

Features

Connect MX Technology addressable devices to a Simplex 4100ES or 4010ES fire alarm control unit (FACU)

- Connect up to 250 MX addressable devices, with up to 1 A of output current per ESMX Loop module.
- Share loop power and addresses across two loops using the optional ESMX loop mezzanine card.
- Up to 30 ESMX Loop Interface Modules for each 4100ES FACU.
- Up to four ESMX Loop Interface Modules for each 4010ES FACU.
- Provides dual isolated Class B loops that you can connect together for Class A operation.
- For each loop, you can select device LEDs for alarm activation as 5, 10, 20 or 30 to be activated simultaneously. Also, for each loop, you can select LED blink on poll.
- Onboard LED diagnostics indicated module status for installation and service convenience.
- Compatible with 4100ES FACUs using ES-PS power supplies and with 4010ES FACUs. Use 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

- Compatibility with many types of existing cable for convenient retrofit with typical communications distances up to 2 km (6560 ft)
- Longer wiring lengths might be possible but that depends on wiring characteristics and other conditions. Consult your Simplex product representative for additional details.

Advanced ESMX Loop Module features

- Information communicated to the control panel is analyzed by 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

- To soft address the devices, use the 850EMT programming tool or the Digital Enrollment mobile application.
- You can change device addresses 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 break glass call points
- Single and double action manual stations.
- Voltage Regulator Module 4100-5130 or 4010-9917 provides compatible regulated DC voltage for use with Monitor ZAMs

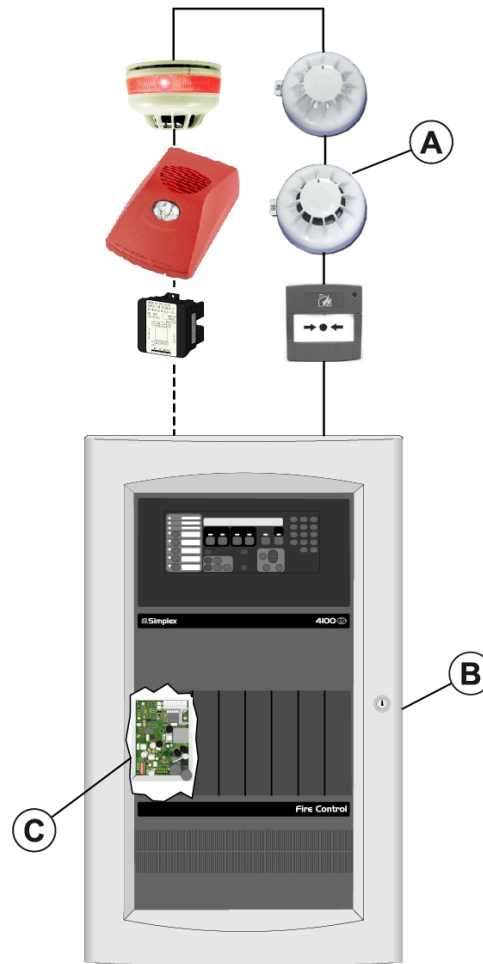


Figure 1: ESMX Loop Interface Module basic reference

Callout	Description
A	MX loop with typical device types
B	4100ES FACU shown for reference
C	ESMX loop module

Description

System compatibility

For applications that require compatible Simplex FACU features to be applied to UL listed versions of MX Technology peripherals, the ESMX Loop Interface Module provides the necessary communications, monitoring, and control for up to 250 addressable MX devices for each loop. For increased capacity, you can install multiple ESMX Loop Interface Modules.

Onboard 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.

* 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.

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 in 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 is an expert algorithm as 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 that govern fire detection system designs.

Traditionally, attempts to reduce 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 that includes:

- 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. On many analog detection systems, the user can select different smoke sensor sensitivity settings. For example, 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 that use MX Fastlogic operation that compares 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.

Addressing methods

With MX technology, you have the option to use hard or soft addressing methods as preferred by an engineer or specification.

Soft addressing

You can use the mobile application Digital Enrollment to address MX technology sensors and addressable devices. Each addressable device is marked with a unique QR code. Use the mobile application to scan it. Point data such as address, point description and zone description are entered on the mobile device, and through the programmer, transferred to the Simplex ES panel. When instructed to do so, the panel then address each of the devices in line with the data entered on the mobile device. The application eliminates the risk of double addressing and provides a convenient and error free method of addressing devices.

An 850EMT programming tool is also available. It presents a simple, menu driven UI that can automatically increment addresses after each write operation. This simple to use soft addressing technique avoids misaddressing errors that often occur when coded switches are used.

Hard addressing

Many of the MX devices are also provided with a DIP switch as an alternate method of addressing the devices.

Additional information

Table 1: Additional information

Subject	Document
4100ES	Installation Instructions
	Product Reference
4010ES	Installation Instructions
	Product Reference
4100-5130 and 4010-9916, 25 V Regulator Module Installation Instructions	
Compatible MX Devices	

579-1390
S4100-1031
579-1390
S4010-0006
579-812
See Product selection and peripherals reference

Product selection and peripherals reference
Table 2: ESMX Loop Interface Module

Model	Description	Details
4100-6311	ESMX Loop Interface Module for 4100ES FACUs	For the 4100ES with ES-PS, the module mounts in available CPU bay block spaces. To connect power from the CPU bay to the second bay, use harness 4100-0642. Order the harness separately, see Table 3. The module uses only one 5 in. x 4 in. block. Power up to four modules from one ES-PS.
4100-6312	ESMX Optional Loop Mezzanine Card for 4100ES FACUs	Install directly on top of the ESMX Loop Interface Module to provide a second dual-isolated Class A loop. The addresses and loop power are shared between the ESMX Loop Interface Card and the ESMX Optional Loop Mezzanine Card.
4010-6311	ESMX Loop Interface Module for 4010ES FACUs	For the 4010ES, the module mounts in available CPU bay block spaces. To connect power from the CPU bay to the second bay, use harness 4100-0642. Order the harness separately, see Table 3. The module uses only one 5 in. x 4 in. block. Power up to four modules from one PSU. For additional mounting information, refer to datasheet S4010-0006 .
4010-6312	ESMX Optional Loop Mezzanine Card for 4010ES FACUs	Install directly on top of the ESMX Loop Interface Module to provide a second dual-isolated Class A loop. The addresses and loop power are shared between the ESMX Loop Interface Card and the ESMX Optional Loop Mezzanine Card.

Table 3: ESMX Loop Interface Module mounting accessories

Model	Description	Details
4100-0642	MX Loop Interface Module Power Harness for ES-PS Master Controller	Use to provide power from an ES-PS Master Controller Power Supply to up to three 4100-6311 MX Loop Modules mounted in a second bay without requiring a power supply in that bay. The connection to the second bay requires block G.

Table 4: Compatible addressable smoke and heat sensors and accessories

Model	Description	Datasheet
4098-5255	Photoelectric Smoke Sensor with Heat Sensor	S4906-0017
4098-5256	Photoelectric Smoke Sensor	S4906-0017
4098-5257	Heat Sensor	S4906-0017
4098-5260	4B-C 4 in. Continuity Base	S4906-0017
4098-5261	4B 4 in. Standard Base	S4906-0017
4098-5265	Photoelectric Smoke Sensor with Heat Sensor with Isolator	S4906-0017
4098-5266	Photoelectric Smoke Sensor with Isolator	S4906-0017
4098-5267	Heat Sensor with Isolator	S4906-0017
4098-5268	Triple Sensor with Isolator	S4906-0017
4098-5287	SSD Style Photoelectric Smoke / Heat Sensor with DIP switch and Isolator	A16381VVJJ
4098-5288	SSD Style Photoelectric Smoke Sensor with DIP switch and Isolator	A16381VVJJ
4098-5289	SSD Style Photoelectric Heat Sensor with DIP switch and Isolator	A16381VVJJ
4098-5290	SSD Style Triple Sensor with DIP switch and Isolator	A16381VVJJ
4098-5291	SSD Style Photoelectric Smoke / Heat Sensor with DIP switch	A16381VVJJ
4098-5292	SSD Style Photoelectric Smoke Sensor with DIP switch	A16381VVJJ
4098-5293	SSD Style Photoelectric Heat Sensor with DIP switch	A16381VVJJ
2098-9808	Remote LED Alarm Indicator	S4906-0017
4098-5214	Duct Housing and Accessories	S4098-0046
4098-5276	Address Flags, pack of 100.	S4906-0017
4098-5277	Address Flag Labels	S4906-0017

Table 5: Addressable manual stations and callpoints

Model	Description	Datasheet
4099-5208	Indoor Call Point with LED, break glass, with Isolator	S4099-0007
4099-5209	Outdoor Call Point with LED, break glass, with Isolator	S4099-0007
4099-5214	Single Action Manual Station	S4099-0008
4099-5215	Double Action Manual Station, break glass	S4099-0008
4099-5216	Double Action Manual Station, push type	S4099-0008

Table 6: Addressable interface modules

Model	Description	Datasheet
4090-5204	Signal IAM	A16381VUFP
4090-5206	Line Isolator Module	A16381VUFV
4090-5250	Multiple I/O Module. Three Class B inputs and two Form C relay outputs.	S4090-0016
4090-5258	Mini-IAM, supervised contact monitoring module	S4090-0020
4090-5259	Relay IAM	S4090-0021

Table 6: Addressable interface modules

Model	Description	Datasheet
4090-5260	Monitor ZAM. Note: For conventional devices requiring 25 VDC power, use Voltage Regulator Module 4100-5130 for 4100ES or 4010-9916 for 4010ES FACUs. Order separately.	S4090-5260
4090-5261	Dual Input IAM, dual supervised contact monitoring module	S4090-5261

Table 7: Addressable loop powered sounders and sounder-beacons

Model	Description	Datasheet
4098-5209	Loop Powered Sounder Base, 85 dB at 3 ft (1 m)	S4906-0017
4098-5210	Loop Powered Sounder Base, 85 dB at 10 ft (3 m)	S4906-0016
4098-5217	Addressable Base Sounder	S4906-0018
4098-5220	Addressable A/V Base VID	S4906-0018
4906-5210	Addressable Wall Sounder White	S4906-0018
4906-5211	Addressable Wall Sounder Red	S4906-0018
4906-5212	Addressable Wall Sounder WP	S4906-0018
4906-5213	Addressable Wall A/V VID White	S4906-0018
4906-5214	Addressable Wall A/V VID Red	S4906-0018
4906-5215	Addressable Wall A/V VID WP	S4906-0018

Table 8: Device accessories and service tools

Model	Description
4100-5130	4100ES 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 except for the 4010ES.
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 adapter.
516.800.924	Package of 10 spare pins for ancillary programming lead.

System installation reference

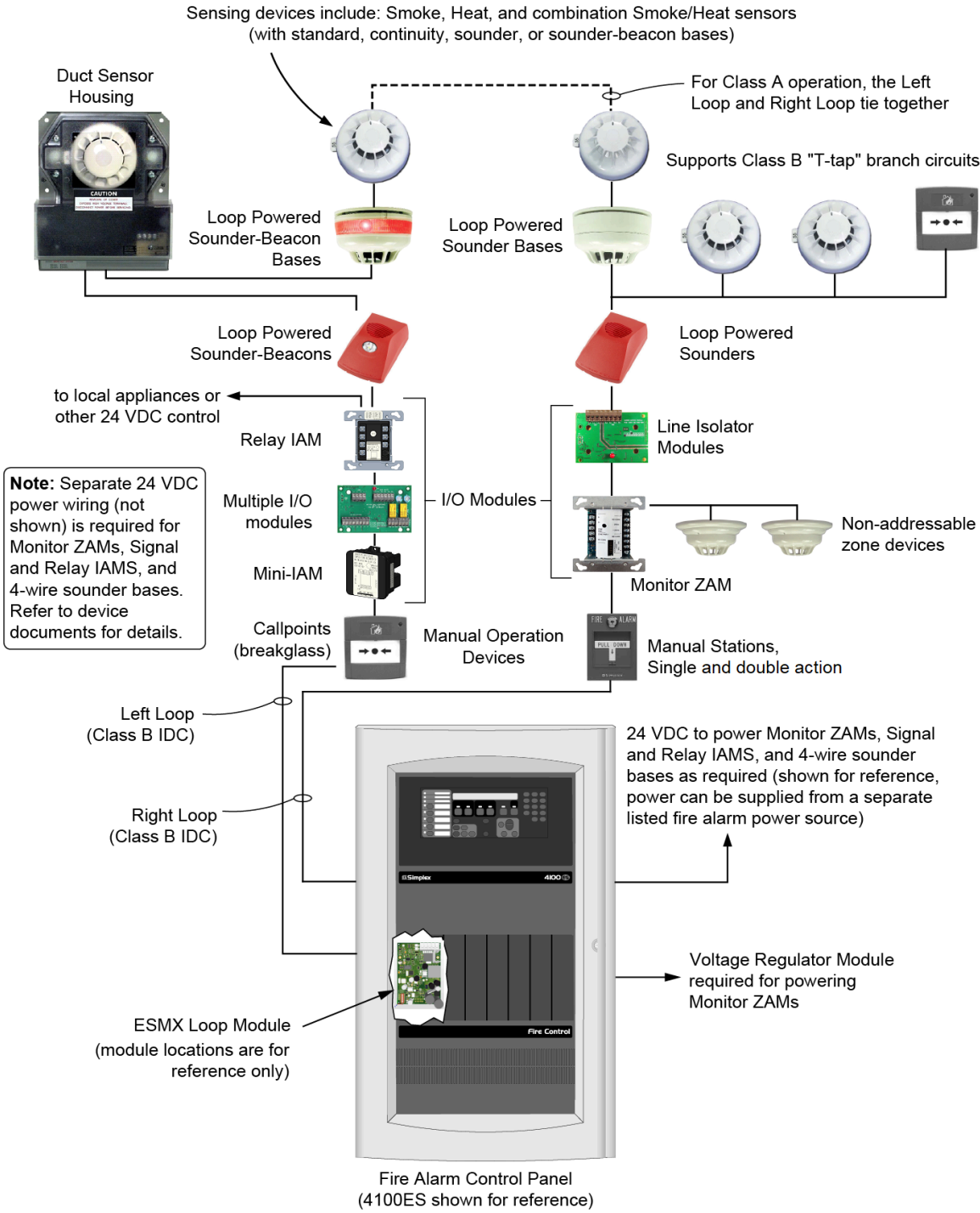


Figure 2: System installation reference

Specifications

Table 9: MX Loop output reference

Specification		Rating
MX Loop output	Voltage	40 VDC maximum
	Current	1 A maximum
Addresses for each loop		250 maximum
4100ES panel capacity		Up to 30, 4100-6311 ESMX Loop Modules maximum
4010ES panel capacity		Up to 4, 4010-6311 ESMX Loop Modules maximum
Loop distance		6560 ft (2000 m) typical maximum Note: You can have longer wire lengths depending on wiring characteristics and other conditions. Consult your Simplex product representative for additional details.
Loop resistance		150 ohm 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	118 mA for module only, no devices. 2614 mA maximum, fully loaded at 250 devices. Actual current depends on connected devices.

Table 11: Yellow LED status indicators

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: 4100-5130 or 4010-9916 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 VDC to 26.4 VDC (25 VDC nominal). Output is resettable, and tracks the state of the RESET input.
Output current		2.5 A maximum supervisory. 4 A maximum alarm
Ripple		600 mV pk-pk maximum
Trouble Relay		1 x Form C dry contact for monitoring. Rated 400 mA at 30 VDC. Changes state for Earth or output voltage trouble. Normally held energized
Mounting requirements	4100ES	4 x 5 single block module
	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 at 90°F (32°C)
Output wiring connections	Onboard terminal blocks for field wiring 18 to 12 AWG (0.82 mm ² to 3.31 mm ²)