

Features

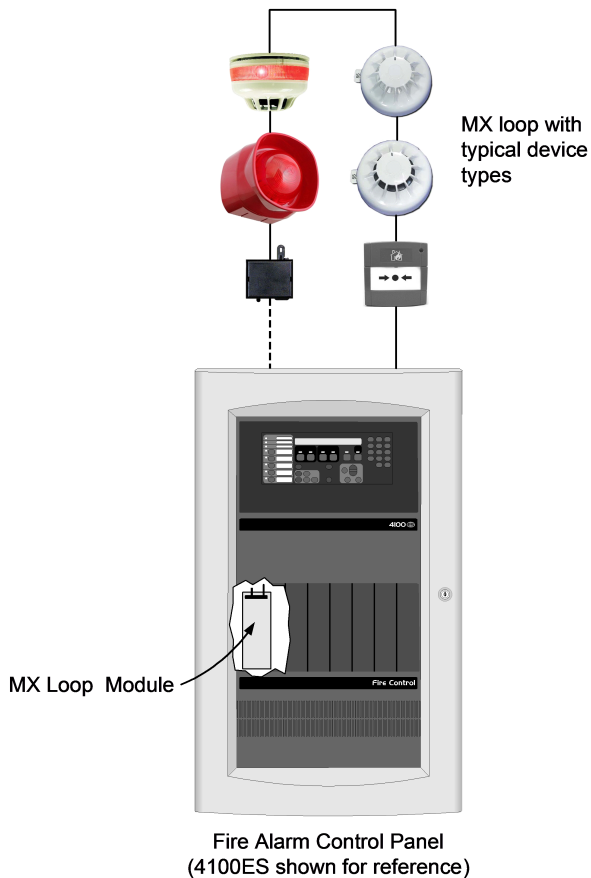


Figure 1: MX Loop Interface Module Basic Reference

Connect MX Technology addressable devices to a Autocall 4100ES 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, A100-6077 MX Loop Interface Modules per 4100ES fire alarm control panel
- Up to 4, A010-9917 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; LED blink on poll is also selectable per loop
- On-board LED diagnostics indicated module status for installation and service convenience
- Compatible with 4100ES and 4010ES panels with software revision 2.03 or higher and MX loop module software 2.01 or higher
- Supports Local Mode operation when module is mounted in MINIPLEX transponders
- 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 Autocall product representative for additional details

With a A100-6077 or A010-9917 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 system testing with automatic self-resetting is available for silent mode (select SIG OFF)

MX Peripherals provide:

- Soft addressing of devices performed using the 850EMT 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 loop powered sounder or sounder-beacon, or with separately powered sounder
- Loop powered beacons and sounder-beacons
- Single, dual, and multiple 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 A100-5130 or A010-9917 provides compatible regulated DC voltage for use with Monitor ZAMs

Description

System Compatibility

For applications requiring compatible Autocall 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

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

MX Technology Features

MX Fastlogic operation for photoelectric sensors and photoelectric/heat combination sensors.

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 sensors, 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 sensor 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 sensor 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 sensors 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 850EMT 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 850EMT programming tool 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

Table 1: Additional Information

Subject		Document
4100ES	Installation Instructions	579-833AC
	Product Reference	AC4100-0031
4010ES	Installation Instructions	579-833AC
	Product Reference	AC4010-0006
Compatible MX Devices		Refer to Product Selection and Peripherals Reference

MX Loop Interface Modules for 4100ES and 4010ES Fire Alarm Control Panels

Product Selection and Peripherals Reference

Table 2: MX Loop Interface Module

SKU	Description	Details
A100-6077	MX Loop Interface Module for 4100ES fire alarm control panels (PID connection module); single slot module mounts in CPU bay, expansion bay, or MINIPLEX transponder; up to four (4) modules can be powered from one SPS or EPS	For 4100ES with SPS: For CPU bay mounting, A100-9867 Mounting Kit with harnesses is required, ordered separately, see below For 4100ES with EPS: Mounts in available CPU slot; to connect EPS power from the CPU bay to the second bay, harness A100-0642 is required, ordered separately, see below
A010-9917	MX Loop interface module for 4010ES fire alarm control panels	Refer to data sheet <i>AC4010-0006</i> for additional mounting information

Table 3: MX Loop Interface Module Mounting Accessories

SKU	Description	Details
A100-9867	CPU Bay Mounting Kit	Required to mount the A100-6077 MX Loop Module in the CPU bay of a 4100ES with SPS, includes harnesses for connection to a second bay without requiring an XPS in that bay; connection to second bay requires block G
A100-0642	MX Loop Interface Module EPS Power Harness	Required to provides power from an EPS to up to three (3) A100-6077 MX Loop Modules mounted in a second bay without requiring an XPS in that bay; connection to second bay requires block G

Table 4: Compatible Addressable Smoke and Heat Sensors and Accessories

SKU	Description	MX Model Reference
A4098-5215	Loop Powered Sounder Base with selectable sound output	LPSB3000
A4098-5212	Loop Powered Sounder-Beacon Base with selectable sound output and selectable flash rate	LPAV3000
A4098-5209	Loop Powered (LP) Sounder Base, 85 dB @ 3 ft (1 m)	802SB
A4098-5210	Loop Powered (LP) Sounder Base, 85 dB @ 10 ft (3 m)	812SB
A4098-5211	4-Wire Sounder Base	912SB
A2098-9808	Remote LED Alarm Indicator	–
A4098-5214	Duct Housing and Accessories	–
A4098-5251	850 Series Photo-Heat Sensor with Isolator	–
A4098-5252	850 Series Photo Sensor with Isolator	–
A4098-5253	850 Series Heat Sensor with Isolator	–
A4098-5254	850 Series Triple Sensor with Isolator	–

Note: See data sheets *AC4098-0045*, *AC4098-0046*, and *AC4906-0016* for more information.

Table 5: Addressable Manual Stations and Callpoints

SKU	Description	MX Model Reference
A4099-5201	Single Action Manual Station	–
A4099-5202	Double Action Manual Station	–
A4099-5203	Indoor Callpoint with LED (Breakglass)	CP820
A4099-5204	Outdoor Callpoint with LED (Breakglass)	CP830

Note: See data sheets *AC4099-0004* for more information.

Table 6: Addressable Interface Modules

SKU	Description	MX Model Reference
A4090-5201	Mini-IAM, supervised contact monitoring module	MIM800
A4090-5202	Dual Input IAM, dual supervised contact monitoring module	CIM800
A4090-5203	Relay IAM	RIM800
A4090-5204	Signal IAM	SNM800
A4090-5205	Monitor ZAM; Note: For conventional devices requiring 25 VDC power, use Voltage Regulator Module A100-5130 for 4100ES fire alarm control panels (ordered separately)	DIM800
A4090-5206	Line Isolator Module	LIM800
A4090-5250	Multiple I/O Module; 3 Class B inputs and 2 Form C relay outputs	MIO800

Note: See data sheets *AC4090-0012* and *AC4090-0016* for more information.

MX Loop Interface Modules for 4100ES and 4010ES Fire Alarm Control Panels

Table 7: Addressable Loop Powered Sounders and Sounder-Beacons

SKU	Description	SKU Reference
A4906-5201	Sounder, indoor, red	LPSY800R
A4906-5202	Sounder, indoor, white	LPSY800W
A4906-5203	Sounder, outdoor, red	LPSY865W
A4906-5205	Sounder-Beacon, indoor, red	LPAV800R
A4906-5206	Sounder-Beacon, indoor, white	LPAV800W
A4906-5207	Sounder-Beacon, outdoor, red	LPAV865R

Note: See data sheets *AC4906-0014* and *AC4906-0015* for more information.

Table 8: Device Accessories and Service Tools

SKU	Description
A100-5130	4100ES Voltage Regulator Module, 25 VDC nominal; isolated and resettable output; includes earth detection circuit and trouble relay for status monitoring
516.850.900	850EMT Programming Tool
516.800.917	Sensor Head Removal Tool, ref. MX Model 800RT
516.800.922	Spare ancillary programming lead for 850EMT
516.800.923	Accessory Kit; carrying case, shoulder strap, and 12 V automobile adaptor
516.800.924	Package of 10 spare pins for ancillary programming lead

System Installation Reference

Figure 2 shows:

- Duct Sensor Housing A4098-5214
- A100-6077 MX Loop Module and A100-5130 Voltage Regulator Module; required for powering A4090-5205 Monitor ZAMs (both installed in fire panel)

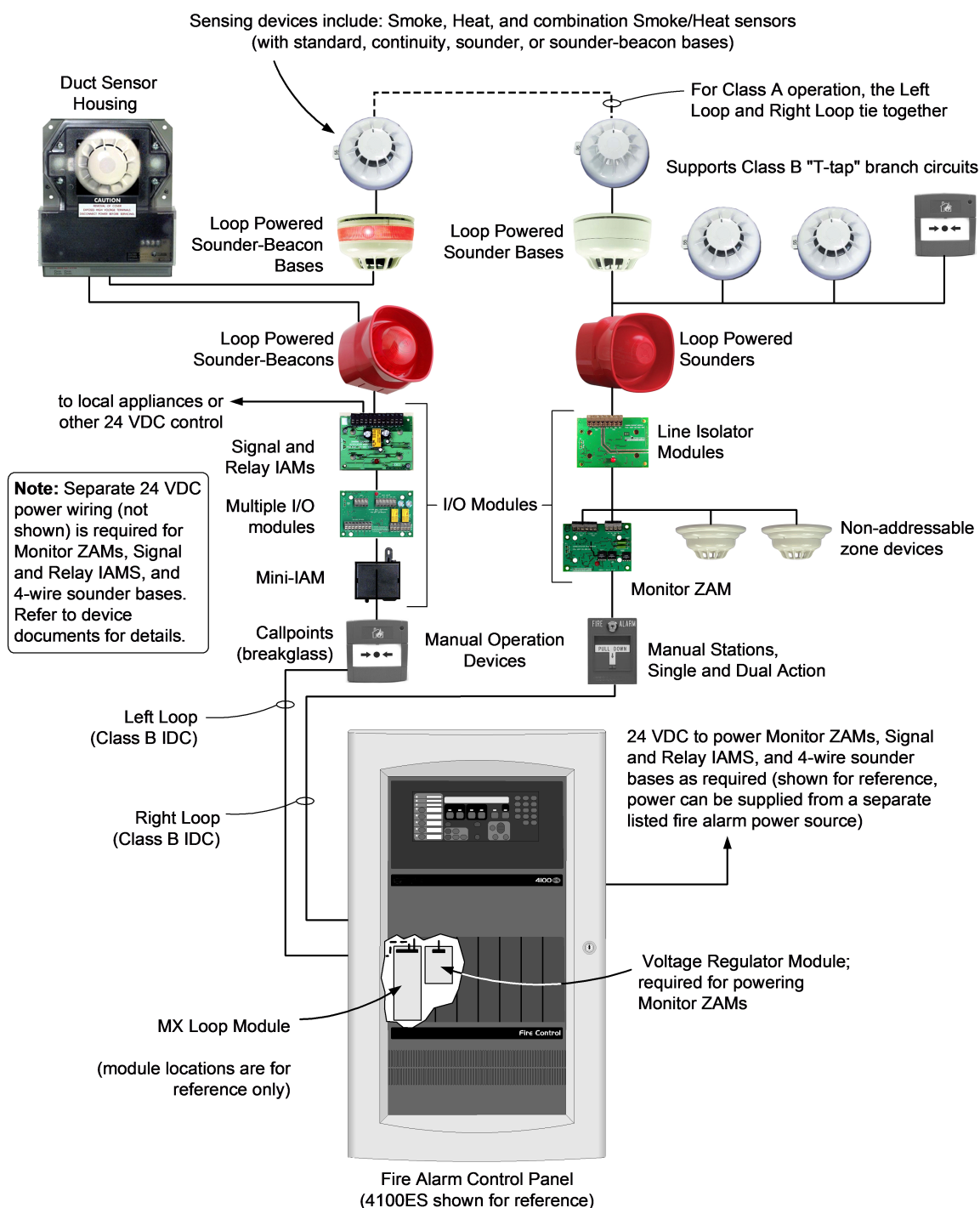


Figure 2: System Installation Reference

Specifications

Table 9: MX Loop Output Reference

Specification		Rating
MX Loop Output	Voltage	40 VDC maximum
	Current	500 mA maximum
Addresses per Loop		250 Maximum
4100ES Panel Capacity		up to 30, A100-6077 MX Loop Modules Maximum
4010ES Panel Capacity		Up to 4, A010-9917 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 Autocall product representative for additional details
Loop Resistance		150 Ω maximum
Loop Capacitance		0.2 μ F maximum
Loop Inductance		1.5 mH maximum
Communications Voltage		40 V peak maximum

Table 10: Module Power Requirements

Specification	Rating
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

Table 11: LED Status Indicators (yellow LEDs)

LED	Description
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

Table 12: A100-5130 Voltage Regulator Module

Specification		Rating
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	4 x 5 single block module; requires mounting in same bay as connected power supply
	4010ES	4 x 5 single block module

Table 13: General Specifications

Specification	Rating
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 ² to 3.31 mm ²)