Simplex

MX Technology Addressable Devices

UL Listed*

Addressable Smoke and Heat Sensors; Multi-Sensors (Smoke & Heat), Isolator Bases, Sounder Bases, and Accessories

Features

MX Technology addressable smoke sensor, heat sensor and multi-sensor features:

- Smoke Sensors provide accurate photoelectric sensing
- Heat Sensors provide electronic heat sensing with multiple alarm options
- **Multi-Sensors** combine photoelectric sensing with heat sensing
- **Isolator Bases** monitor line condition and separates input from output to isolate short circuits
- Sounder Bases provide multiple tone and volume selections and are available as MX Loop powered, or powered from separate 24 VDC
- Accessories include remote LED indicators, address flags and labels, and base adapters
- Smoke sensors and accessories are UL listed to Standard 268, heat sensors to Standard 521

Compatibility:

- For use with Simplex[®] 4100ES, 4010ES and 4100U Series fire alarm control panels equipped with an MX Loop Module
- Analog sensor information is communicated to the host control panel and 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

Installation and Service Features:

- Each sensor is supplied with an integral dust cover for protection during storage and installation and is easily removed when commissioning the system
- Unique 'park' position for commissioning and service
- The address flag is attached to the base to minimize errors during service
- Detector addressing is conveniently programmed using the MX Service tool
- Bases with multiple mounting options simplify installation

Description

Rugged Construction. MX compatible 4098-Series sensors provide robust and reliable construction which has undergone stringent environmental testing. Electrical contacts are molded into the plastic to eliminate movement. Construction uses durable, fire resistant FR110 plastic.

Detection Modes. MX Sensors communicate to the MX Loop Module using MX Technology communications. This allows each detector to operate in one or two of several detection modes, thus allowing it to be easily optimized to the risk.



4098-5202 Photoelectric Sensor and 4098-5203 Photoelectric Sensor with Heat Sensing



4098-5201 Heat Sensor



4098-5207 Standard Base and 4098-5208 Isolator Base



4098-5209, 4098-5210, and 4098-5211Sounder Bases

^{*} Listings 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 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.

Sensor Details



4098-5201 Heat Sensor

4098-5201 Heat Sensor. The 4098-5201 Heat Sensor returns analog temperature readings to the fire alarm control panel for evaluation. Construction includes a high quality thermistor with very low thermal mass allowing the sensor to provide fast and accurate temperature readings for heat detection determination.

Heat detection settings are selectable at the fire alarm control panel for 135° F (57.2° C) or 200° F (93° C) either with or without rate-of-rise detection.

Application Note: When Heat Sensor 4098-5201 is used for 200° F setting applications, only use the following bases:

Standard Base 4098-5207 Isolator Base 4098-5208 Sounder Base 4098-5210

Sensor Details (Continued)

Base and LED Indicator Details



4098-5202 Photoelectric Sensor

4098-5202 Photoelectric Sensor incorporates a unique optical chamber design with a signal-to-noise ratio that provides high resilience to dust, dirt, and small insects for reduced service cost. The unique chamber cover actually draws slow moving smoke into the chamber to provide more responsive detection.



4098-5203 Photoelectric Sensor with Heat Sensing

4098-5203 Multi-Sensors provide the features of the 4098-5202 photoelectric sensor with the addition of the heat sensor from the 4098-5201. This allows the 4098-5203 to satisfy detection applications with multiple risks.

Additional MX Loop Module Information

For additional information about the MX Loop Module, refer to data sheet S4100-0059.



4098-5207 5" Addressable Sensor Base

4098-5207 5" Addressable Sensor Bases are

compatible with a variety of standard ceiling and wall mount backboxes. Features include: Remote LED connections, Anti-Tamper facility, Park position and address flag holder, and integral breakout locking key.



4098-5208 Addressable Isolator Base

4098-5208 Addressable Isolator Bases provide the features of the 4098-5207 Standard Base and incorporate bi-directional short circuit isolation. Isolators can be used for each sensor on the MX Loop, or can be used to isolate specific areas, as well as to isolate sensors from callpoints, manual stations, and other MX addressable devices. An integral yellow LED indicates isolation mode is activated.



2098-9808 Remote LED Indicator

2098-9808, Remote LED Alarm Indicator. Red LED indicator provides a remote indication that the sensor is in Alarm. (Refer to Specifications on page 5 for dimensions.)



4098-5209, 4098-5210, and 4098-5211 Sounder Bases, Appearance Reference (shown with supplied mounting flange)

Sounder bases are for use with the following sensors:

- 4098-5201, Heat Sensor (see application note on page 2)
- 4098-5202, Photoelectric Sensor
- 4098-5203, Photoelectric Sensor with Heat Sensor

Multiple output tones are available:

- Tones are activated per individual address as controlled from the MX Loop Module
- Eight tone selections are available (see details below)
- Tone is DIP switch selected at the base to satisfy local requirements

Tone volume is adjustable at each base:

• For applications requiring reduced sound level, output volume can be adjusted at the sounder base using Volume Trimmer Tool 517.050.015

MX Loop Module provides the following tone control selections:

- Temporal 3
- Slow March Time (20 bpm)
- March Time (60 bpm)
- Steady-on (continuous)

Local tone selection options:

- Continuous Note: Select this for use with Temporal 3, Slow March Time, or March Time control from the MX Loop Module
- The following local tone selections are available for use with the Steady-on (continuous) command from the MX Loop Module:
 - Temporal 4
 - Slow sweep
 - March time beep
 - Fast sweep
 - Temporal 3
 - Two tone
 - German DIN
 - Dutch Slow Sweep

4098-5209 Addressable Loop Powered (LP) Sounder Base, Low Output:

- MX Loop powered, no separate power connection is required
- Maximum sound level output is 85 dBA @ 3 ft (1 m)
- Maximum alarm current is 6.8 mA, from the MX Loop
- Note: 4098-5209 is for supplemental use only and not in lieu of notification appliances

4098-5210 Addressable Loop Powered (LP) Sounder Base, Standard Output:

- MX Loop powered, no separate power connection is required
- Maximum sound output is 85 dBA @ 10 ft (3 m)
- Maximum alarm current is 24 mA, from the MX Loop

4098-5211 Addressable 4-Wire Sounder Base:

- Sounder is activated from the MX Loop
- Power is supplied from a separate 24 VDC fire alarm power supply using a separate wiring loop
- Maximum sound output is 90 dBA @ 10 ft (3 m)
- Maximum alarm current is 20 mA, from the separate fire alarm power supply

Product Selection

Model	Description	Installation Instructions
4098-5201	Heat Sensor	579-933
4098-5202	Photoelectric Smoke Sensor	579-934
4098-5203	Photoelectric Smoke Sensor with Heat Sensor (Multi-Sensor)	579-932
2098-9808	Remote LED Alarm Indicator	_
4098-5207	5" Addressable Sensor Base with Remote LED Output	579-936
4098-5208	5" Addressable Isolator Base with Remote LED Output	579-937
4098-5209	Addressable Loop Powered (LP) Sounder Base, Low Output [85 dB @ 3 ft (1 m)]	579-939
4098-5210	Addressable Loop Powered (LP) Sounder Base, Standard Output [85 dB @ 10 ft (3 m)]	579-925
4098-5211	Addressable 4-Wire Sounder Base	579-926

Sensor Accessories

Model	Description	Installation Instructions
4098-5275	6" Adapter for the 5" Base	579-938
4098-5276	Address Flags (pack of 100)	refer to base
4098-5277	Address Flag Labels	instructions
517.050.015	Volume Trimmer Tool	used with sounder bases

Specifications

Current Requirements (ex	cept for 409	8-5211, 4-\	Vire Sounder Base, all currents are supplied from the MX Loop)			
	Product	Normal	In Alarm/Activated (Note: Does not include Remote Indicator LED current)			
4098-5208 Isolator Base 80		80 µA	10 mA in isolation			
4098-5201 Heat Sensor 24		245 µA				
4098-5202 Photoelectric Sensor 27		275 µA	3.33 mA maximum in alarm			
4098-5202 Multi-Sensor 27		275 µA				
4098-5209 LP Sounder Base 20		200 µA	6.8 mA at full volume of 85 dB @ 3 ft (1 m) 1.2 mA at low volume			
4098-5210 LP Sound	der Base	10 µA	24 mA at full volume of 85 dB @ 10ft (3 m)			
4098-5211 4-Wire Source	der Base	5 ۸	20 µA from MX Loop			
4030-3211 4-Wile Sound		5 μΛ	20 mA from external 24 VDC power			
General Specifications						
Communications		MX Lo	MX Loop, 1 address per sensor base			
Sounder Base Voltage		18 to 3	18 to 32 VDC; (24 VDC nominal) from fire alarm power supply			
Sensor Base Wire Connections			Terminal blocks, for wire size 20 to 14 AWG (0.5 to 2.5 mm ² , or two, 1.5 mm ²)			
Operating Temperature Range:						
4098-5203 Multi-Sensor 2098-9808 Remote LED Annunciator 4098-5210 LP Sounder Base 4098-5211 Four Wire Sounder Base			32° to 100° F (0° to 38° C)			
4098-5209 LP Sounder Base			100° F (0° to 38° C); 100° F (38° C) maximum ceiling ambient temperature			
4098-5202 Photoelectric Sensor 4098-5207 Standard Base 4098-5208 Isolator Base			-13° to 158° F (-25° to 70° C) continuous; up to 194° F (90° C) short term			
4098-5201 Heat 135° F (57.2 °C) setting			100° F (38° C) maximum ceiling ambient temperature			
Sensor 200° F (93° C) setting			150° F (65.6° C) maximum ceiling ambient temperature			
Additional Specifications						
Humidity Range		up to 9	up to 93% RH at 90° F (32° C)			
Sensor Dimensions			4 ¼" (109 mm) diameter x 1 ¹¹ / ₁₆ " (43 mm) deep			
Base Dimensions (Standard and Isolator)			5" (125 mm) diameter x ¹⁵ / ₁₆ " (23.5 mm) deep			
Sounder Base Dimensions			4 ¹¹ / ₃₂ " (110 mm) diameter x 1 ¹⁵ / ₃₂ " (37.5 mm) deep			
2098-9808 Remote LED	Dimensio	ns Overal Mounti	I: 4 $\frac{1}{2}$ " H x 2 $\frac{3}{4}$ " W (114 mm x 70 mm) ng holes: 3 $\frac{9}{32}$ " (83 mm) apart (standard US single-gang box mounting)			
Indicator	Curre	nt 1 mA	2			
	Connectio	ns Color o	coded wire leads, 18 AWG (0.82 mm ²)			

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