

### Features

**Connect MX Technology addressable devices to a Simplex® 4100ES, 4100U, or 4010ES fire alarm control panel:**

- Connect up to 250 MX addressable devices, with up to 500 mA of output current per MX Loop module
- Up to 30, 4100-6077 MX Loop Interface Modules per 4100ES/4100U fire alarm control panel, or up to 4, 4010-9917 MX Loop Interface Modules per 4010ES fire alarm control panel
- Provides dual isolated Class B loops that can be connected together for Class A operation
- Device LEDs for alarm activation are selectable per loop as 5, 10, 20 or 30 to be activated simultaneously
- On-board LED diagnostics indicated module status for installation and service convenience
- Compatible with 4100ES and 4010ES panels, and 4100U panels with software revision 14.02 or higher
- UL listed to Standard 864

**MX Loop Communications provide:**

- Compatibility with many types of existing cable for convenient retrofit with typical communications distances up to 2 km (6560 ft)
- (Wiring lengths may be longer depending on wiring characteristics and other conditions, consult your Simplex product representative for additional details)

**With a 4100-6077 or 4010-9917 MX Loop Module, the control panel provides:**

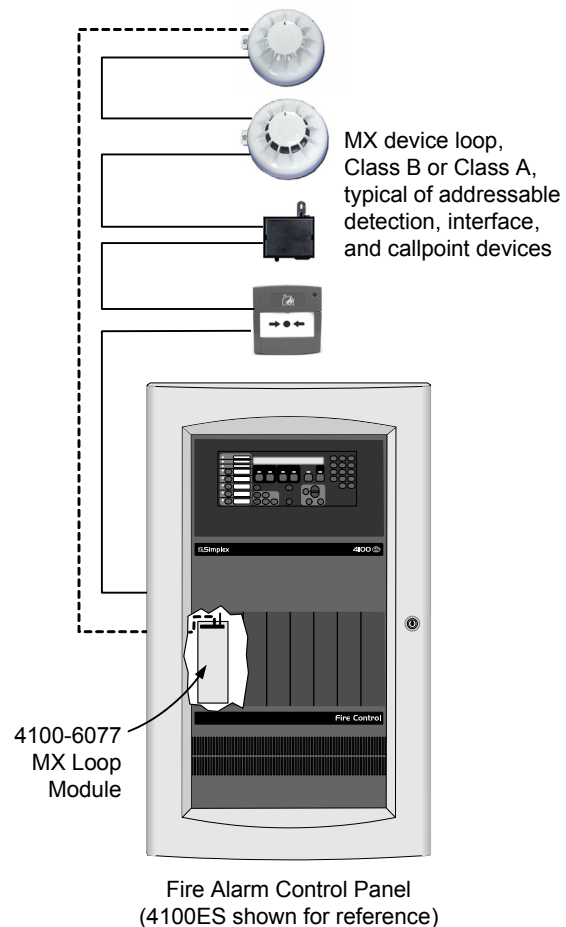
- Information communicated to the control panel is analyzed using the MX Fastlogic algorithm
- The MX Fastlogic algorithm is considered an Expert algorithm that uses real fire data as a basis for the alarm decision
- WALKTEST silent or audible system test performs an automatic self-resetting test cycle

**MX Peripherals provide:**

- Soft addressing of devices performed using the 801AP programming tool
- Device addresses may be changed at the front panel

**Compatible addressable devices include:**

- Smoke sensors, heat sensors, and combination smoke/heat sensors
- Sensor base operation is available with built-in: isolator; or with built-in loop powered sounder; or with separately powered sounder
- Single and dual I/O modules
- Relay, signal, monitor, and separate line-powered isolator modules
- Indoor and outdoor breakglass callpoints
- Single and Dual action manual stations
- Voltage Regulator Module 4100-5130 or 4010-9917 provides compatible regulated DC voltage for use with Monitor ZAMs



MX Loop Interface Module Basic Reference

### Description

**System Compatibility.** For applications requiring compatible Simplex fire alarm control panel features to be applied to UL listed versions of MX Technology peripherals, the MX Loop Interface Module provides the necessary communications, monitoring, and control for up to 250 addressable MX devices per loop. Multiple MX Loop Interface Modules can be installed for increased capacity.

**On-Board LEDs** provide service level module status indications for communications, earth monitoring, device response, and loop power status.

**MX Technology Features.** Provides MX Fastlogic operation for photoelectric sensors and photoelectric/heat combination sensors (explained on the following page).

\* This product was not ULC listed or approved by FM, MEA (NYC), or CSFM as of document revision date. Additional listings may be applicable; contact your local Simplex product supplier for the latest status. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Fire Protection Products.

## MX Fastlogic Sensor Operation

**MX Fastlogic sensor operation** is an algorithm that takes into account the pattern of smoke build up over time and applies fuzzy logic to calculate the level of risk. This algorithm uses over 200 years of fire test data from research at the University of Duisburg (Duisburg, Germany) to determine the likelihood that there is a real fire and is designed to achieve faster detection of real fires and slower (preferably no detection) of false alarm sources.

**MX Fastlogic Sensor Basics.** The MX Fastlogic algorithm can be described as an Expert algorithm since it uses real fire data as a basis for the alarm decision. For any given application we are obliged to employ the most suitable detection in terms of response to an actual fire while minimizing false alarms. This general requirement is clearly reflected in local and national standards governing fire detection system designs.

Traditionally, attempts at reducing the occurrence of false alarms have involved degrading the level of fire protection afforded, either by raising the alarm threshold of smoke detectors, introducing delays, or generally employing less responsive detection. MX Fastlogic sensors give us the opportunity to offer an improved level of protection while simultaneously increasing immunity to false alarm.

### MX Fastlogic Algorithm - Principle Elements.

Several elements of the detector output are monitored and this raw data is used by MX Fastlogic algorithm to execute a series of processes to evaluate the probable presence of fire including:

- Background filtering
- Instantaneous smoke density
- Rate of change of smoke density
- Smoke density weighting
- Smoke density peak suppression
- Real fire 'experience' comparison

Elements synonymous with false alarms are filtered while those elements indicative of fire are weighted. These results are continually compared against data derived from real fires to produce a measure of fire risk. It is against this risk measurement that the decision to alarm is made.

### Maintain Sensitivity and Minimizing False Alarms.

MX Fastlogic sensors are designed to maintain sensitivity to fire while minimizing false alarms. Many analog detection systems allow the user to select different smoke detector sensitivity settings e.g. High, Normal, or Low sensitivity. Lowering the sensitivity setting is a typical reaction to unwanted alarms but it usually means that a greater density of smoke is required to initiate an alarm. This is not the case for detectors using MX Fastlogic operation which is comparing the real fire experience against recognized fire patterns. Changing sensitivity from 'normal' to 'low' for example, would delay responses to less likely fire patterns while maintaining a normal response to more likely fire patterns. The net result is a reduced sensitivity to possible false alarms without reducing sensitivity to clearly identifiable fires.

**MX Fastlogic algorithm availability.** MX Fastlogic operation is available for MX photoelectric sensors and photoelectric/heat sensors. These devices are used in both life protection and property protection applications providing reliable, early detection of real fires.

## Soft Addressing

MX technology sensors and addressable devices are addressed using the 801AP programming tool which presents a simple menu driven user interface that can automatically increment addresses following each write operation. This simple to use "soft addressing" technique avoids misaddressing errors that often occur when coded switches are used.

The 801AP address programmer can also change addresses stored in a sensor or other addressable device's non-volatile memory, which makes addressing errors easy to rectify.

## Additional Information

Subject		Document
4100ES	Installation Instructions	579-833
	Product Reference	S4100-0031
4010ES	Installation Instructions	579-833
	Product Reference	S4010-0006
4100-5130 and 4010-9916, 25 V Regulator Module Installation Instructions		579-812
Compatible MX Devices		Refer to page 3

## Product Selection and Peripherals Reference

### MX Loop Interface Module

Model	Description
4100-6077	MX Loop interface module for 4100ES and 4100U fire alarm control panels
4010-9917	MX Loop interface module for 4010ES fire alarm control panels

### Compatible Peripherals

#### Addressable Smoke and Heat Sensors and Accessories

Model	Description	MX Model Reference	Data Sheet Reference
4098-5201	Heat Sensor	801H	S4098-0045
4098-5202	Photoelectric Smoke Sensor	801P	
4098-5203	Photoelectric Smoke Sensor with Heat Sensor	801PH	
4098-5207	5" Sensor Base with Remote LED Output	5B-UL	
4098-5208	5" Isolator Base with Remote LED Output	5BI-UL	
4098-5209	Loop Powered (LP) Sounder Base, 85 dB @ 3 ft (1 m)	802SB	
4098-5210	Loop Powered (LP) Sounder Base, 85 dB @ 10 ft (3 m)	812SB	
4098-5211	4-Wire Sounder Base	912SB	
4098-5275	6" Adapter for the 5" Base	6A-5B-UL	
2098-9808	Remote LED Alarm Indicator	—	
4098-5276	Address Flags (pack of 100)	800F	
4098-5277	Address Flag Labels	—	
4098-5214	Duct Housing and Accessories	—	S4098-0046

#### Addressable Manual Stations and Callpoints

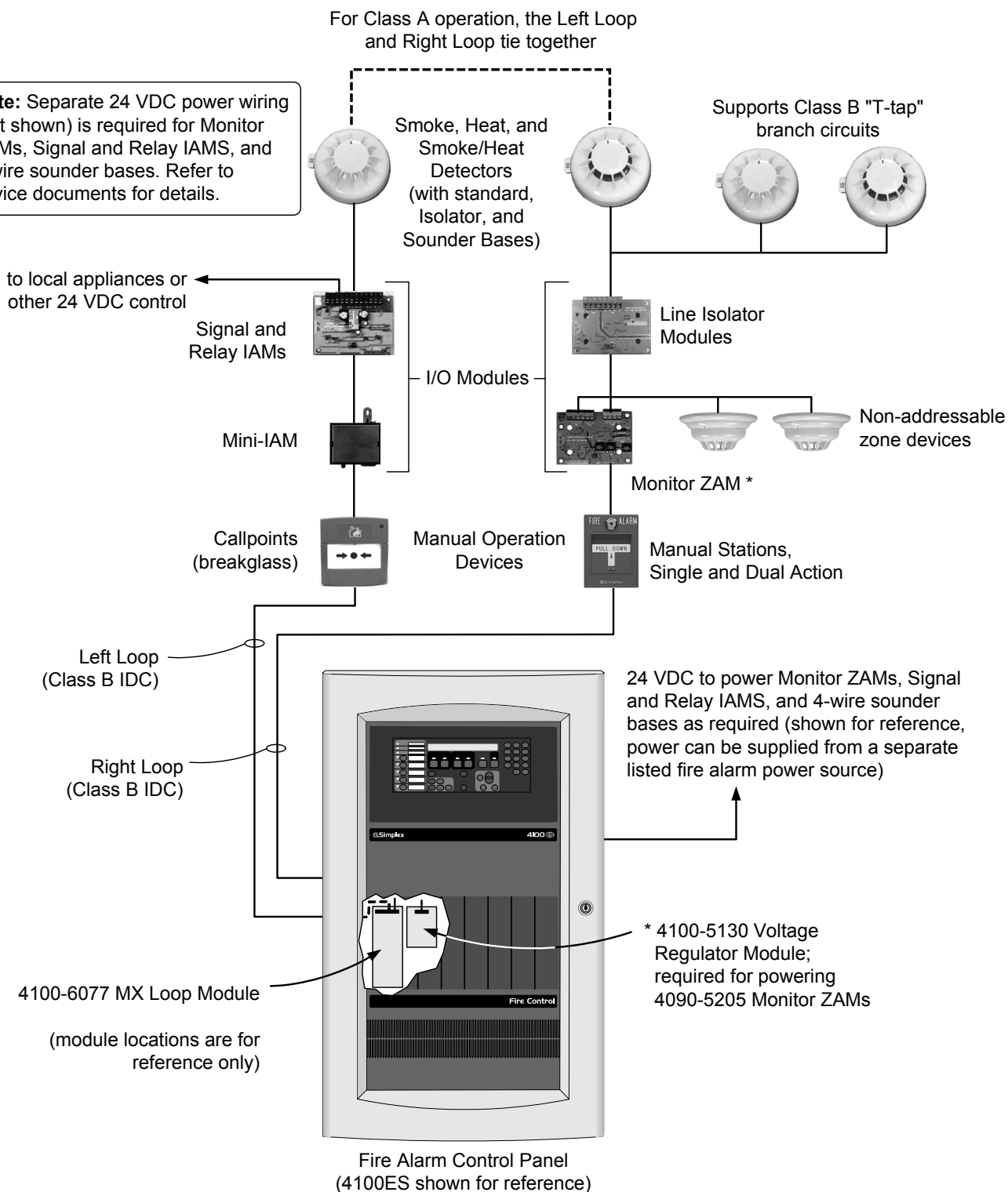
Model	Description	MX Model Reference	Data Sheet Reference
4099-5201	Single Action Manual Station	—	S4099-0003
4099-5202	Double Action Manual Station	—	
4099-5203	Indoor Callpoint with LED (Breakglass)	CP820	S4099-0004
4099-5204	Outdoor Callpoint with LED (Breakglass)	CP830	

#### Addressable Interface Modules

Model	Description	MX Model Reference	Data Sheet Reference
4090-5201	Mini-IAM, supervised contact monitoring module	MIM800	S4090-0012
4090-5202	Dual Input IAM, dual supervised contact monitoring module	CIM800	
4090-5203	Relay IAM	RIM800	
4090-5204	Signal IAM	SNM800	
4090-5205	Monitor ZAM; Note: For conventional devices requiring 25 VDC power, use Voltage Regulator Module 4100-5130 for 4100ES/4100U or 4010-9916 for 4010ES fire alarm control panels	DIM800	
4090-5206	Line Isolator Module	LIM800	
4090-5213	Addressable Module Cover	M520	

#### Device Accessories and Service Tools

Model	Description
4100-5130	4100ES/4100U Voltage Regulator Module, 25 VDC nominal; isolated and resettable output; includes earth detection circuit and trouble relay for status monitoring
4010-9916	Same as above for 4100ES/4100U
516.800.917	MX Sensor Head Removal Tool, ref. MX Model 800RT
516.800.918	MX Service Tool, ref. MX Model 801AP
516.800.922	MX Ancillary Program Lead (Spare)
516.800.923	MX Service Tool Accessory Kit



## Specifications

### MX Loop Output Reference

MX Loop Output	Voltage	40 VDC maximum
	Current	500 mA maximum
Addresses per Loop	250 Maximum	
4100ES/4100U Panel Capacity	up to 30, 4100-6077 MX Loop Modules Maximum	
4010ES Panel Capacity	Up to 4, 4010-9917 MX Loop Modules Maximum	
Loop Distance	6560 ft (2000 m) typical maximum	
	Note: Wire lengths may be longer depending on wiring characteristics and other conditions, consult your Simplex product representative for additional details	
Loop Resistance	150 $\Omega$ maximum	
Loop Capacitance	0.2 $\mu$ F maximum	
Loop Inductance	1.5 mH maximum	
Communications Voltage	40 V peak maximum	

### Module Power Requirements

Module Voltage	24 VDC nominal, supplied from control panel power supply	
Module Input Current	100 mA for module only (no devices)	
	1235 mA maximum, fully loaded at 250 devices; actual current depends on connected devices	

### LED Status Indicators (yellow LEDs)

COMM LOSS	On steady upon loop communications loss, flashing if not communicating with panel	
EARTH FAULT	On steady when an earth fault is detected on field wiring	
Loop Status LED	On steady if no device response	
	Slow flash if Class A open trouble	
	Fast flash if short circuit trouble	
MX DOWNLOAD	On steady when module is in service mode and download is in progress	
LPS FAULT	On steady upon loop power supply failure	

### 4100-5130 or 4010-9916 Voltage Regulator Module

Input Voltage	System supplied 24 VDC	
Input Current	Supervisory = 3 A max. with 2.5 A output load; Alarm = 4.9 A max. with 4 A output load	
Output Voltage	22.8 to 26.4 VDC (25 VDC nominal); output is resettable, will track state of RESET input	
Output Current	2.5 A maximum supervisory; 4 A maximum alarm	
Ripple	600 mV pk-pk maximum	
Trouble Relay	1 Form C dry contact for monitoring; rated 400 mA @ 30 VDC; changes state for Earth or output voltage trouble; normally held energized	
Mounting Requirements	4100ES/4100U	4 x 5 single block module; requires mounting in same bay as connected power supply
	4010ES	4 x 5 single block module

### General Specifications

Mounting	4" x 10" (102 mm x 254 mm) module requires two vertical 4 x 5 block spaces	
Operating Temperature Range	32° F to 120° F (0° C to 49° C)	
Operating Humidity Range	Up to 93% RH, non-condensing @ 90° F (32° C)	
Output Wiring Connections	On-board terminal blocks for field wiring 18 to 12 AWG (0.82 mm <sup>2</sup> to 3.31 mm <sup>2</sup> )	

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