Simplex

TrueAlarm®
Fire Alarm Systems

Fire Alarm Controls
4100 Series MAPNET II/TrueAlarm Addressable Modules and Isolator Modules

UL, ULC Listed
FM Approved

MAPNET II® FEATURES

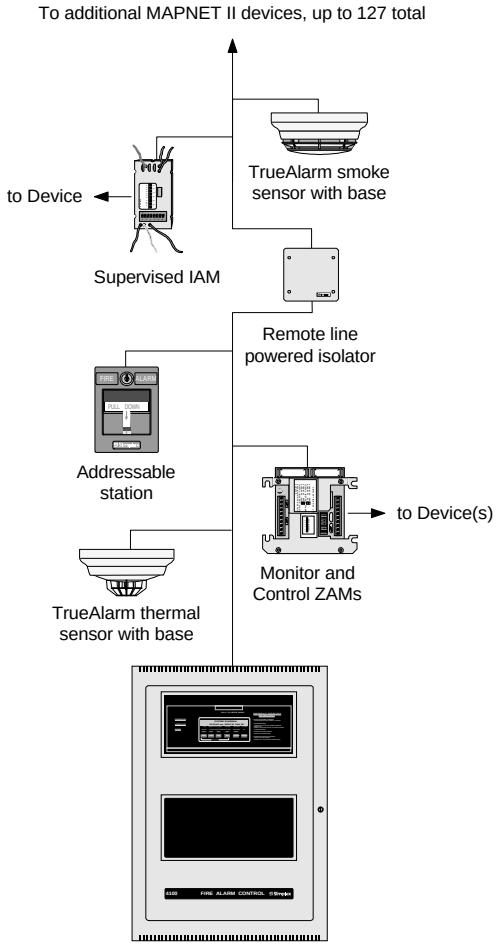
- **An addressable two-wire circuit that provides individual*:**
  - Supervision and identification of initiating devices
  - Supervision and operation of notification appliance circuits
  - Operation of control relays
  - Support of TrueAlarm® analog sensing devices*
- **Module 4100-0110 characteristics:**
  - Capacity of up to 127 addressable devices per channel (one channel per module)
  - Class B or Class A communications wiring
  - Retrofit applications can often use existing wiring
  - Multiple modules can be mounted in the control panel (refer to specific control panel for details)
- **Zone adapter modules (ZAMs) are available to connect conventional (non-addressable) initiating devices to MAPNET II circuits**
- **Compatible with Simplex:**
  - 4100 series fire alarm control panels
  - MINIPLEX® transponders
  - Universal transponders
  - 4120 Networks**
- **Optional fault isolation modules:**
  - Panel mount module is available with four output circuits, Class A or Class B
  - Single circuit line powered modules are available for remote mounting in surface or flush mount trim

TrueAlarm ANALOG SENSING FEATURES

- **Analog information is digitally transmitted to the control panel to provide:**
  - Automatic environmental compensation to accurately maintain sensor sensitivity
  - Variable sensitivity settings
  - Automatic daily sensor alarm simulation test
  - Selectable day/night operation mode
  - Automatic dirty and excessively dirty sensor indication

* MAPNET addressable communications is protected by U.S. Patent No. 4,796,025. TrueAlarm analog detection is protected by U.S. patent numbers 5,173,683 and 5,155,468.

** When configuring modules for use in a 4120 Network, substitute prefix 4120 for 4100.



Simplex 4100 Series Fire Alarm Control Panel with MAPNET II Devices

DESCRIPTION

Model 4100-0110 addressable modules communicate with remote addressable devices to provide initiation, notification, and control. Operating over a two wire MAPNET II circuit, individual initiating devices such as smoke and heat sensors, manual fire alarm stations, and sprinkler flow switch contacts can communicate their identity and status.

Individual addressability allows the location and the condition of each device to be displayed on the 4100 control panel and on system annunciators. Additionally, notification appliance circuits (horns, bells, strobes, etc.) as well as other control circuits (fans, dampers, etc.) may also be individually controlled. Up to a combined total of 127 addressable monitor and control devices may be intermixed on the same common pair of wires.

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DESCRIPTION, *Continued*

Multiple 4100-0110 modules may be installed to accommodate a system capacity of up to 1000 addressable devices (control panel dependent).

MAPNET II operation continuously interrogates each addressable device on its communication channel for status changes. Two-way data communication are supported over a multi-drop, “T-tapped” pair of wires for any combination of up to 127 monitor and control points. The digital poll/response techniques used ensure high supervision integrity and will report alarm and trouble conditions to the control panel.

Wiring. Using a twisted, shielded #18 AWG wire pair, a maximum of 10,000 ft (3 km) of all connected lines may be run from each 4100-0110 module, provided that the maximum distance from the module to any addressable device is no more than 2500 ft (762 m).

Retrofit Wiring. Due to its inherent noise immunity, many retrofit applications using unshielded wire can support MAPNET II communications. Retrofit using existing wiring will typically reduce installation cost and expedite the project. (Refer to Simplex field wiring specification 900-082 for additional information.)

TrueAlarm SYSTEM OPERATION

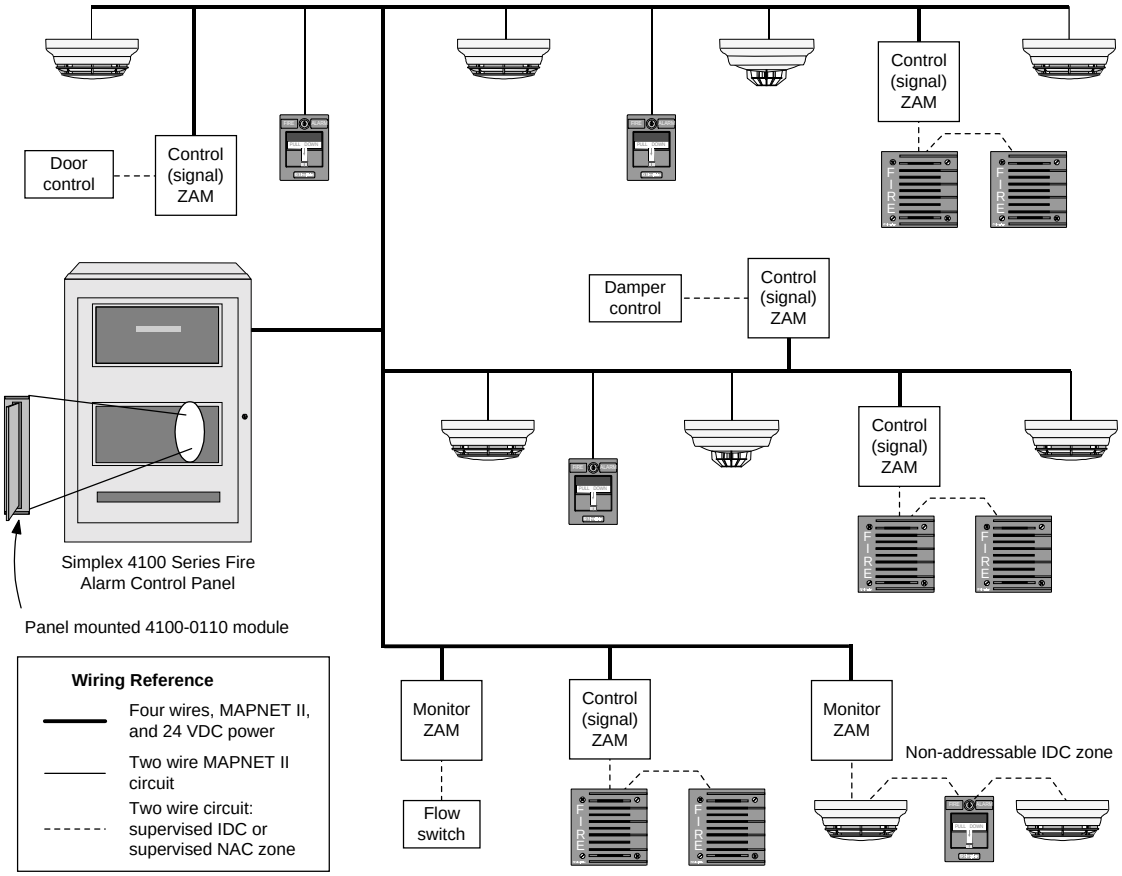
MAPNET II can also communicate with TrueAlarm analog smoke and temperature sensors. Every four seconds, smoke sensors transmit an output value based on their smoke chamber condition.

The control panel maintains a current value, peak value, and an average value of each sensor's output. Status is determined by comparing the current sensor value to its average value.

Tracking this average value as a continuously shifting reference point filters out environmental factors that cause shifts in sensitivity.

Programmable Sensitivity. The sensitivity of each sensor can be field programmed at the control panel for different levels of smoke obscuration (in percent). Sensor sensitivity can be individually varied automatically by time of day, typically more sensitive at night and less sensitive during daytime hours. In order to evaluate whether the sensitivity should be revised, the peak value that is stored in memory can be read and compared to the alarm threshold, directly in percent.

Diagnostics and Dual Stage Operation. TrueAlarm operation gives the control panel the ability to automatically indicate when a sensor is dirty and excessively dirty. The NFPA 72 requirement for a test of the sensitivity range of the sensors is fulfilled by the TrueAlarm ability to maintain the sensitivity level of each sensor. Additionally, a "two-stage" alarm operation can be programmed in the control panel. For example, a 1% smoke obscuration reading could cause a local indication allowing the building security staff to investigate, while a 3% obscuration report could immediately initiate a system alarm.



4100 Series Addressable System One-Line Drawing Example (Class B Wiring Shown)

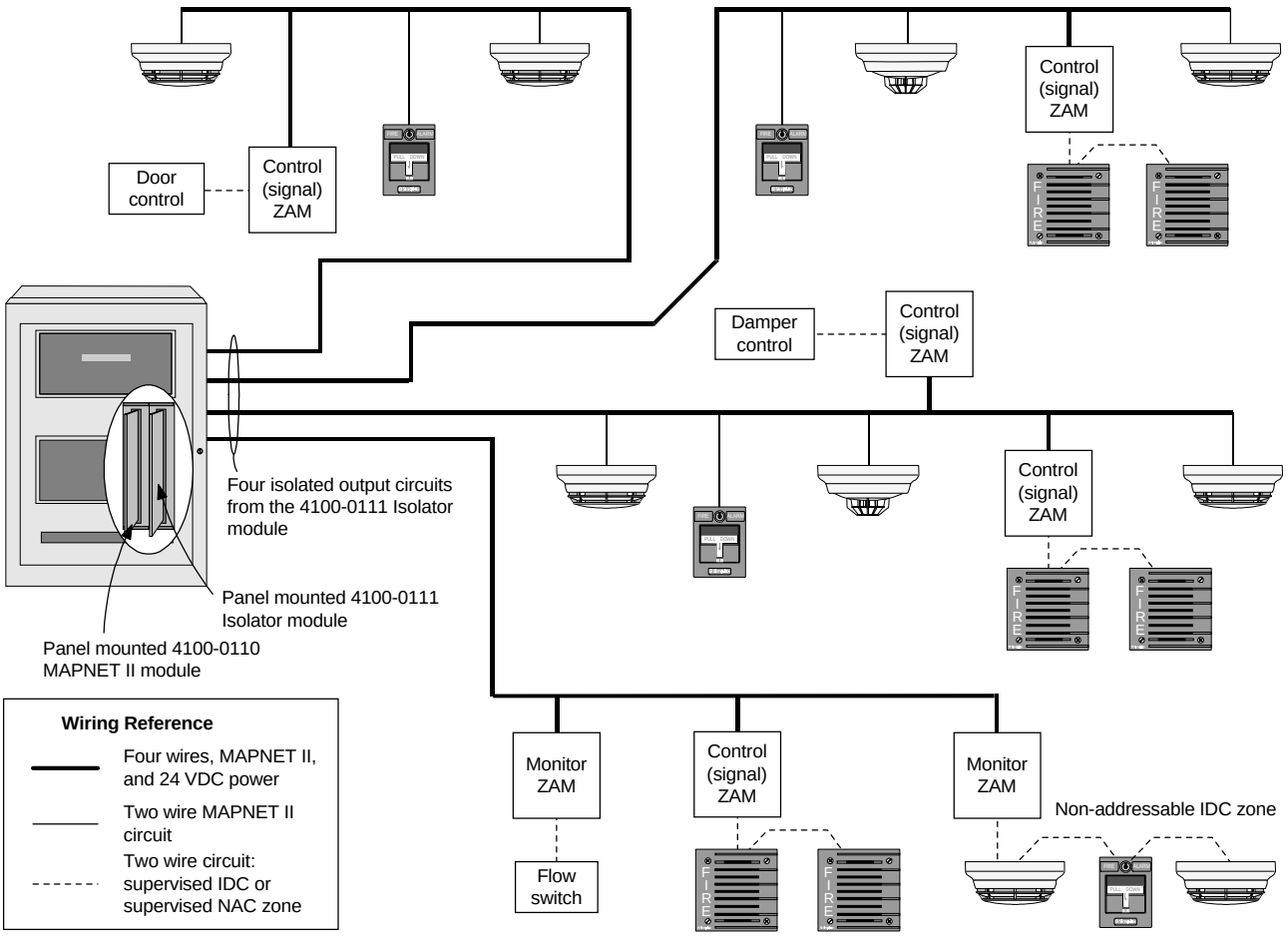
FEATURES

- **Connects to the MAPNET II output of a 4100-0110 module to provide:**
  - Four output circuits, short circuit isolated from each other
  - Up to 123 MAPNET II circuits that can be assigned as required to any or all of the four output circuits
  - (Four consecutive MAPNET II addresses are required to be assigned to the 4100-0111 for circuit identification)
- **Each output has an individual diagnostic fault indicator LED**
- **Each circuit can operate Class B (Style 4) or Class A (Style 6)**

DESCRIPTION

The 4100-0111 MAPNET II fault isolator module allows an addressable interface module to be wired with up to four isolated circuits of Class B or Class A operation. This provides isolation of a circuit with a shorted line without interfering with the MAPNET II communication to devices on the other circuits.

Operation involves continuously monitoring the shorted lines and automatically restoring normal communications when the shorted line condition has been corrected. The module also contains a trouble LED per circuit for ease in locating the faulty circuit. Each fault isolator module requires four consecutive MAPNET II device addresses to be dedicated for its operation to advise the control panel of the circuit fault location.



4100 Series Addressable System with the 4100-0111 Fault Isolator Module Connected to Four Circuits (Class B Wiring Shown)

MODEL 2190-9169/9170, MAPNET II LINE POWERED ISOLATORS

FEATURES

- **Isolates input from output in the event of a MAPNET II short circuit:**
  - Properly locating isolators allows the system to optimize operation by isolating shorted wiring
  - Control panel reporting of active and inactive devices assists in locating the fault
  - Initial system power-up frequently encounters short circuit wiring faults, using isolators can expedite system set-up
- **Available in two mounting styles:**
  - **Model 2190-9169** for surface mount (mounting plate is 4 5/16" [109 mm] square)
  - **Model 2190-9170** for flush mount (mounting plate is 4 3/4" [121 mm] square)
  - Mounts in standard 4" square electrical box, 2 1/8" minimum depth
- **Operating power is supplied by the MAPNET II communications lines** (see installation note 2)**:**
  - Up to four remote isolator modules may be connected without channel loading impact
- **Can be connected to the 4100-0111 panel mount isolator module for additional isolation**
- **Output terminal strip provides dual terminal connections for wiring convenience**

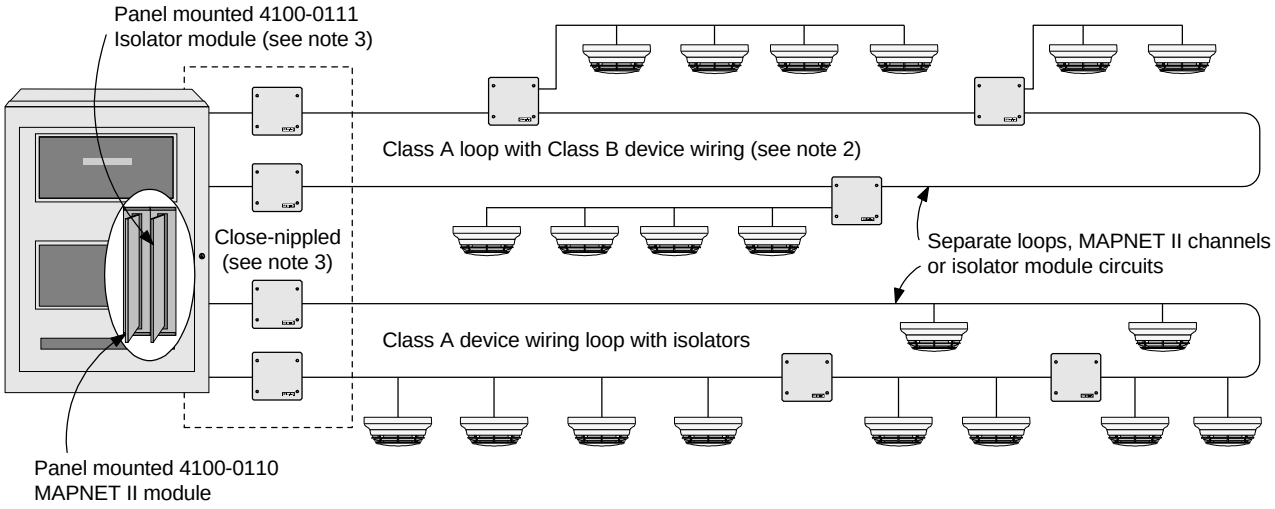
DESCRIPTION

Line powered isolator modules provide bi-directional short circuit protection for MAPNET II communication lines. When properly located, remotely mounted isolators can optimize communication integrity by creating device groups. Any group with short circuited wiring can be isolated, allowing communications to continue to the other groups.

These remote isolators are typically wired such that a Class A loop is available to feed Class B wiring runs, or connected as an entire Class A circuit.

INSTALLATION NOTES

1. **Loading requirements.** If more than four modules are used on a single MAPNET II channel, each additional isolator module reduces the channel loading capacity by six addresses (5 modules ⇒ 121 addresses, 6 modules ⇒ 115 addresses, 7 modules ⇒ 109 addresses, etc.)
2. Refer to installation instructions 574-674 for additional information.
3. Refer to MAPNET II distance and wiring requirements when applying line powered isolator modules.
4. Refer to diagram notes below for additional installation information.



Symbol Reference

2190-9169 or 2190-9170 Line powered isolator

Smoke sensor with base shown as typical of compatible MAPNET II devices.

NOTES:

1. For simplicity, only line powered isolators and smoke sensors are shown. Other MAPNET II devices are compatible with these wiring options.
2. Class A loop wiring with Class B device wiring is typical of a Class A riser supplying floor devices wired Class B.
3. These MAPNET II wiring examples can be wired to the panel mount isolator output or directly to the MAPNET II module output depending on application requirements. **If wired directly to the MAPNET II module output, locate the first and last isolator modules close-nippled (within 3 ft) of the control panel cabinet.**

MAPNET II Wiring Reference One-Line Diagram with Line Powered Isolator Modules

S4100-0002-8 6/98

Simplex

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