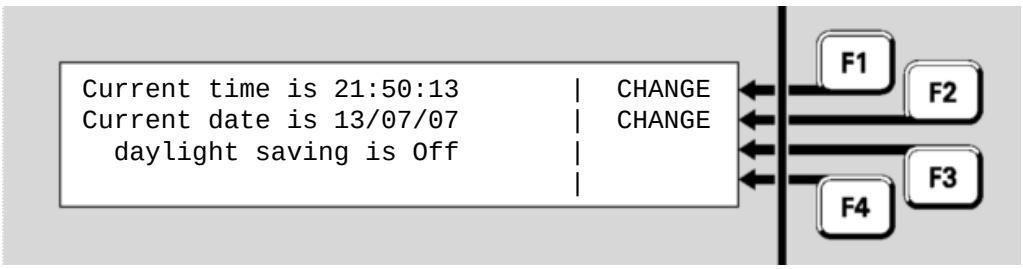


Fig 8-2 – Date And Time Change Menu

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

Setting the Time

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**.

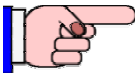
Press **OK** to store the new date.

Daylight Saving

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

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

Power Supply Status and Battery Testing



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.

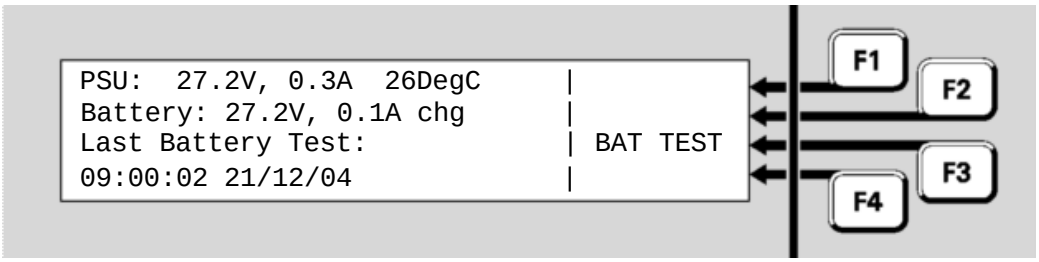


Fig 8-3 – Power Supply Status

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**, then **MENU** twice, **BATTERY←F3** to view the Battery Test status screen.

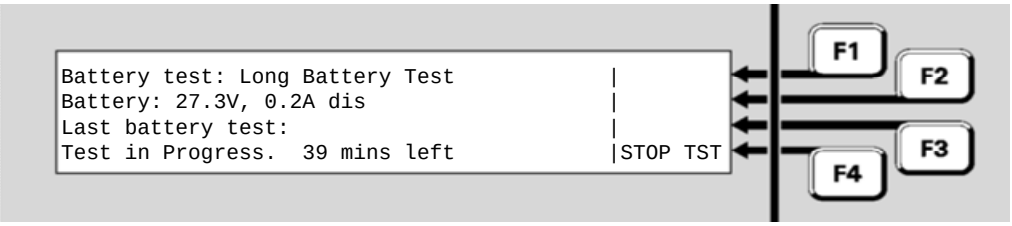


Fig 8-4 – Battery Test Menu

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.

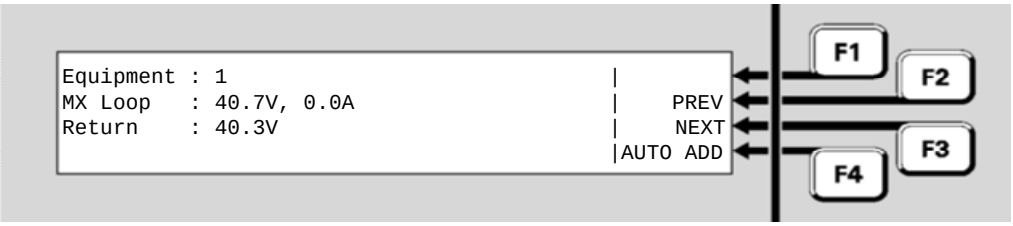


Fig 8-5 – MX Loop Status

- **Equipment**: shows which MX loop is being viewed. 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.

The example display shows a typical situation. The power feed is being 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 both ends because of an open circuit, 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 state of these system points (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.

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.

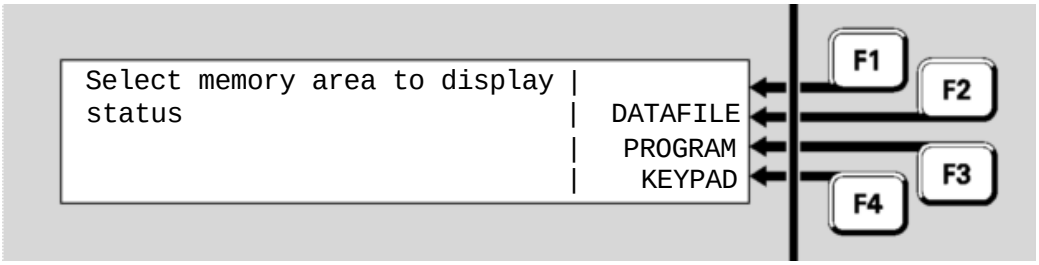


Fig 8-6 – System Memory Status Menu

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.

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.

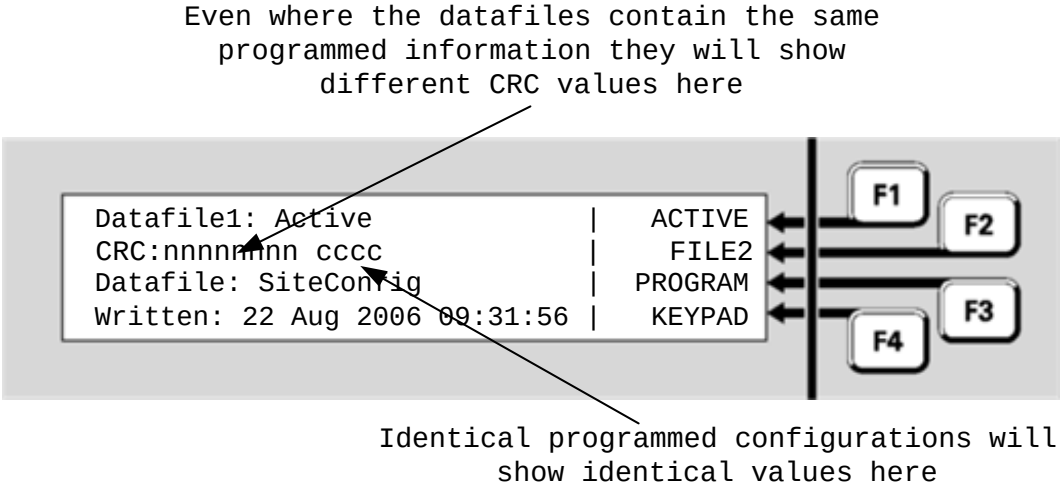


Fig 8-7 - Site-Specific Data Display – Datafile 1 Active

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.

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.

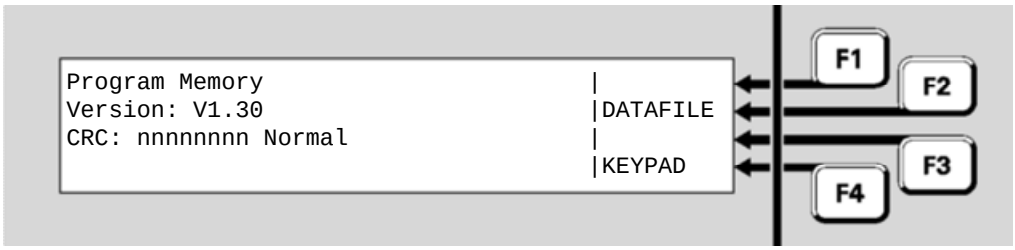


Fig 8-8 – Controller Firmware Display

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 program.

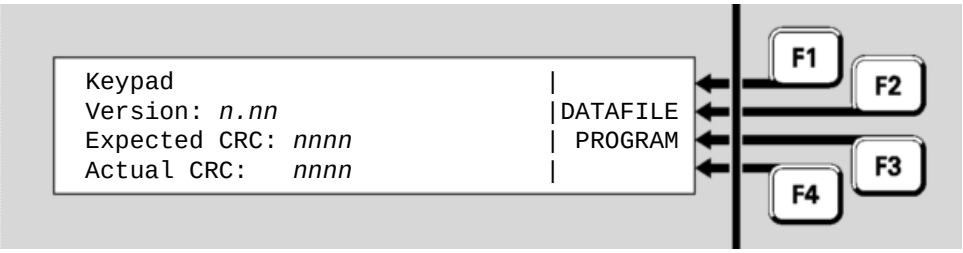


Fig 8-9 – LCD/Keyboard Firmware Status

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

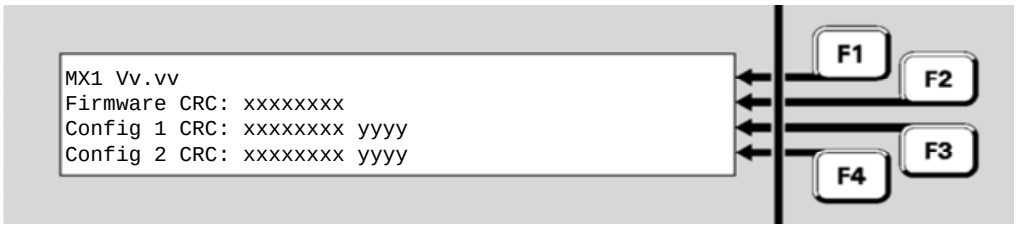


Fig 8-10 – Tests System Screen Shows Firmware and Config CRCs

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**, and if any tests are already in progress press **MENU** so an **ALARM DEV←F3** option is shown. Press **ALARM DEV←F3** so the alarm devices test status screen is shown.

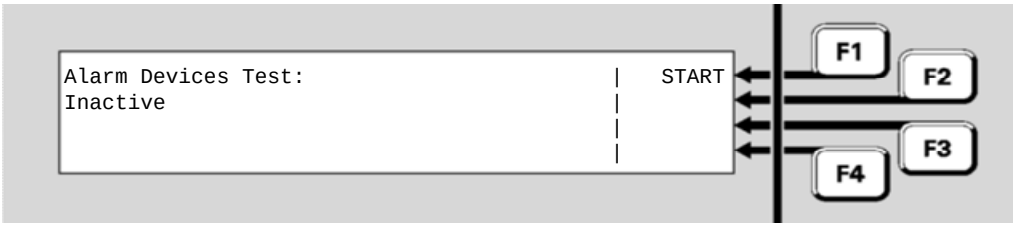


Fig 8-11 – Alarm Devices Test Status Screen

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. This section describes the installation and programming procedure using the *MX1* Auto-Addressing function.

When supplied, new *MX* devices are factory set to address 255. The *MX1* has a facility to set the address of any replacement device, via the LCD, to that of the device it replaces.

This procedure 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.

From the base display press "**MENU**" three times, then **MX LOOP←F2**. Then press **AUTOADD←F4**. Selecting this option will result in one of the following displays.

This display (Fig 8-12) shows one device has been removed and that the replacement device has been recognised and is ready to be programmed. Press **PRGM**←**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.

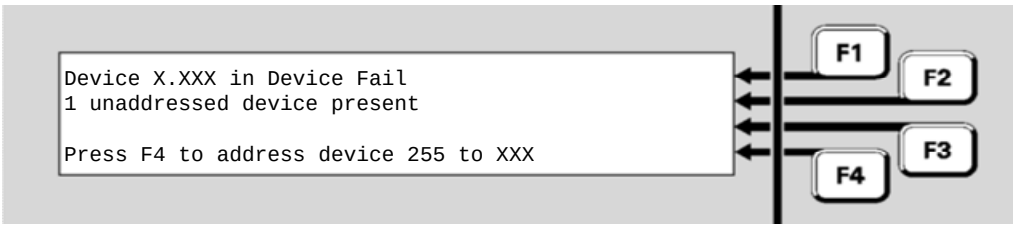


Fig 8-12 – Device Programming Menu

If the Auto-Addressing function does not find all of the required conditions met, one of the following displays (Fig 8-13, 8-14, 8-15 or 8-16) will be shown to indicate the cause.

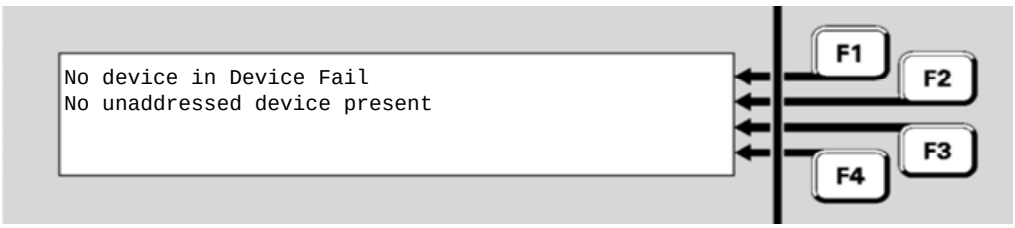


Fig 8-13 – Device Programming Menu – No Devices in Device Fail

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

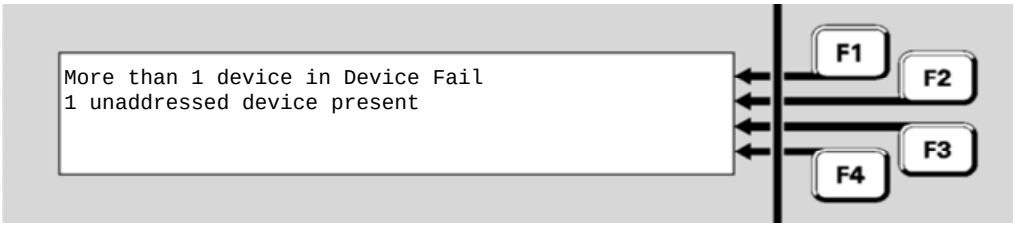


Fig 8-14 – Device Programming Menu – Multiple Devices

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

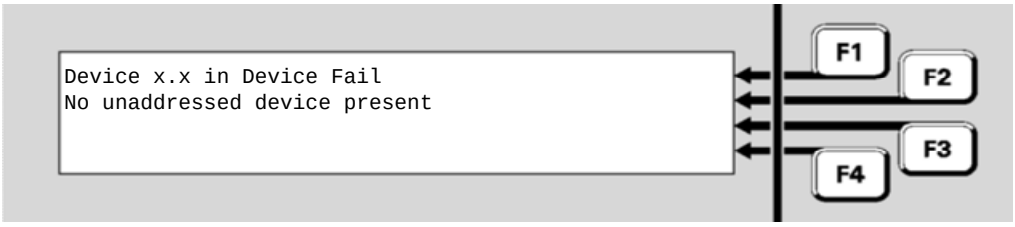


Fig 8-15 – No Unaddressed Device Present

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.

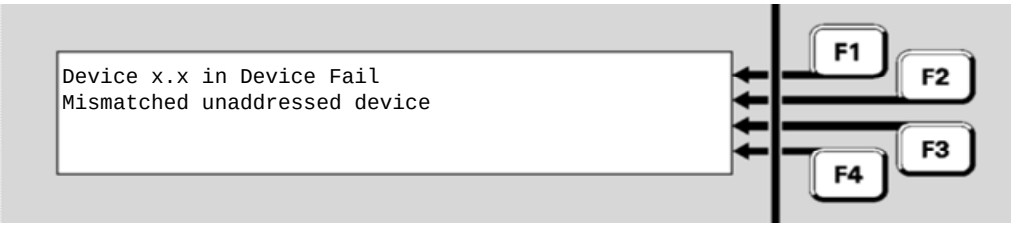


Fig 8-16 – Device Mismatch

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

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.

- **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** 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 **MENU** (twice if any tests are present) to show the **BUZR DIS←F1** option. Press this to display the Buzzer status screen.

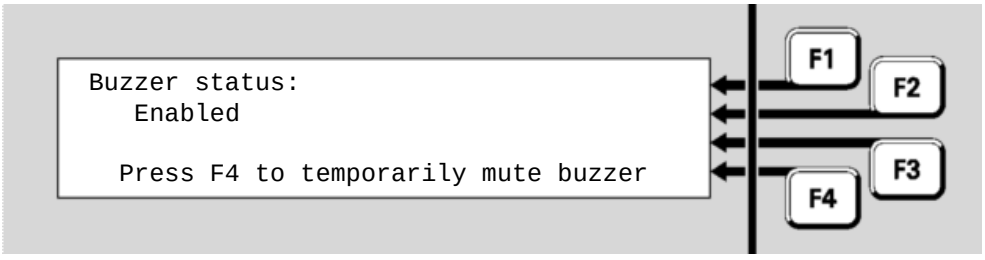


Fig 8-17 – Temporary Buzzer Mute Status

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.

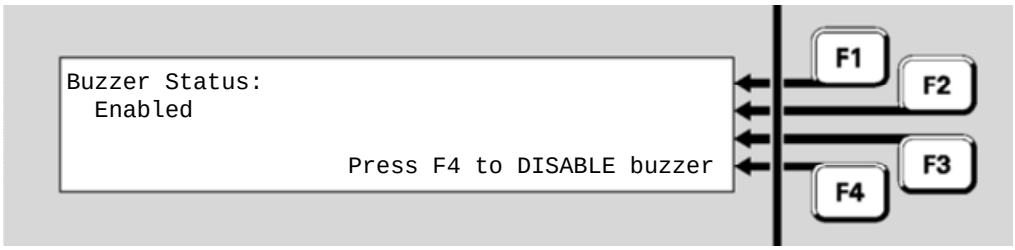


Fig 8-18 –Buzzer Disable Status

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 zones in alarm.

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.

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 the **TESTS** key. If no tests are in progress, the display will show “No Tests Found”.

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 begin 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.

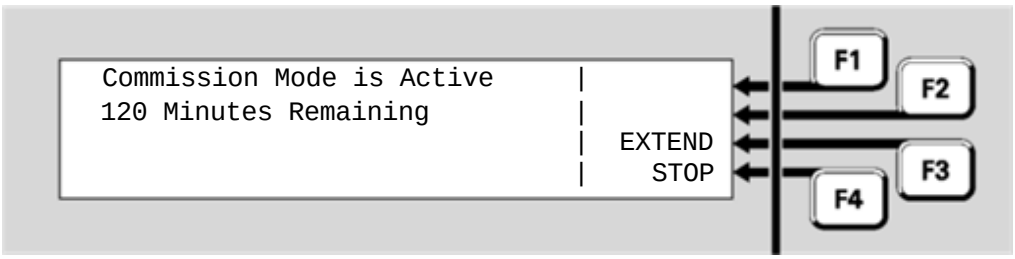


Fig 8-19 – Active Commission Mode Display

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 zones in alarm.

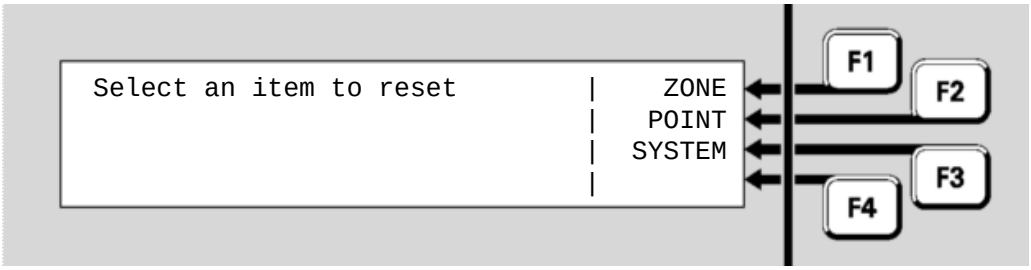


Fig 8-20 – Access Level 3 Reset Menu

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

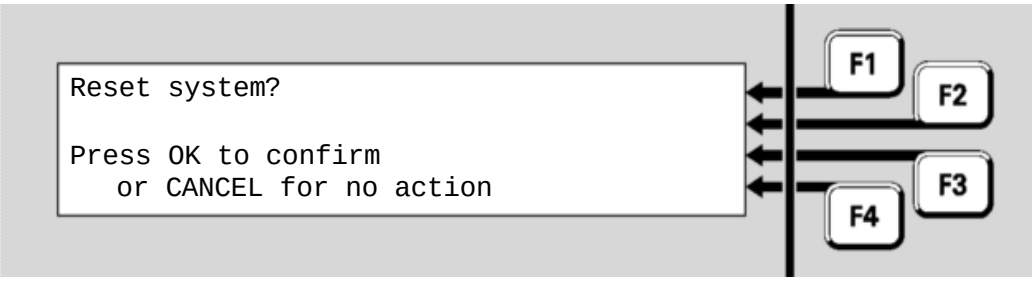


Fig 8-21 – System Reset Confirmation Screen

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

Chapter 9
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

Topic	See Page
Buzzer Cadences	9-1
Troubleshooting – LCD Error Messages and Actions	9-1

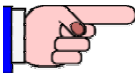
Buzzer Cadences

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 at cadence 2 Hz	A new alarm exists.
Buzzer steady	A new fault exists.
Buzzer 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: TEST BATTERY MENU	Last battery test status is not known; previous test was aborted before test completion.	None.
"Alarm Test Not Allowed" CONTEXT: Point Test Attempted ACTION: Fast Alarm Test.	Zone is configured to be "not testable". Auto-Reset Test is in progress.	Check zone configuration. Use tests recall to see if test underway. Stop Auto-Reset Test. Check that all points mapped to zone are alarm testable.
"ERROR: CRC TEST FAILED" "Tyco Safety Products" "*MX1* Keyboard VX.XX" "Calc CRC: 0xXXXX Stored CRC: 0xXXXX" CONTEXT: LCD/Keyboard startup	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" "Tyco Safety Products" "*MX1* Keyboard VX.XX" CONTEXT: LCD/Keyboard startup	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: Test-Menu ACTION: Attempting to 'operate' a zone.	Configuration data file corrupt.	Contact service company.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"Error processing command" CONTEXT: Test-Menu ACTION: Trying to perform a reset operation.	Configuration data file corrupt.	Contact service company.
"Error processing command" CONTEXT: Test Point Menu ACTION: Trying to reset point.	Configuration data file corrupt.	Contact service company.
"Error Processing Command" CONTEXT: Test Alarm Devices Menu ACTION: Trying to test alarm devices.	Configuration file corrupt.	Contact service company.
"ERROR: RAM TEST FAILED" "Tyco Safety Products" "*MX1* Keyboard VX.XX" CONTEXT: LCD/Keyboard startup	Internal RAM failed test. Microprocessor is probably faulty.	Contact service company. Replace LCD/Keyboard PCB.
"ERROR: UNABLE TO RECEIVE CONFIG DATA" "Tyco Safety Products" "*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.
Display stuck at "Loading Keyboard Information…" CONTEXT: MEMORY MENU	Keyboard not responding.	Power *MX1* down and up again. Check correct LCD/Keyboard firmware version is installed.
"Long Term Test" CONTEXT: TEST BATTERY MENU	Battery is currently undergoing a long-term test.	
"Manual Test" CONTEXT: TEST BATTERY	Battery is currently undergoing a manual test.	None.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
MENU		
"No History to View" CONTEXT: HISTORY LOG DISPLAY	There is no stored history	None.
"No Items found" CONTEXT: POINT/ZONE RANGE RESET/ENABLE	No points/zones are configured in the selected range.	
"Not in Test" CONTEXT: TEST BATTERY MENU	Battery is currently not under test.	None.
"Not Started" CONTEXT: TEST BATTERY MENU	There has not been a previous battery test since the *MX1* was last restarted.	None.
"Point not configured. Unable to perform operation." (MX Loop points only)	The point appears in the data file, but it has been configured as not used.	Select correct point.
"PreAlarm" CONTEXT: RECALL DISPLAY	One of the points that is mapped to the zone is in prealarm.	Use the history display to determine which point is in prealarm. Use the off-normal recall menu to find points in prealarm. Check analogue values of the point in prealarm using the values menu. Physically examine point in prealarm to determine cause.
"Point not testable at this time" CONTEXT: POINT TEST ATTEMPTED	Some devices (e.g., 814CH) cannot be tested again after a test, until a delay has elapsed.	Wait 60 seconds and try again.
"Test Cannot Start at this Time" CONTEXT: Point Test Attempted		The point is not configured to perform the requested test. Check configuration, or try a more appropriate test.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"Test in progress. ## mins left" Also showing *[Battery voltage]* *[Battery Current]* CONTEXT: TEST BATTERY MENU	There is currently a manual or long-term battery test underway. Minutes to completion is shown.	Wait for the test to complete.
"Test Pass" CONTEXT: TEST BATTERY 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.	None.
"This point cannot be disabled" CONTEXT: DISABLES MENU	Point is configured so that it cannot be disabled by user.	None.
"This zone cannot be disabled" CONTEXT: MESSAGE IS RESPONSE TO DISABLE OPERATION ON TEST MENU	Panel configuration does not allow zone to be disabled by user.	Check configuration data file.
"This zone cannot be disabled" CONTEXT: ZONE DISABLE DISPLAY	Zone cannot be disabled by operator.	None.
"This Zone Cannot be Disabled" CONTEXT: Test-menu ACTION: Attempting to perform an auto-reset test on a zone.	Panel configuration does not allow the zone to be disabled by user. If zone is testable, configuration file corrupt.	Check configuration to confirm zone setup. Check configuration data file.
"Unable to Test: Alarm Routing Error" CONTEXT: Battery test Attempted.	*MX1* is in alarm and so battery tests are not permitted.	Wait until alarms are reset and try again.
"Unable to Test: Battery Busy" CONTEXT: Battery test attempted.	Battery is already being tested (e.g., daily battery test).	Wait until test is completed and try again.
"Unable to Test: Battery Charging" CONTEXT: Battery test attempted.	Battery is allowed to charge for twice the length of the previous battery test. This message indicates this charging period is underway.	Wait until period is up, then try again.
"Unable to Test: Battery Low" CONTEXT: Battery test attempted.	Battery voltage is already low, so test not permitted.	Allow battery to charge up, then try again.

Troubleshooting LCD Messages		
LCD Message	**Meaning/Cause(s)**	**Action**
"Unable to Test: Mains Failed" CONTEXT: Battery test attempted.	Battery tests are not permitted when mains power is failed.	Wait until mains power is reapplied, then try again.
"Unable to Test: No Battery" CONTEXT: Battery test attempted.	No batteries are connected, or if so they are discharged or faulty.	Connect good batteries and try again, or wait until batteries have charged.
"-Verified-" CONTEXT: LOGON DISPLAY	The user code and PIN entered matches that contained in the active configuration data file.	None.

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 to display the oldest history event next.
No History to View	History recall	There is no stored history.
No OFFNORMAL zones found	Zone recall	All zones configured to "Show in Off Normal Recall" are normal.
No OFFNORMAL points found	Point recall	All points configured to "Show in Off Normal Recall" are normal.
No POINTS to display	Point recall	There are no points set up as "Show in Sequential Recall".
No ZONES to display	Zones recall	There are no zones set up as "Show in Sequential Recall".
No FAULTS to display	Fault recall	There are no zones or points in fault.
No DISABLED to display	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.

LCD Messages		
`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.

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Chapter 10
Mounting and Wiring Instructions

Introduction

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

In this Chapter

Topic	See Page
Cabinet Installation	10-1
External Wiring	10-3
Mains Wiring	10-4
MX1 Controller Wiring	10-6
MX Addressable Loop Wiring	10-7
Alarm Devices	10-9
Other *MX1* Input and Output Wiring	10-14

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

Cabinet Installation

MX1 is available in a 15U cabinet that simplifies 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
- prepunched 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 10-1).
- 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.

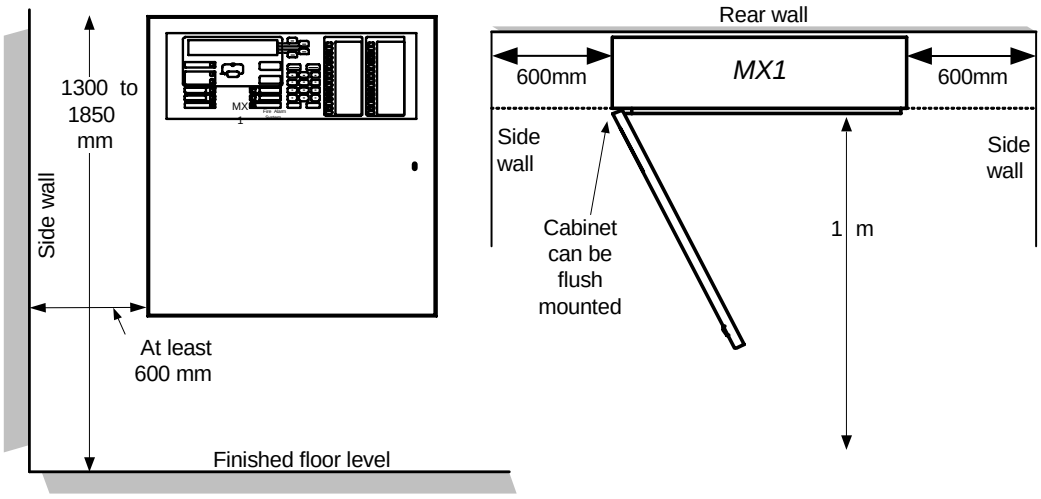


Figure 10-1 – Recommended clearances

Wall Mounting - 15U Cabinet

The 15U 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 10-2.

Note that the 15U cabinet is not supplied with knockouts in the back of the cabinet.

If any drilling or filing is required inside the cabinet, it is recommended to remove the gear plate containing the PCBs and the mains cover containing the power supply first.

Unplug the power supply loom from the controller PCB, and unclip it from the cable clamps on the gear plate. Unplug the 10-way loom from the keyboard PCB and unclip it from the front panel before removing the gear plate.

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

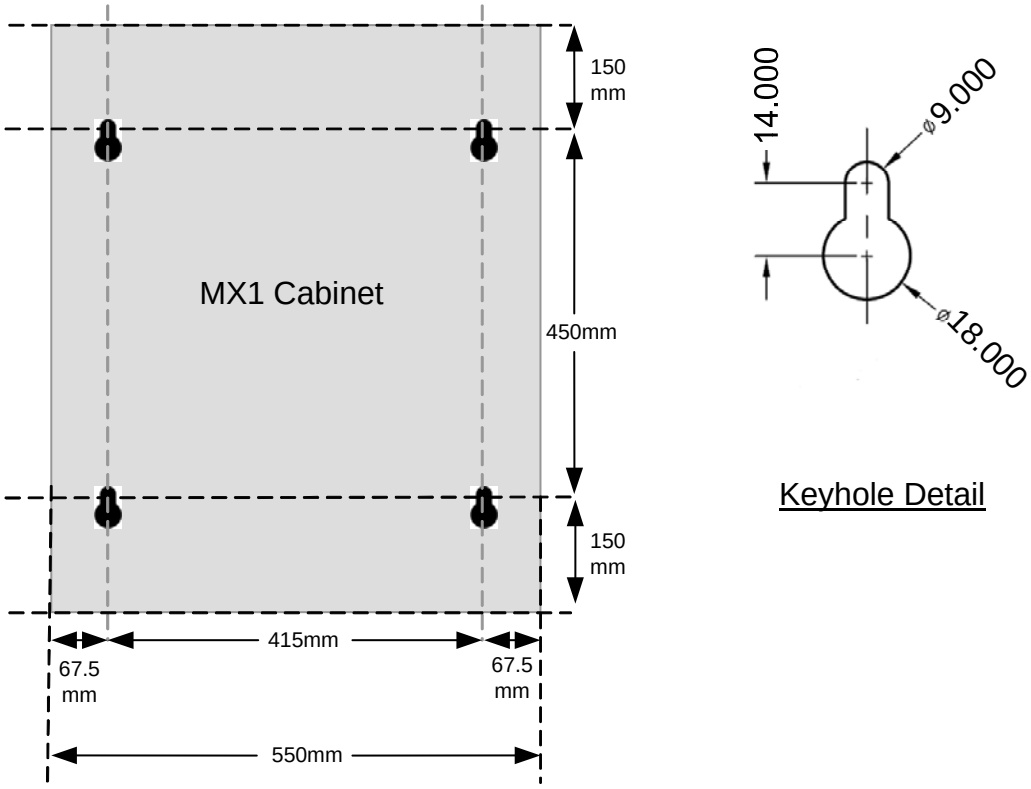


Figure 10-2 – Keyhole Pattern for Mounting 15U Cabinet

External Wiring

Cable Entry - 15U Cabinet

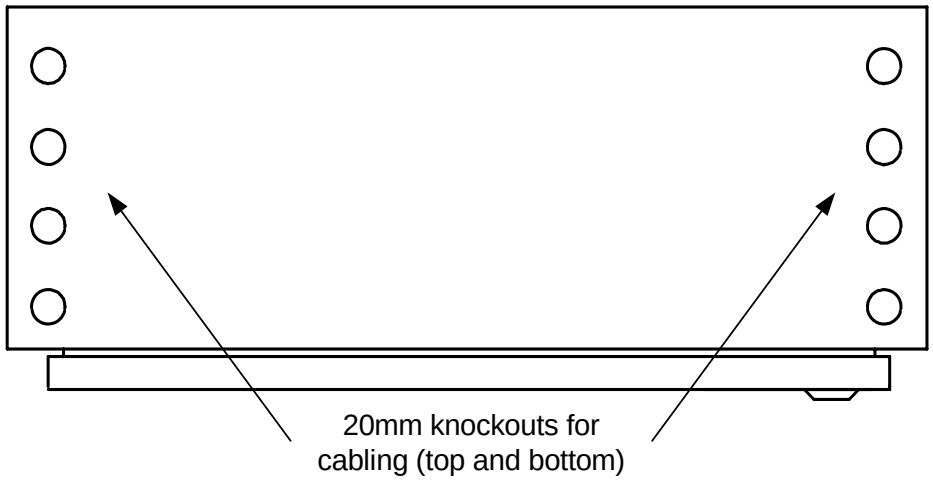


Figure 10-3 – Knockout positions at top and bottom of 15U cabinet

The 15U cabinet has eight 20mm knockouts in the top and eight knockouts in the bottom. 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 15U gearplate has precut slots beside the mains outlet and the controller board to facilitate cable entry from the rear of the cabinet. The cabinet does not have knockouts in these positions, so appropriate openings will need to be cut.

Mains Wiring

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 – 15U Cabinet

Wherever possible the mains cable should be routed 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.

Alternatively, the mains can enter the cabinet from the back, and be brought through the gearplate slot beside the mains outlet.

A mains socket, mounting block and mounting hardware (2 x M4 barrel nuts and 2 x M4 flat washers) are included, but not fitted. Cut the mounting block to allow cable entry and fit to the gearplate as per Figure 10.4 using the mounting hardware. Connect the incoming mains and the flying earth wire from the gearplate into the mains socket (ensure correct wiring), then fit the switch plate using the supplied screws.

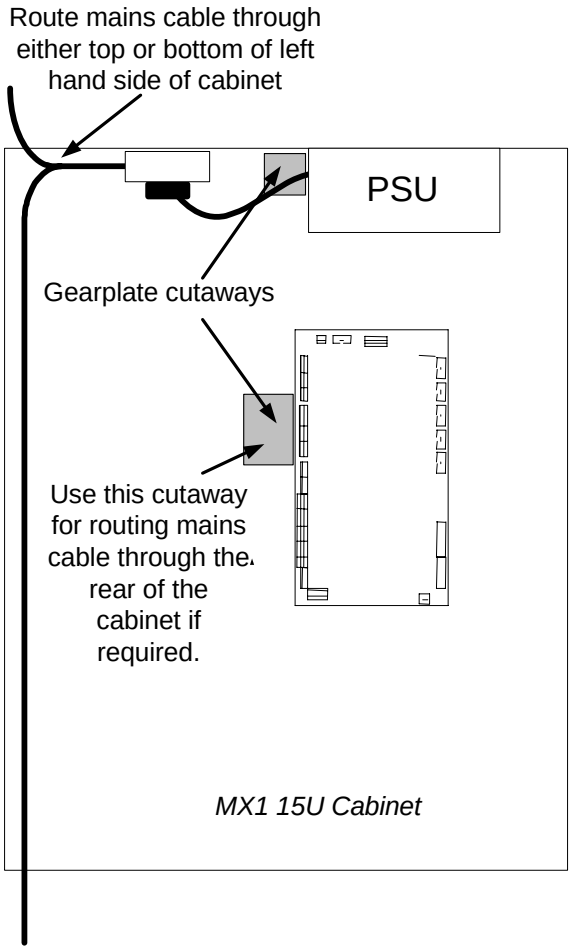


Figure 10-4 – Recommended Mains Cable Routes within 15U Cabinet

Battery Wiring

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

Many non-brigade-connected systems will require up to 40Ah batteries to meet the 72 hour standby operation requirements.

Batteries greater than 40Ah will require a separate battery box, which must be located as near as is practical to the *MX1*.

The wiring between any external battery cabinet and the *MX1* should use 4mm^2 cable to minimise voltage drop. A 10A thermal cut-out should be wired into the positive battery lead inside the battery cabinet.

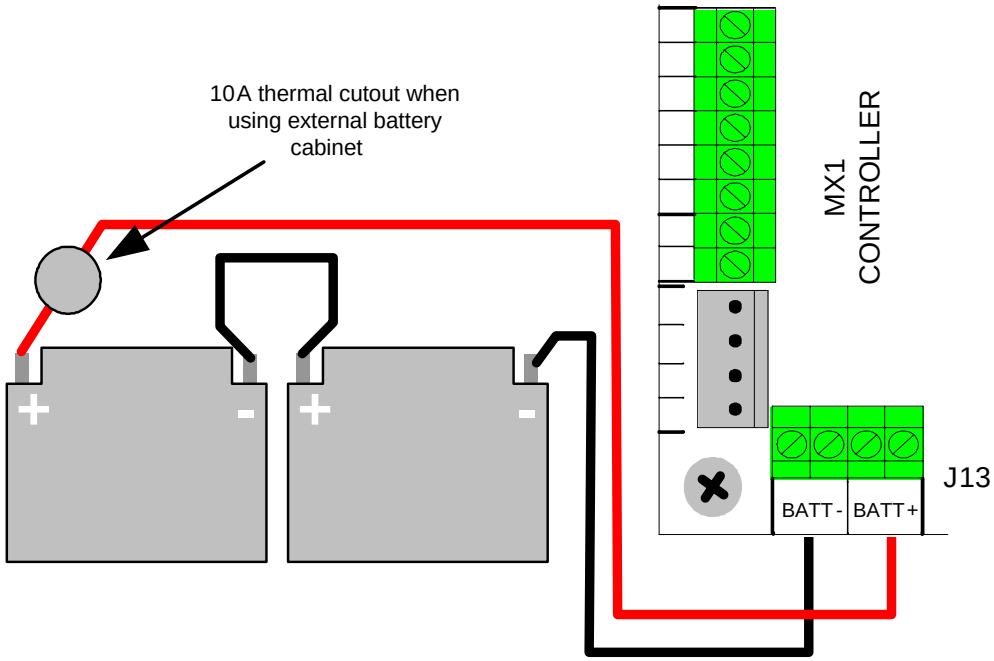


Figure 10-5 – Battery wiring to *MX1* Controller

MX1 Controller Wiring

Controller Wiring Connections

The *MX1* Controller provides most of the field wiring connections. Figure 10-6 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.

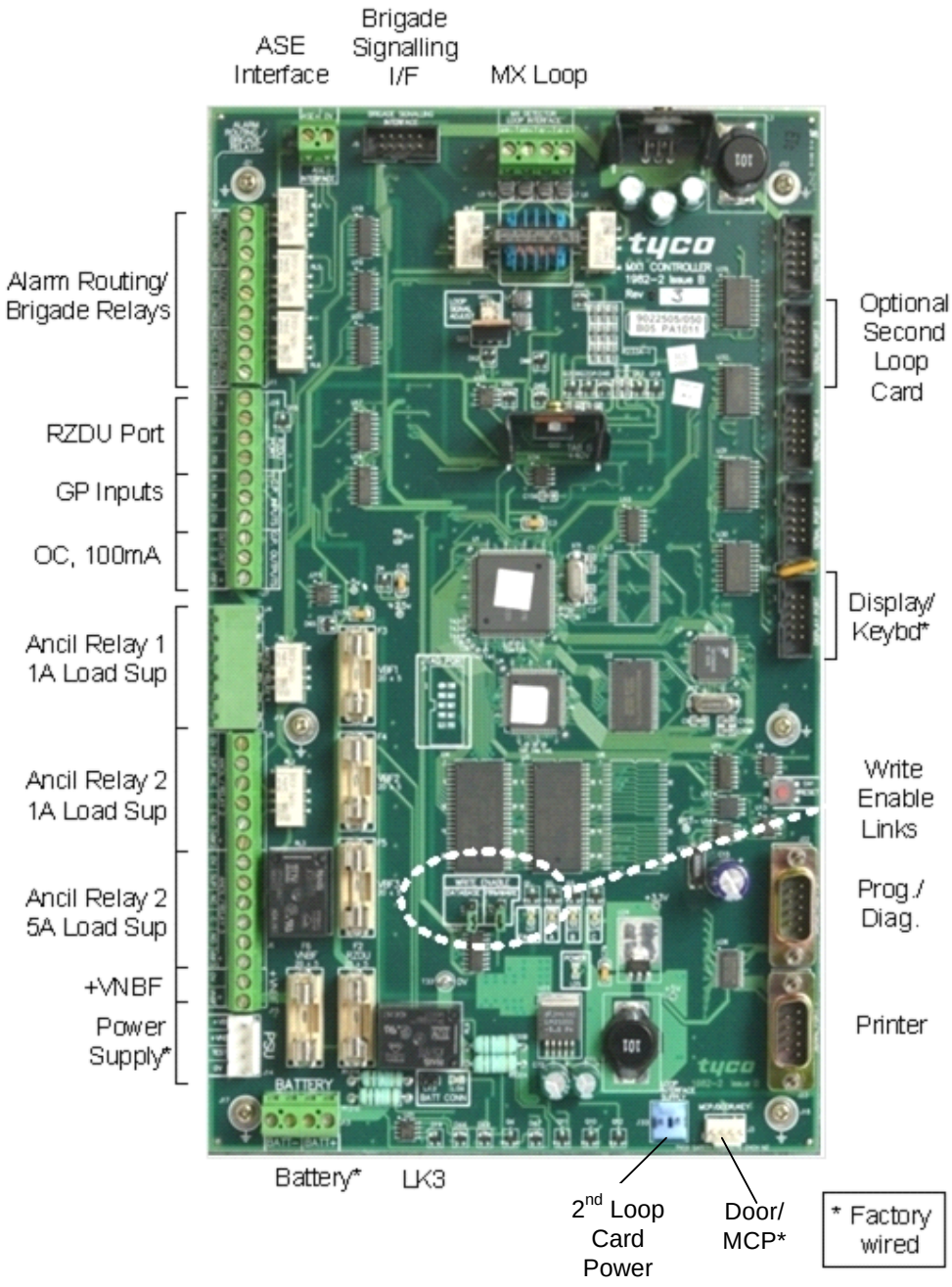


Figure 10-6 - Controller Wiring Connections

MX Addressable Loop Wiring

Figure 10-7 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 4.0mm^2 in size.

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

AS 1670.1 Clause 2.5 requires that Short Circuit Isolators be located around the loop such that no more than 40 devices are adversely affected by a short circuit.

The detectors plugged into an isolator base (5BI) 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.

The Issue B version of the gearplate has mounting points for 4 standard size MX modules in the top left corner.

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

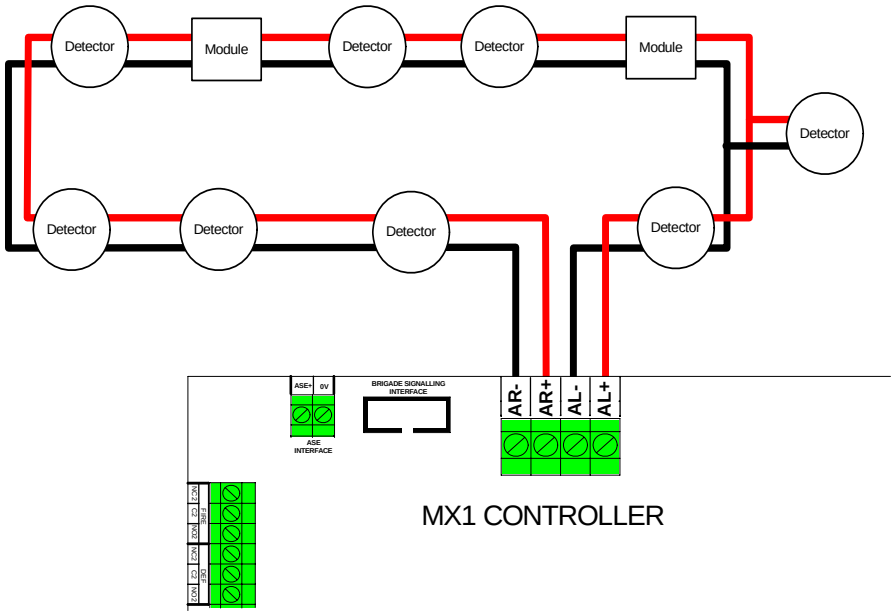


Figure 10-7 – Addressable Devices on MX Loop

Under many circumstances 2.5mm^2 TPS is suitable for the *MX* Loop. However it is strongly recommended that the cabling requirements should be calculated for each installation.

Second Loop Card

An *MX* Loop Card can be installed to provide a second *MX* loop of up to 250 devices (order as FP0950).

The *MX* Loop Card links should be set during installation.

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

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-Gen 50 tone generator to drive loudspeakers with tones, digitised speech messages, and, optionally, public address.
- One, two or three Mini-Gens to drive loudspeakers with tones and digitised speech messages.
- Multiple sounders on a common cable pair that can be arranged in up to three branches.
- Visual warning strobes driven by the ISO 8201 Strobe Driver Module.
- A QE90 EWIS system.

These are described in the following sections.

Note that the 100V speaker outputs of Mini-Gen, T-Gen and QE90 are Telecommunication Low-Voltage (LV) cabling and is subject to AS/ACIF 5009:2006. The cabling must be double-insulated and separated from ELV customer cabling.

T-GEN 50

The *MX1* gear plate has five holes for plastic standoffs and one metal standoff to mount a T-Gen 50 tone generator.

The T-Gen 50 can be connected to the ANC1 relay output as shown in Figure 10-8, using the pre-made loom (LM0319) included for this purpose. It plugs in to the 6 way header on ANC1.

This wiring provides complete supervision of wiring open and short circuits, as well as passing the state of the T-Gen 50’s fault relay to the *MX1* controller. The 10kΩ resistor is critical to this supervision and should not be omitted, or a different value substituted.

ANC2 could be used to control the T-Gen instead of ANC1, but this will require manual wiring as the supplied loom supports only ANC1.

When the T-Gen 50 Alert and Evacuation tones must be separately controlled by the *MX1*, one of the GP OUT terminals can be connected to the T-Gen 50’s A/I/E- input, as shown in the diagram. This is not default operation, and the *MX1* must be specially configured.

The metal standoff mounting the T-Gen 50 provides the necessary protection earthing. No other earth lead is required.

Refer to the T-Gen 50 Installation Manual (LT0186) for information about its DIP switch and link settings, but the following settings are required at least:

- SW4 = ON, to enable Alarm Input supervision
- SW5=OFF, for non-latching ALM
- LK7 = RELAY, to enable the Fault Relay output

- LK2 and LK6 = MASTER

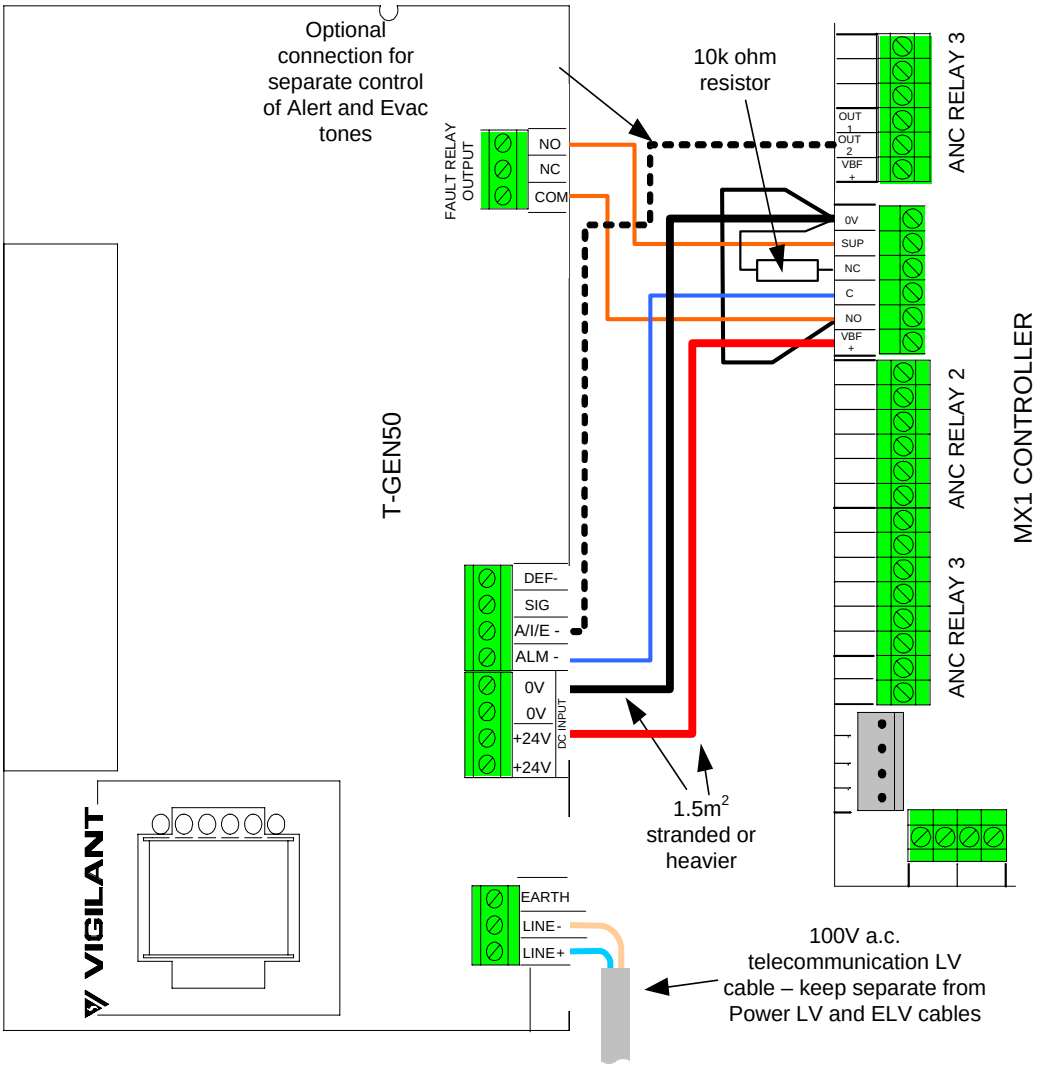


Figure 10-8 – Wiring Ancillary Relay 1 to T-GEN 50

Mini-Gen

Mini-Gen is an alternative tone generator to T-Gen 50, but with lower power and fewer facilities.

The *MX1* gear plate has mounting footprints for three Mini-Gens, two of which overlap with the T-Gen 50 footprint. The first Mini-Gen should be mounted in the lower position, so that it is earthed by the metal standoff. The second and third Mini-Gen are mounted on plastic standoffs, and should be earthed to the first Mini-Gen as shown in Figure 10-9.

The Mini-Gens must be connected to the ANC3 relay output since this is the only one with sufficient current rating and suitable supervision. This relay can be configured for full supervision of up to three branches of loudspeaker wiring, using the 27kΩ ELDs provided with the *MX1*. Do not use the 9kΩ or 18kΩ ELDs as they are not suitable for use with 100V lines.

All Mini-Gens must have their 2W supervision link fitted. If all three branches of wiring are not used, the extra 27kΩ ELD resistors must be connected across the last Mini-Gen's DC terminals.

An ISO 8201 Strobe Driver Module (PA1043) can be fitted instead of a Mini-Gen to drive T3 synchronised strobes.

When the Alert and Evacuation tones must be separately controlled by the *MX1*, one of the GP OUT terminals can be connected to the Mini-Gen's Alert input, as shown in the diagram. This is not default operation, and the *MX1* must be specially configured.

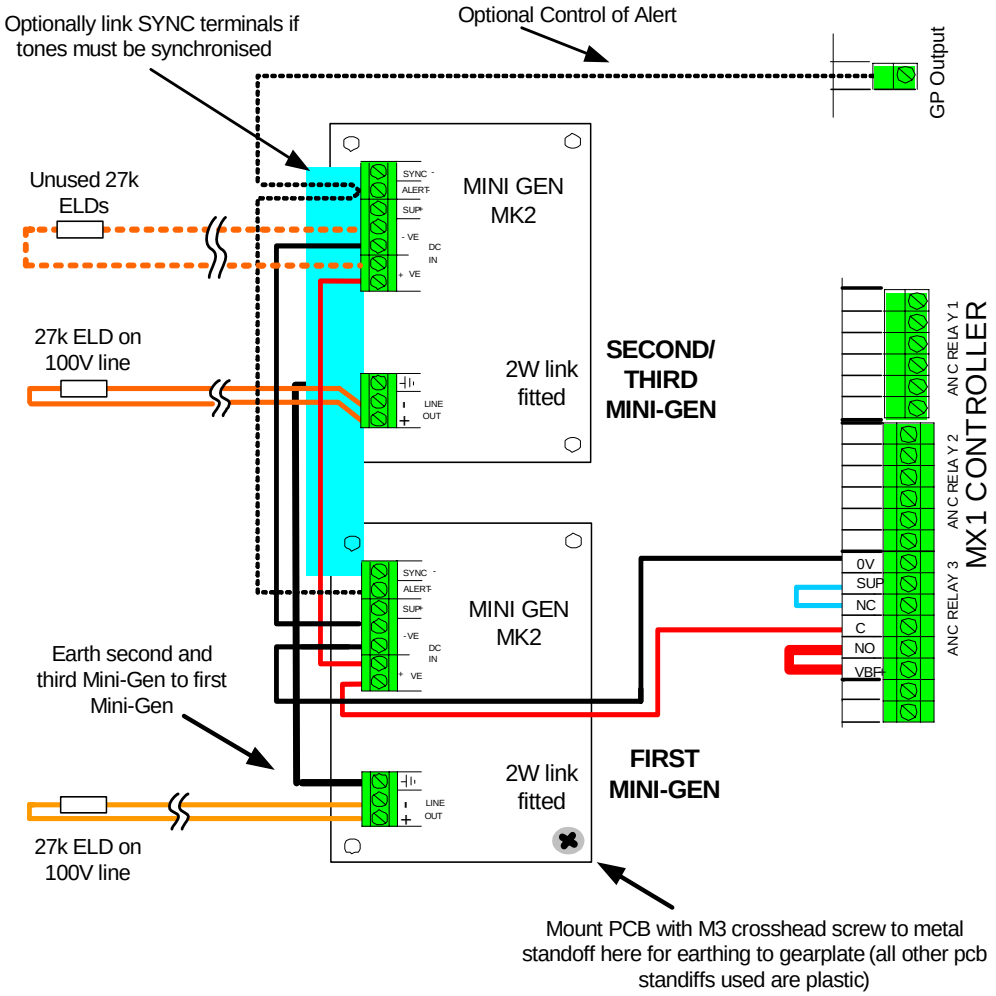


Figure 10-9 – Mini-Gen Wiring to Anc 3

Multiple Branch Loads

Ancillary relay ANC3 can supervise wiring to controlled loads such as sounders, strobes and AVIs on up to three branches. This output can switch loads up to 5A resistive at 30V. Figure 10-10 shows the necessary wiring.

Each load must be reverse polarity isolated with a diode as shown in Figure 10-10. 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*.

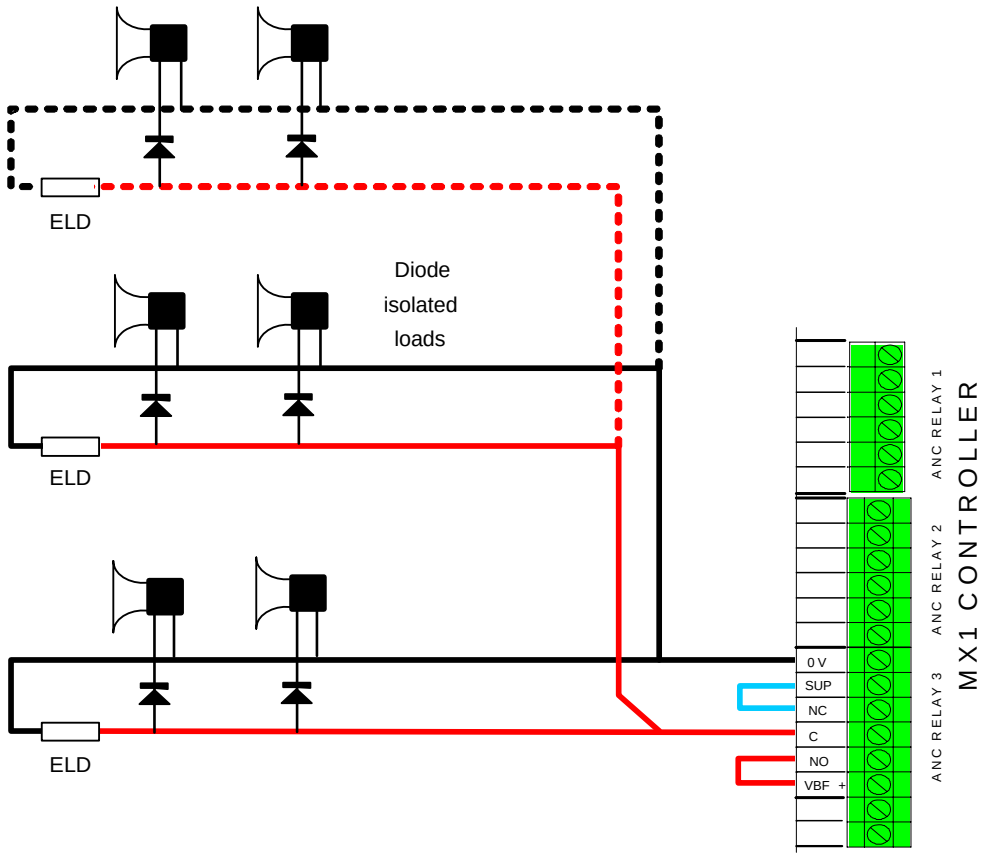


Figure 10-10 – Wiring for Multiple Branched Loads with Supervision

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.

The RZDU method will be described as it is the usual interface (refer Figure 10-11). 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 10-11.

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.

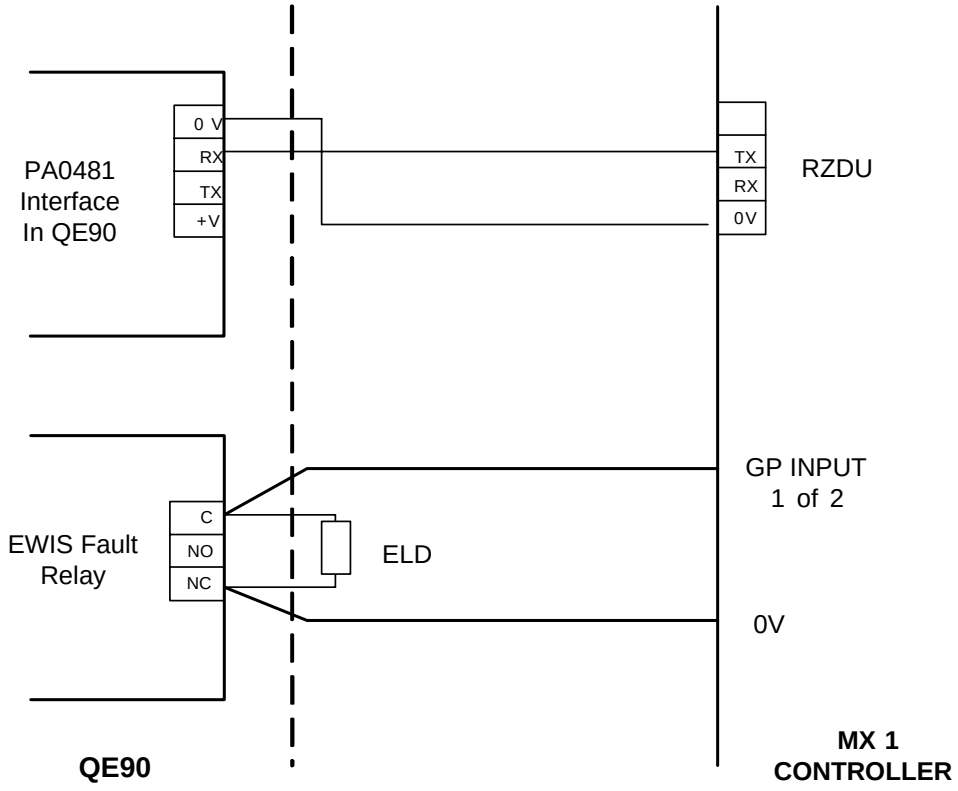


Figure 10-11 - *MX1* to QE90 Wiring Using RZDU and EWIS Fault Relay

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 with a PA0481 Interface Module. The *MX1*'s RZDU TX and 0V outputs are wired to the RX and 0V inputs respectively on the PA0481.

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 10-11.

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 strobe, relay solenoid, or actuator, and supervise the wiring for short and open circuit faults, using the wiring shown in Figure 10-12.

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.

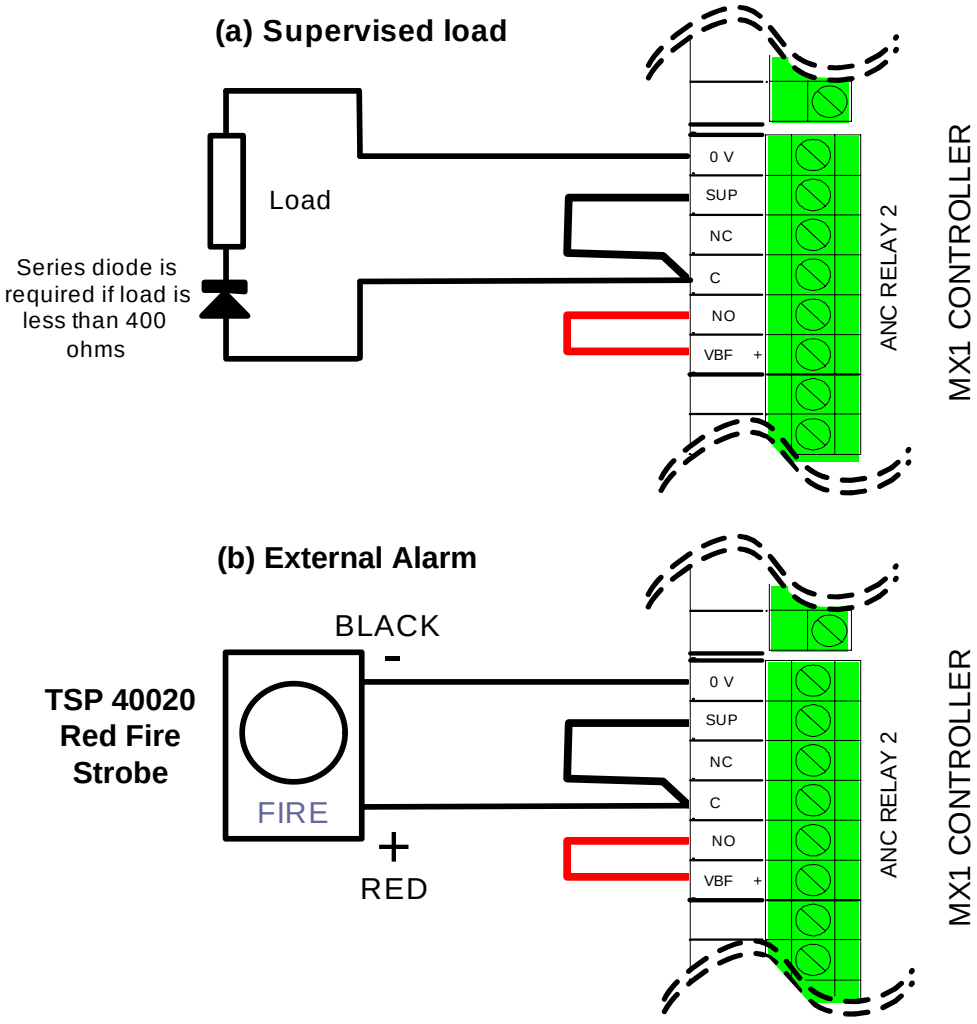


Figure 10-12 – Wiring for Switched Load with Supervision

Door Holders

Figure 10-13 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.

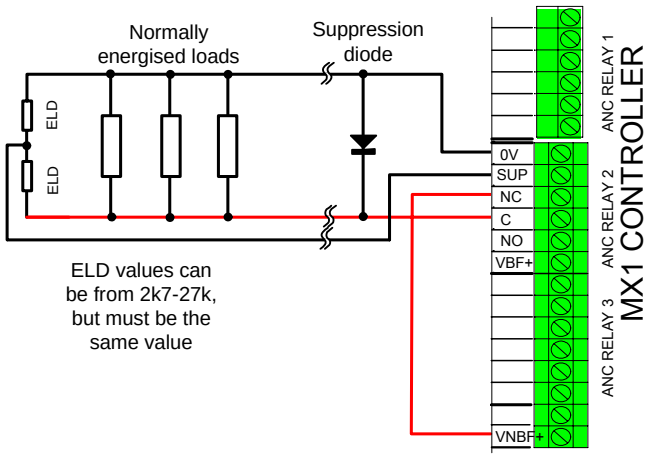


Figure 10-13 – Wiring to Normally Energised VNBF Loads with Supervision

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 QE90 system.

Figure 10-14 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.

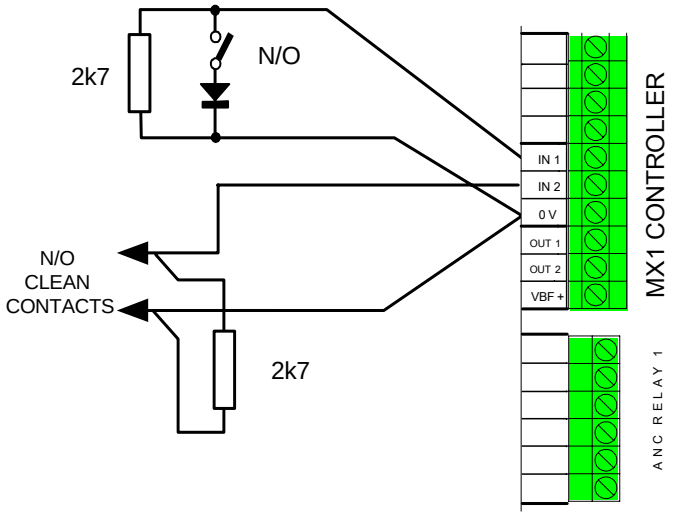


Figure 10-14 – Wiring General Purpose Inputs

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 10-15 shows examples of connection to a fault buzzer and an external relay. The maximum load current is 100mA for each output, i.e., 270Ω minimum load resistance, and there is no current limiting action. 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.

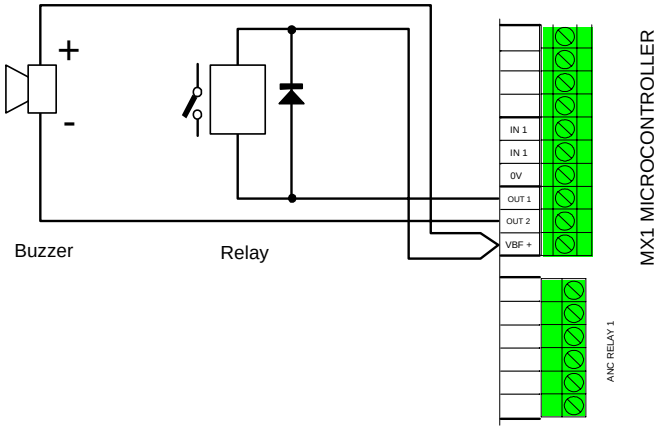
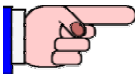


Figure 10-15 – Wiring General Purpose Outputs

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 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 supervised Remote Display Units can be connected to the RZDU interface on the *MX1*. Additional unsupervised RZDU devices can be connected along with other RZDU protocol devices such as IO-NET controllers or QE90 EWIS.

RZDU devices that are separately powered should include electrical isolation and should not be connected to the +VRZDU line.

The TX and RX signals must “cross-over” between the *MX1* panel and the first RZDU device, as shown in Figure 10-16. There must not be any wiring crossover between following 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.

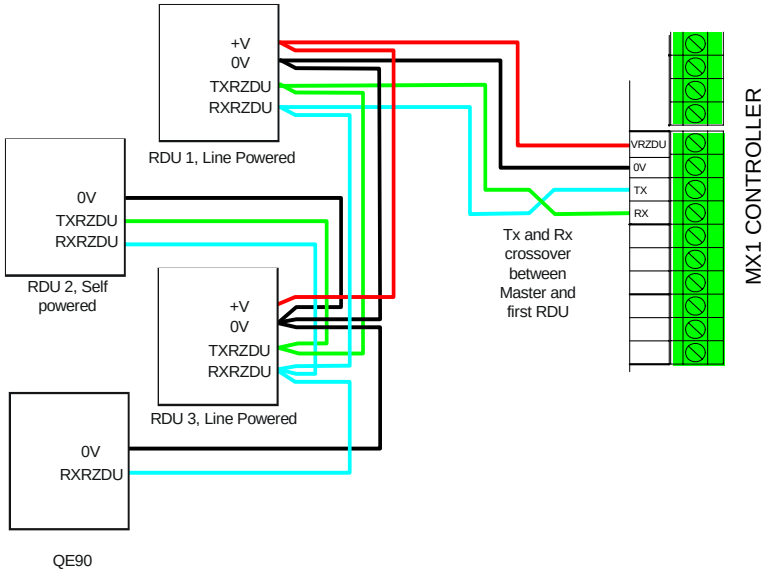


Figure 10-16– Wiring to RZDU Devices

Zone LED Displays

The 15U cabinet has provision for 32 zones of LED displays using two *MX1* 16 zone display modules (FP1002). No displays are included as standard. 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 10-17 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.

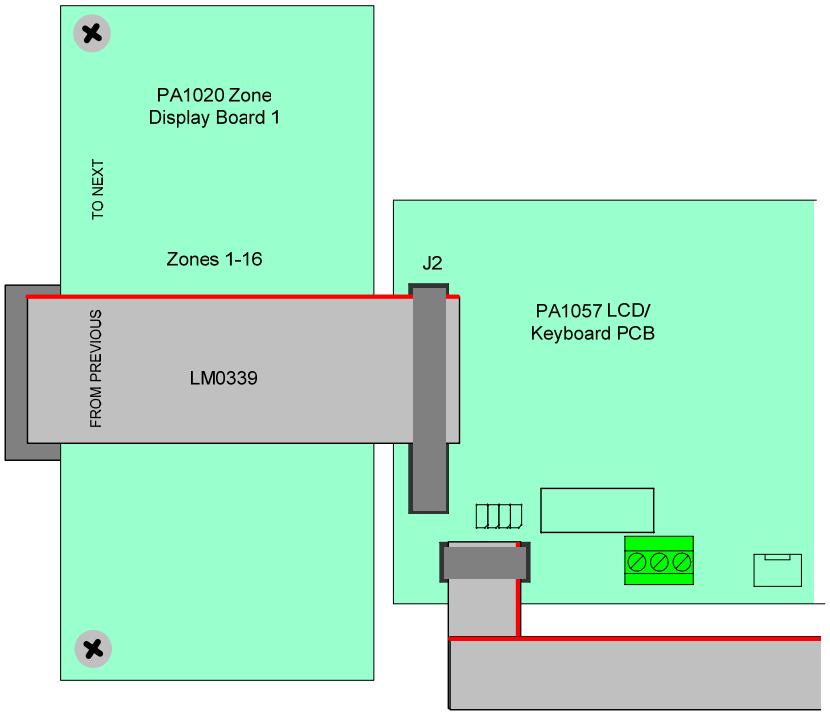


Figure 10-17 – Single Zone Display on front panel (rear view)

A second zone display board (part number FP1002) can be fitted, as shown in Figure 10-18. 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.

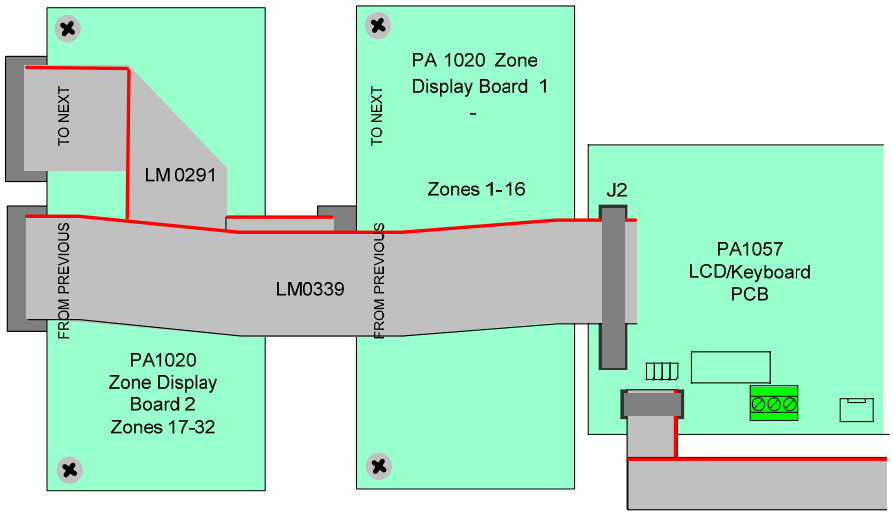


Figure 10-18 – Double Zone Displays on front panel (rear view)

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 preprinted set of labels on grey card is available as LB0600 (5 strips per sheet).

Alternatively, the labels can be printed directly from SmartConfig, or a template file is available from the Fireplace (Tyco Safety Products Fire Detection – ANZ extranet site www.tycosafetyproducts-anz.com) as LT0369. The required text is entered into the template document, which is then printed at 100% scaling onto suitable material.

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. 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. Consult Tyco Safety Products or the Fireplace (www.tycosafetyproducts-anz.com) for tested isolation devices.

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 11
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.

Topic	See Page
General Specifications	11-1
MX1 Analogue Loop Compatible Devices	11-3
DIM800 Detector Compatibility	11-3
Compatible Batteries	11-4
Equipment Point Descriptions	11-6

General Specifications

General Specifications		
Cabinet -15U	Construction	1.2mm/1.6mm mild steel, zinc coated, colour Cream Wrinkle BFF-998-CW. Baked epoxy powdercoat finish. 003 key for outer door.
	Dimensions (15U 19" rack)	750 x 550 x 210 mm (H x W x D)
	Shipping weight	24 kg approx., excluding batteries.
Environmental	Temperature/Humidity	Operating Temperature -5°C to 45°C. 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 °C, 5.0A DC continuous, 5.5A current limit nominal. Temperature-compensated at -31mV/ °C
	Batteries (Sealed Lead Acid)	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 4.0 mm^2.
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

General Specifications		
		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 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 100mA. Load mode supervision (for O/C only) is optional on these outputs. Not 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 proprietary RZDU protocol.
Brigade Interfaces	ASE Interface	Isolated and protected screw terminal, 4mm^2 capacity, for 2 wire connection to a Centaur ASE FAS 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
516.800.800	801PC	Photoelectric Smoke + CO + Heat multi-sensor 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
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
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
555.800.065	MIO800	Multiple Input/Output Module	250
SNM800	SNM800	Sounder Notification Module	250
RIM800	RIM800	Relay Interface Module	250
516.800.011	LPS800	Loop-Powered Sounder Driver	166
VLC-800MX	VLC800MX	VESDA Laser Compact	125
CP820	CP820	Manual Call Point	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
516.800.956	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

The actual maximum number of devices per loop depends on the mixture of types, cable type and cable length.

DIM800 Detector Compatibility

Series	Model	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
Tyco/Thorn	S231f+ IR Flame Detector (flameproof)	7	21.0 – 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
	DO1101 Photoelectric Smoke Detector	16	21.7V - 27.7V
	DLO1191 Photoelectric Beam Smoke Detector	1	22.7V - 28.7V
	P136 Duct Sampling Unit	5	19.0V - 28.7V
	T56B Heat Detector (Z56, Z500 bases)	40	18.0V - 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.			

Compatible Batteries

Batteries used in the *MX1* system must meet the requirements of AS 1670.1.

Contact your TSP distribution centre to obtain batteries that are compatible with the *MX1*.

Detector Identification

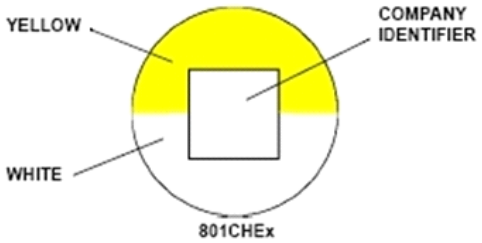
The following information may help identify installed detectors without removing them from the base.

Each detector is identified by a unique label on the top, as shown;

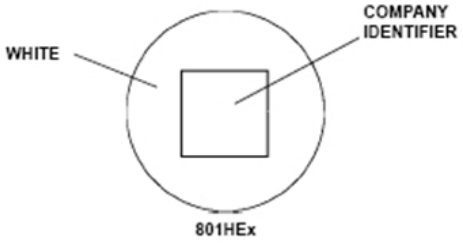
IS Detectors

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**".

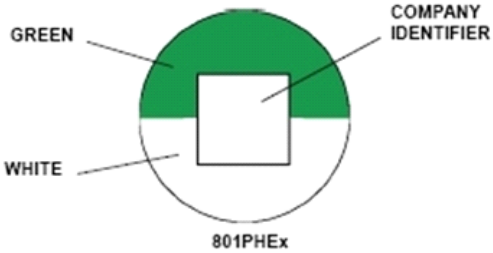
801CHEx



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 states determined by the configuration.
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

Point Number	Point Text	Description
		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 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.
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

Point Number	Point Text	Description
		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.
241.27.0	S/W Faults	This point indicates whether there have been any software faults detected. The point state is Fault if there are any software faults, otherwise Normal. Note that it is possible for a software fault to clear. Refer to the history and/or printer log for "Software Fault" events that give more detail as to the cause of the fault.
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.
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.

Point Number	Point Text	Description
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.
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

Point Number	Point Text	Description
		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.

Equipment 242 – Pseudo Points

The status of these points is generated by specific programming in the configuration

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.
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.

Equipment 245 – Second Loop Card

Point	Point Desc.	Description
245.2.0	Loop 2 Left S/C	Indicates a short circuit on the left hand side of the 2nd *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.
245.2.1	Loop 2 Right S/C	Indicates a short circuit on the right hand side of the 2nd *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.
245.2.2	Loop 2 Open Circuit	Indicates that an open circuit fault has been detected on the 2nd *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.
245.2.3	Loop 2 Overload	This point indicates an over-current fault on the 2nd *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.
245.2.4	Loop 2 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.
245.2.5	Loop 2 Left Relay Status	Display AL Relay status (open/close).
245.2.6	Loop 2 Right Relay Status	Display AR Relay status (open/close).
245.2.7	Loop 2 Communication Status	Indicates whether the loop card is operating or not. “Normal” = operating “Fault” = not operating or disconnected
245.2.8	Loop 2 Flash CRC Status	The result of comparing the Expected and Actual CRC of the Loop Card Flash Memory - “Normal” or “Fault”
245.2.9	Loop 2 RAM Test Status	The result of the most recent RAM test on the Loop Card - “Normal” = passed “Fault” = failed

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
	LB0600	LABEL, *MX1*, BLANK ZONE LABEL, GREY (two supplied with panel)
	LM0076	LOOM 1922-25 ECM PROG DB9 (FEM)-DB9 (FEM) NULL MODEM
	LM0169	LOOM FRC 10W STYLE C 400MM
	LM0291	LOOM, FRC, 26W, STYLE B, 230mm (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
	LM0394	LOOM, 1931-97, 15U MCP & MICRO SWT LOOM, 6.3QC
	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
	PA1011	PCB ASSY, 1982-2, *MX1* CONTROLLER
	PA1057	PCB ASSY, 1982-64, *MX1* LCD/KEYBOARD, AS4428.3
	SW0153	SWITCH, FRIDGE, 250VAC, ¾“ MTG HOLE
Literature Items	LT0332	LITERATURE, SMARTCONFIG 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
Software Items	SF0278	SOFTWARE, SMARTCONFIG, INSTALL CD
	SF0281	SOFTWARE, PANELX REMOTE OPERATION, INSTALL
	SF0305	SOFTWARE, *MX1* CPLD V1.00 FLASH
	SF0332	SOFTWARE, *MX1*CAL, INSTALL
	SF0392	SOFTWARE, *MX1* LOOP CARD, FLASH
	SF0407	SOFTWARE, *MX1* FPB KEYBOARD, AS 4428.3, FLASH
	SF0412	SOFTWARE, *MX1*, MAIN BOARD, v1.30 FLASH
Presentation Drawings	1982-42	Presentation Drawings for *MX1*-Au 15U
	1982-66	Presentation Drawings for MX1-Au 15U Examples

Block Diagram

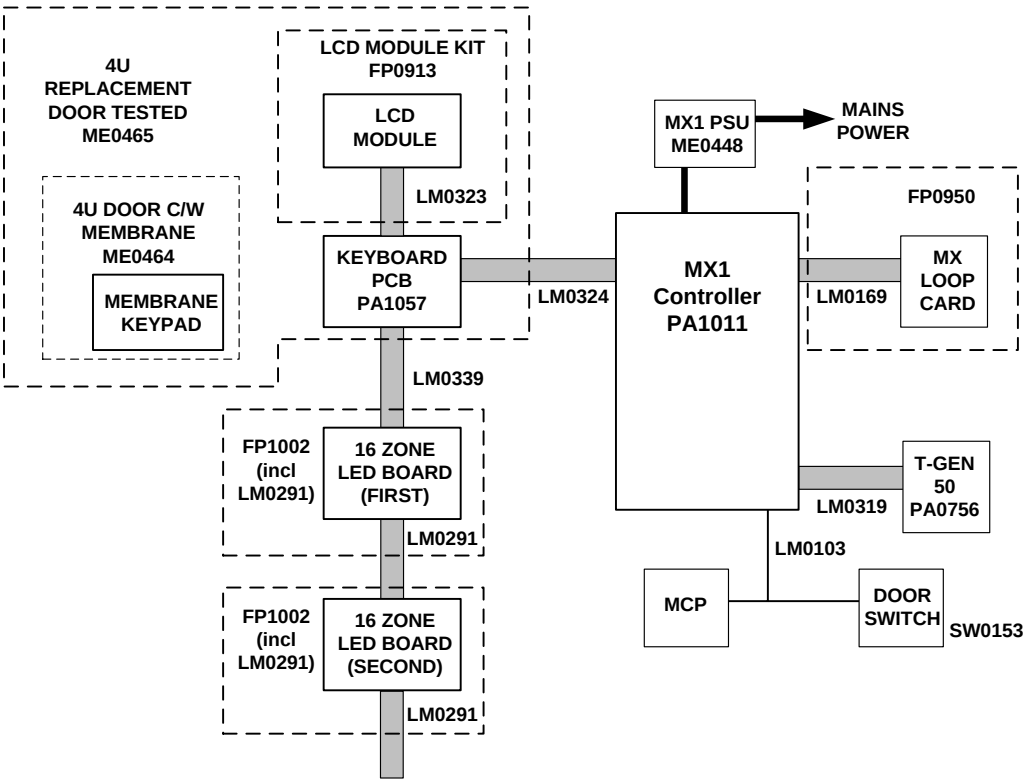


Figure 11-1 – MX1 Panel Block Diagram

Figure 11.1 shows a block diagram of the MX1 panel. It identifies the major components, the interconnecting cables, and their part numbers.

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