Vigilant *MX 1* Fire Alarm System

The Vigilant MX 1 is an innovative single loop analogue addressable fire indicator panel incorporating the latest technology. It complies with NZS 4512 - 2003 and is also designed to meet 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.

Features & Options

- Complies with NZS 4512: 2003. Also designed to meet the requirements of ISO 7240.2 - 2003.
- Single *MX DIGITAL* Loop supporting up to 250 *MX* devices
- *MX VIRTUAL* multi-sensor analogue addressable detector technology
- *MX FASTLOGIC* detection algorithm with *SMARTSENSE* option
- Analogue addressable heat-enhanced photoelectric smoke and CO fire detectors
- Analogue addressable heat detectors programmable as rate-of-rise or fixed temperature
- Analogue addressable High Sensitivity Smoke Detector (VESDA)
- Analogue addressable flame detector
- Loop-powered sounders
- Sub-points indicate status of individual elements of multi-sensor detector
- Sub-point Disable (Isolate)
- Compatible with wide range of collective (conventional) detectors
- Clear alarm messages on 4-line LCD with 4mm character height
- Compact zone LED display
- LCD description text
- Event logging to internal non-volatile history file and printer
- Remote repeater panels
- High level EWIS interface
- Tandem mode for remote access
- "Profiles" simplify programming of complex detection and logic functions
- Day/ night modes for alarm sensitivity adjustment and output logic functions
- Programmable outputs for alarm (alerting) devices and ancillary controls
- Local inputs for MCP/ sprinkler and fire fan controls
- Flow switch monitoring and remote testing
- Powerful, field-programmable logic equations, functions, timers
- Pseudo points controlled by logic equations for enhanced control options
- Text substitutions simplify logic functions
- Built-in clock/ calendar with automatic daylight saving adjustment
- Comprehensive test facilities including automatic self-test and fast commissioning test mode
- Automatic battery connection and capacity tests
- High capacity integral 5A power supply
- Display of PSU voltage and current
- Dual databases for reduced downtime and increased security
- Compact cabinet with optional 19" mounting (future)
- Up to 9 separate user passwords
- Three access levels
- Earth fault supervision
- Fuse supervision
- Windows-based programming tools

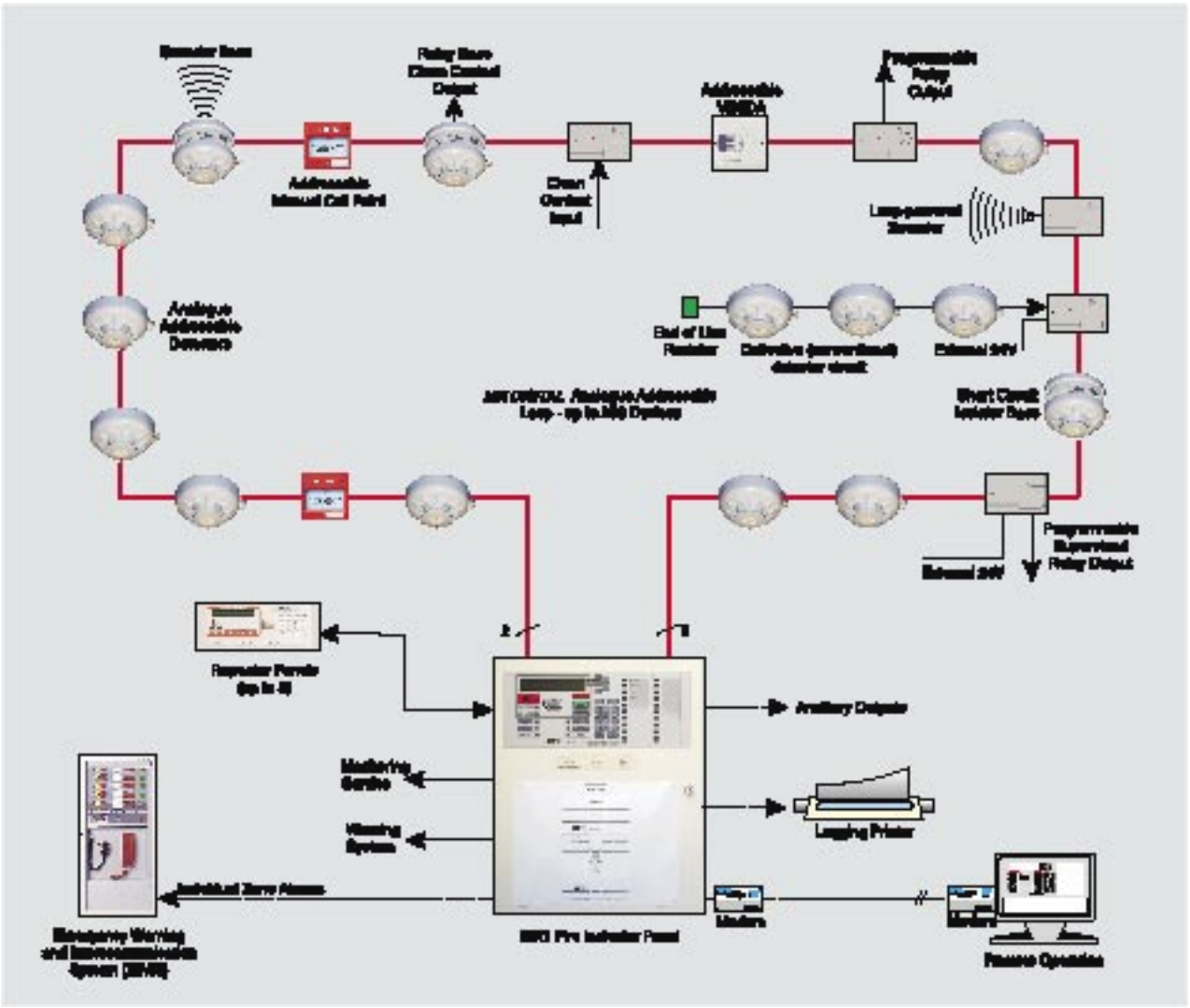
MX Detection Technology

MX 1 utilises *MX VIRTUAL* multi-sensor analogue addressable detectors with dual sensors (photoelectric and heat, or CO and heat) to allow the best detection mode for a situation to be easily selected. Detection modes may include: smoke/ CO detection only, heat-enhanced smoke/ CO detection only, smoke/ CO plus heat detection, heat-enhanced smoke/ CO plus heat detection or heat detection only. Heat detection can be either fixed temperature, or combined fixed temperature and rate-of-rise.

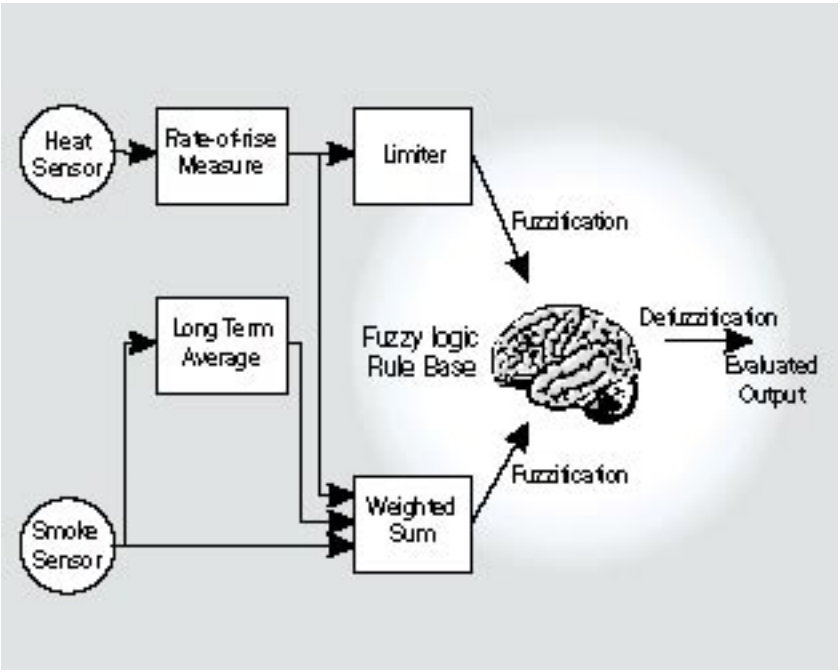
For specific applications, single-sensor *MX* analogue addressable ionisation and photoelectric smoke detectors, high sensitivity smoke detectors (VESDA), heat-only detectors and flame detectors are also available.

Up to 250 *MX* devices (detectors and addressable input/ output modules) may be connected to the detection loop.

The *MX DIGITAL* communications protocol used on the detection loop is designed to provide high reliability and fault resistance, with operation possible over many cable types. This often permits system upgrades using existing cable. The loop configuration ensures that communications continues in the event of a loop open circuit fault condition. In the case of a short circuit, up to 128 short circuit isolator detector bases or modules may be fitted around the loop, to limit the effect of the fault to the devices between isolators.



MX1 System Diagram



MX FASTLOGIC Algorithm

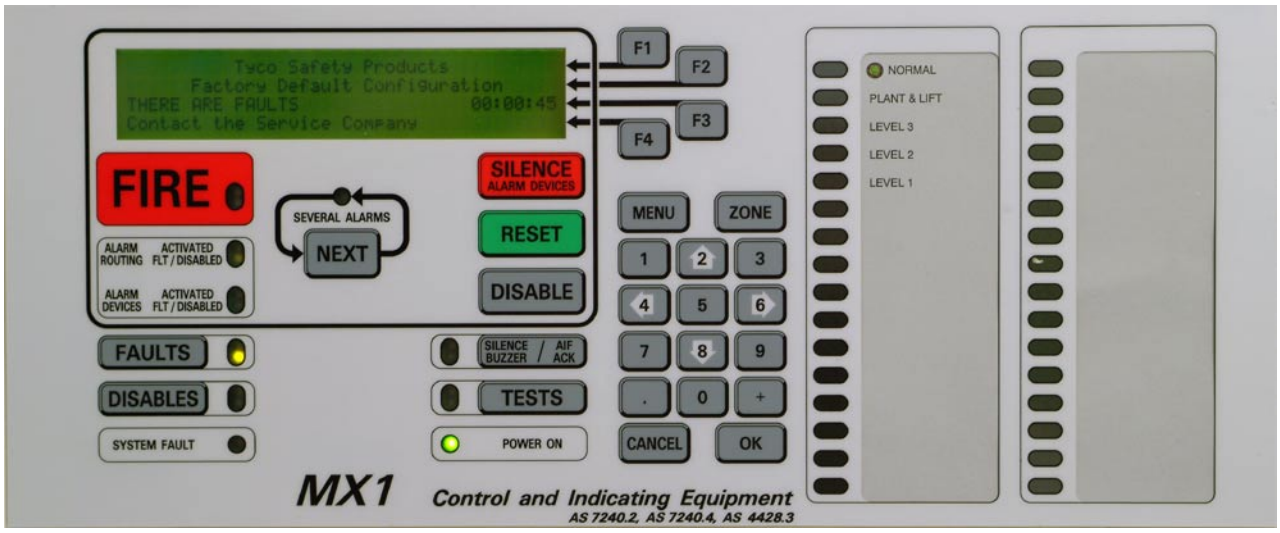
Detection Algorithms

MX FASTLOGIC is a fuzzy logic based algorithm applied to photoelectric smoke and heat enhanced smoke detection. It is designed to discriminate between the smoke and temperature patterns of real fires and typical causes of unwanted alarms.

SMARTSENSE is a field-proven, reliable detection algorithm, providing unwanted alarm reduction, compensation for ambient conditions and 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 "detector dirty alert" when compensation limits are about to be exceeded, to allow maintenance to be scheduled.



MX 1 Control Panel Layout

Easy to Operate

Operation is straightforward with the *MX1*'s keypad and 40 character, 4 line alphanumeric LCD. It displays clear alarm information including the zone and point numbers, the type of alarm, and a text description of the alarm location. The 4-line text display allows easy scrolling through the 99 event alarm buffer. Current faults and disabled (isolated) zones and points can also be separately recalled. An internal, non-volatile history log stores the previous 900 events, and these can be readily recalled to the LCD. The optional easy-to-read plain language printer output provides a 30 character text description of the event, and a date/ time stamp to allow rapid tracing of events. The printer may be selected to log any or all of: zone events, point events, system events. "Tandem Mode" enables the panel to be operated from a remote computer for training, diagnostic or remote monitoring purposes.

Control Panel Facilities

- LCD Control Panel (40 char. x 4 lines)
- System and individual zone status indications
- Three levels of control panel access:
  - Level 1 available at all times,
  - Level 2 via keyswitch,
  - Level 3 via PIN.
- Fire Brigade controls (Level 1 access during alarm display only): Silence Buzzer; Acknowledge (soft key); Next.
- Recall state of point or zone (Level 2 access): all off-normals; individual or browse.
- Zone functions (Level 2): Reset; Disable (Isolate); Alarm Test; Auto-reset Detector Test; Output Operate Test.
- Point Functions (Level2): Reset Point, History, Tracking; Disable (Isolate); Test.
- System Functions (Level 2): History (900 Events), Display Test; Log on.
- Level 3 functions include display of point analogue values, system software and power supply parameters.

Fully Field-Programmable

The *MX1* is programmed quickly and easily using Windows-based programming software running on a desk workstation or laptop computer. The dual database structure allows updated program parameters to be downloaded from the computer while still maintaining full operation. Only by command, after the new database has been loaded and checked, will the system start processing using the new database. System programming provides a wide range of options including operation of remote displays. Freely programmable mapping of points and sub-points to zones allows maximum flexibility for field wiring. Powerful control programmability is available through timers (second and minute), day/ night periods, Boolean logic expressions, variables and system state tokens. Text substitutions add meaning to logic expressions to simplify software maintainance. Virtually any monitoring and control function can be configured, with complex functions preconfigured as a series of Profiles, for ease of use. The programmed data can be printed for reference and archived for back-up storage. Site-specific parameters are stored in nonvolatile FLASH memory which remains protected even if the system's power supply is removed.

Programming Facilities

The following parameters can be programmed:

- Point functions selected by Profile
  - 30 character point text name
  - Point Alarm Type
  - Latching Profile (e.g. AVF options)
  - Detection Profile - includes detector type, detection algorithm, detection sensitivity (alarm & prealarm), temperature enhancement, dirty detector alert
  - Day/ night profile affecting point operation and sensitivity
  - Point to zone mappings with separate zone mappings for multi-sensor sub-points (e.g. heat & smoke)
  - Output control by point, zone or logic
- Zone functions include:
  - 30 character zone text name
  - Programmable routing to LCD/ LED alerting devices/ remote receiving centre
  - Zone operation selected by profile:
    - Normal Detection
    - Residential
    - Multi-hit (n of m)
    - Status only
    - Sprinkler
    - Flowswitch (for remote testing)
    - Ancillary Control (for output Control)
- Output logic programming includes:
  - Variables
  - Timers
  - Boolean AND, OR, XOR, NOT
  - System state tokens
  - Substitution text for plain English descriptions of programming elements
- System functions includes:
  - Automatic test times
  - Day/ night definitions
  - User programmable profiles and templates.

Specifications

System Capacity

Addressable points:	Up to 250, depending on configuration.
Zone indications:	Optional, up to 32: Separate alarm, combined Fault/ Isolate LEDs.
Analogue Loop:	*MX DIGITAL*, 2-wire, 2km max., O/C tolerant, S/C isolators.
Repeater Panels:	Up to 8. More if mimic only (i.e. no controls).

Physical

Cabinet Size:	590H x 480W x 120D
Cabinet Material:	1.2mm mild steel, zinc coated. Baked epoxy powdercoat finish: Cream Wrinkle BFF998CW.
Style:	Rear Service or Front Service options. 003 key lock.
Shipping Weight:	5kg.
Temperature:	-5°C to 45°C operating.
Humidity:	Up to 95% RH at 40°C (non-condensing).

Power Supply

Mains Supply:	230Vac ±10%, 50Hz, 180VA.
Internal Battery:	24V sealed lead acid, up to 18Ah installed internally.
Internal PSU:	28V (nominal), 5A regulated, temperature compensated.
Battery Monitoring:	Battery low/ fail, supervision of battery connection and capacity.

Inputs

MX Loop:	Up to 250 *MX* detectors and input/ output modules. Photoelectric smoke or CO combined with optional heat, ionisation smoke, VESDA, heat (combined fixed temperature/ rate-of-rise or fixed temperature only), triple IR flame.
Other Inputs:	Two programmable supervised inputs at control panel for sprinkler evacuation etc. Transient protected for external wiring. Up to 18 programmable unprotected status inputs also available.

Outputs

Monitoring Service:	Fire, Defect: clean changeover contacts on screw terminal block. Also standard Vigilant GP SGD Interface - 10 Way FRC Header.
Ancil. Relays 1 & 2:	2A, 30Vdc resistive. Voltage free changeover contacts or load-supervised switched 24V. Programmable operation.
Warning System:	5A, 30Vdc resistive. Voltage free changeover contacts or reverse polarity supervision of diode isolated loads. Up to 3 branches. PSU output fused at 3A. Programmable operation.
Output1 & 2:	100mA transistor pulldown (1.1V). Transient protected for field wiring. Programmable operation.
Other Outputs:	16 x 100mA unprotected transistor pulldown (1.1V). Programmable operation.
RZDU Comms:	Communications port for connection to repeater panels.
Printer/ Program:	RS232, male DB9 configured as DTE.

Detector Compatibility

MX1 is compatible with the comprehensive Tyco *MX* range of analogue addressable detectors. Hard contact devices may also be connected using *MX* Input Modules, and contact outputs may be obtained from the *MX* Relay Modules and *MX* relay bases. A wide range of "20 volt" industry standard collective (conventional) detectors may also be connected using the DIM800 detector interface module. Addressable Sounder Modules complete the range with both loop powered and externally powered options.

The *MX* Analogue Addressable detector range includes:

- 814H Heat detector
- 814PH Combined photoelectric and heat detector
- 814P Photoelectric heat detector
- 814CH Combined carbon monoxide fire detector and heat detector
- 814I Ionisation smoke detector
- VLC800MX VESDA smoke detector
- Sounder and Relay bases
- Short circuit isolators and isolator bases
- Input and Output contact modules
- Analogue addressable manual call points

APPROVED

MX1 complies with New Zealand Standard NZS 4512: 2003 "Fire Detection and Alarm Systems in Buildings".

FPANZ Listing Number VF/118

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"PROTECTING PEOPLE & PROPERTY"

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