# Marriott Courtyard
# Portland, ME

## Fire Detection & Alarm System
## Area of Refuge Communication System
## Revision 1 Equipment Submittal
## 12/03/13

20 Thomas Drive
Westbrook, ME 04092-3824

| | |
|---|---|
| **Project:** | **Marriott Courtyard**<br>**Maple Street**<br>**Portland, ME 04101** |
| **Customer:** | **TRT Electric**<br>**65 Washington Street**<br>**Augusta, ME 04330** |
| **Date:** | **12/03/13** |
| **Contact:** | **John Hale** |

**ADDRESSABLE FIRE DETECTION & ALARM SYSTEM**
**AREA OF REFUGE COMMUNICATION SYSTEM**
**REVISION 1**
**EQUIPMENT SUBMITTAL**

Please contact the SimplexGrinnell Service Department **TWO WEEKS IN ADVANCE** to schedule a technician for checkout.

SimplexGrinnell District Contact Information:

Operations Coordinator: Wendy Hall

SimplexGrinnell
20 Thomas Drive
Westbrook, ME 04092

Sales: 207-842-6440
Service: 207-842-6440
Fax: 207-842-6439

Prepared by:

SimplexGrinnell
Engineering Support Services
50 Technology Drive
Westminster, MA 01441

Project Engineer: Steven C. Kalafarski
NICET # 77524, Level IV

**Submittal Approval:**

Approved By:_____ Date:_____

# MARRIOTT COURTYARD
# FIRE DETECTION & ALARM SYSTEM
# AREA OF REFUGE COMMUNICATION SYSTEM
# REVISION 1

**TABLE OF CONTENTS**


**Insert 1 Project Bill of Material (BOM)**

**Insert 2 Fire Alarm Control Equipment, Batteries & Accessories**
Simplex 4100ES Fire Control Panel and Accessories Data Sheet (S4100-0031)
Simplex 4100ES Fire Control Panels Cabinet Reference Data Sheet (S4100-0037)
Simplex 4009 NAC Extender Panel Data Sheet (S4009-0002)
Simplex Sealed Lead-Acid System Batteries Data Sheet (S2081-0006)
AES Wireless Fire Alarm Communicator Data Sheet (AES)
Space Age Document Storage Cabinet Data Sheet (LT10559)

**Insert 3 Area of Refuge System Equipment & Accessories**
Cornell Rescue Assistance System Data Sheet (D4200)
Cornell Power & Battery Back-up Data Sheet (B5243)

**Insert 4 Fire Alarm Initiating/Addressable Devices, & Accessories**
Simplex Addressable Manual Stations Data Sheet (S4099-0001)
Simplex Smoke, Heat Sensors & Bases Data Sheet (S4098-0019)
Simplex Sounder Base 4098-9794 Data Sheet (S4098-0028)
Simplex CO Sensor Bases Data Sheet (S4098-0041)
Simplex Addressable Duct Smoke Sensor Data Sheet (S4098-0030)
Simplex Individual Addressable Module (IAM) Data Sheet (S4090-0001)
Simplex Relay IAM Addressable Module Data Sheet (S4090-0002)
Air Products and Controls PAM-1 Relay Data Sheet (E060404)
Gentex Photoelectric Smoke Alarm Data Sheet
Gentex Photoelectric Smoke Alarm with Visual Signaling Appliance Data Sheet
Gentex Combination Photoelectric Smoke and Carbon Monoxide Alarm Data Sheet

**Insert 5 Notification Appliances & Accessories**
Simplex Non-Addressable Visible Notification Appliances Data Sheet (S4906-0001)
Simplex Non-Addressable Audible/Visible Notification Appliances Data Sheet (S4906-0002)
Simplex Temporal Code 4 Module Data Sheet (S4095-0006)

# INSERT 1

# PROJECT BILL OF MATERIAL

# REVISION 1 BILL OF MATERIAL
# MARRIOTT COURTYARD
# FIRE DETECTION & ALARM SYSTEM
# AREA OF REFUGE COMMUNICATION SYSTEM

| TAB | QTY | MODEL | DESCRIPTION |
|---|---|---|---|
| **FIRE ALARM CONTROL EQUIPMENT, BATTERIES & ACCESSORIES** | | | |
| 2 | 1 | 4100-9111 | 4100U CONFIG. DOMESTIC 120V |
| 2 | 1 | 4100-0632 | UTILITY BLOC, 16 TERMINALS |
| 2 | 1 | 4100-0634 | POWER DISTRIBUTION MODULE 120V |
| 2 | 8 | 4100-1279 | 2" BLANK DISPLAY MODULE |
| 2 | 1 | 4100-0650 | BATTERY SHELF - REQUIRED FOR 50AH BATTERIES |
| 2 | 1 | 4100-2300 | EXPANSION BAY (PHASE 10 ONLY) |
| 2 | 1 | 4100-2302 | 8 SLOT EXP BAY FILLER PANEL |
| 2 | 1 | 4100-3104 | IDNET MODULE, UP TO 127 POINTS |
| 2 | 1 | 4100-3206 | 8 RELAYS - 3 AMP |
| 2 | 1 | 4100-5101 | EXPANSION PWR SUPPLY (XPS) - 120VAC 60HZ |
| 2 | 1 | 4100-5115 | EXPANSION NAC MODULE - 3 NACS |
| 2 | 1 | 4100-6031 | CITY MODULE W/DISCONNECT |
| 2 | 1 | 4100-6038 | DUAL RS-232 IF CARD |
| 2 | 1 | 4100-6052 | EVENT REPORTING DACT |
| 2 | 1 | 4100-2153 | INDICATOR ONLY 3 BAY GLASS DOOR |
| 2 | 1 | 2975-9446 | 3 BAY BACK BOX W/GLASS DOOR PLAT |
| 2 | 2 | 2081-9296 | BATTERY, SYSTEM, 12VOLT, SEALED, LEAD ACID 50Ah |
| 2 | 5 | 4009-9201 | 4009 IDNET NAC EXTENDER, 120 VAC |
| 2 | 1 | 4009-9807 | NAC CARD, 4PT, IDNET |
| 2 | 10 | 2081-9272 | BATTERY, SYSTEM, 12VOLT, SEALED, LEAD ACID 6.2Ah |
| **AES CONTROL EQUIPMENT, BATTERIES & ACCESSORIES** | | | |
| 2 | 1 | 7788-F | AES RADIO MASTER BOX |
| 2 | 1 | BD7-12 | AES 12V 7AH BATTERY |
| 2 | 1 | 1640 | AES UL SUBSCRIBER TRANSFER |
| 2 | 1 | SG SWITCH | AES DISCONNECT SWITCH |
| 2 | 1 | ADI GSW TSW-01S | AES TAMPER SWITCH |
| 2 | 1 | SSU00685 | SPACE-AGE DOCUMENT STORAGE CABINET |

# REVISION 1 BILL OF MATERIAL
# MARRIOTT COURTYARD
# FIRE DETECTION & ALARM SYSTEM
# AREA OF REFUGE COMMUNICATION SYSTEM

| TAB | QTY | MODEL | DESCRIPTION |
|---|---|---|---|
| **AREA OF REFUGE SYSTEM EQUIPMENT & ACCESSORIES** | | | |
| 3 | 1 | A-4208 | RESCUE ASSISTANCE 8-ZONE AUDIO MASTER |
| 3 | 1 | BB-41 | RESCUE ASSISTANCE BACK BOX FOR A-4208 |
| 3 | 1 | B-5243A | RESCUE ASSISTANCE SYSTEM POWER SUPPLY |
| 3 | 6 | 4201B/V | RESCUE ASSISTANCE VANDAL PRF CALL STATION |
| **FIRE ALARM INITIATING/ADDRESSABLE DEVICES, DOOR HOLDERS & ACCESSORIES** | | | |
| 4 | 22 | 4099-9003 | IDNET DOUBLE ACTION PULL STATION |
| 4 | 206 | 4098-9714 | TRUEALARM PHOTO SMOKE SENSOR |
| 4 | 4 | 4098-9733 | TRUEALARM HEAT SENSOR |
| 4 | 58 | 4098-9792 | TRUEALARM SENSOR BASE |
| 4 | 135 | 4098-9794 | TRUEALARM SENSOR SOUNDER BASE |
| 4 | 17 | 4098-9798 | SSD SENSOR BASE WITH CO MODULE/SOUNDER |
| 4 | 19 | 4098-9756 | TRUEALARM DUCT SMOKE SENSOR W/ RELAY OUTPUT |
| 4 | 19 | 4098-9857 | SAMPLING TUBE, 73" |
| 4 | 19 | 2098-9806 | REMOTE TEST STATION W/ LED AND KEY SWITCH |
| 4 | 56 | 4090-9001 | IDNET SUPERVISED IAM |
| 4 | 56 | 4090-9810 | 4090-9001 IAM SINGLE GANG BOX MOUNTING BRACKET |
| 4 | 56 | 4090-9806 | SEMI-FLUSH MNT SINGLE GANG BOX COVER PLATE W/LITE PIPE |
| 4 | 16 | 4090-9002 | IDNET RELAY IAM |
| 4 | 16 | 4090-9801 | SEMI-FLUSH MNT DOUBLE GANG BOX COVER PLATE W/LITE PIPE |
| 4 | 4 | PAM-1 | ENCAPSULATED RELAY PAM-1 |
| 4 | 22 | 9123 | PHOTOELECTRIC SMOKE ALARM |
| 4 | 1 | 7109CS-C | PHOTOELECTRIC SMOKE ALARM WITH VISUAL SIGNALING |
| 4 | 14 | GN-503 | COMBINATION PHOTOELECTRIC SMOKE AND CARBON MONOXIDE |
| **FIRE ALARM NOTIFICATION APPLIANCES & ACCESSORIES** | | | |
| 5 | 33 | 4906-9101 | V/O M-C NON-ADDRESS, RED, WALL |
| 5 | 98 | 4906-9127 | A/V M-C NON-ADDRESS, RED, WALL |
| 5 | 2 | 4905-9835 | TEMPORAL CODE 4 MODULE FOR CO GAS ALARM |

# INSERT 2

# FIRE ALARM CONTROL EQUIPMENT, BATTERIES & ACCESSORIES

# Simplex

# 4100ES Fire Control Panels

*UL, ULC, CSFM Listed; FM Approved;*
*MEA (NYC) Acceptance**

Addressable Fire Detection and Control
Basic Panel Modules and Accessories

## Features

**Master Controller (top) bay:**

- 32-Bit Master Controller with color-coded operator interface including raised switches for high confidence feedback
- Dual configuration program CPU, convenient service port access, and capacity for up to 2500 addressable points
- CPU assembly includes 2 GB dedicated compact flash memory for on-site system programming and information storage
- System power supply (SPS) and charger (9 A total) with on-board: NACs, IDNet addressable device interface, programmable auxiliary output and alarm relay
- Available with InfoAlarm Command Center expanded content user interface (see data sheet S4100-0045)
- Upgrade kits are available for existing control panels

**Standard addressable interfaces include:**

- IDNet addressable device interface with 250 points that support TrueAlarm analog sensing and operate with *either shielded or unshielded* twisted pair wiring
- Remote annunciator module support via RUI (remote unit interface) communications port

**Optional modules include:**

- Building Network Interface Module (BNIC) for Ethernet connectivity options (see data sheet S4100-0061)
- Additional IDNet and MAPNET II addressable device modules and IDNet/MAPNET II quad isolator modules
- IDNet+ output module with built-in quad isolator and enhanced operation for better retrofit to existing wiring (see data sheet S4100-0046)
- Fire Alarm Network Interfaces, DACTs, city connections, and up to five (5) RS-232 ports for printers and terminals
- IP communicator compatibility
- Alarm relays, auxiliary relays, additional power supplies, IDC modules, NAC expansion modules
- Service modems, VESDA Air Aspiration Systems interface, ASHRAE BACnet Interface, TCP/IP Bridges
- LED/switch modules and panel mount printers
- Emergency communications systems (ECS) equipment; 8 channel digital audio or 2 channel analog audio
- Battery brackets for seismic area protection (see page 2)

**Compatible with Simplex® remotely located 4009 IDNet NAC Extenders, up to ten per IDNet SLC**

**4100ES and upgrade kits are UL Listed to:**

- UL Std. 864, Fire Detection and Control (UOJZ), and Smoke Control Service (UUKL)
- UL Std. 2017, Process Management Equipment (QVAX)
- UL Std. 1076, Proprietary Alarm Units-Burglar (APOU)
- UL Std. 1730, Smoke Detector Monitor (UULH)
- ULC Std. S527-99

4100ES Cabinets are Available with
One, Two or Three Bays

## Software Feature Summary

**CPU provides dual configuration programs:**

- Two programs allow for optimal system protection and commissioning efficiency with one active program and one reserve
- Downtime is reduced because the system stays running during download

**PC based programmer features:**

- Convenient front panel accessed Ethernet port for quick and easy ***download*** of site-specific programming
- Modifications can be ***uploaded*** as well as downloaded for greater service flexibility
- ***AND***, firmware enhancements are made via software downloads to the on-board flash memory

## Introduction

**4100ES Series Fire Detection and Control Panels** provide extensive installation, operator, and service features with point and module capacities suitable for a wide range of system applications. An on-board Ethernet port provides fast external system communications to expedite installation and service activity. Dedicated compact flash memory archiving provides secure on-site system information storage of electronic job configuration files to meet NFPA 72 (*National Fire Alarm and Signaling Code*) requirements.

**Modular design.** A wide variety of functional modules are available to meet specific system requirements. Selections allow panels to be configured for either Stand-Alone or Networked fire control operation. InfoAlarm Command Center options provide convenient expanded display content (detailed on data sheet S4100-0045).

* See pages 5 and 6 for product that is UL or ULC listed and additional listing information. This product has been listed by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7165-0026:251(4100ES) for allowable values and/or conditions concerning material presented in this document. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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.

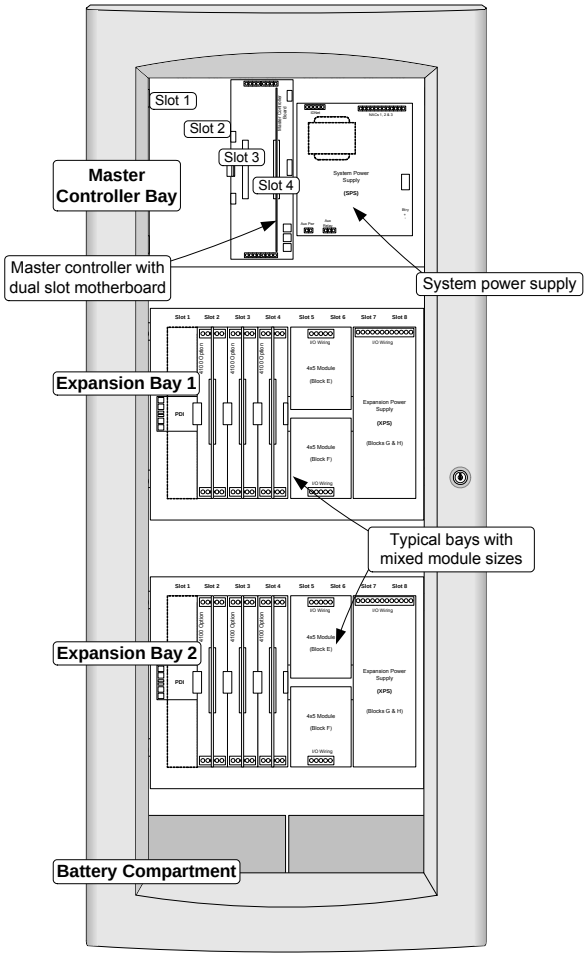
## Module Bay Description

**The Master Controller Bay** (top) includes a standard multi-featured system power supply, the master controller board, and operator interface equipment.

**The Expansion Bays** include a Power Distribution Interface (PDI) for new 4" x 5" flat design option modules and also accommodate 4100-style modules.

**The Battery Compartment** (bottom) accepts two batteries, up to 50 Ah, to be mounted within the cabinet without interfering with module space.

The following illustration identifies bay locations using a three bay cabinet for reference.




4100ES Module Bay Reference

## Mechanical Description

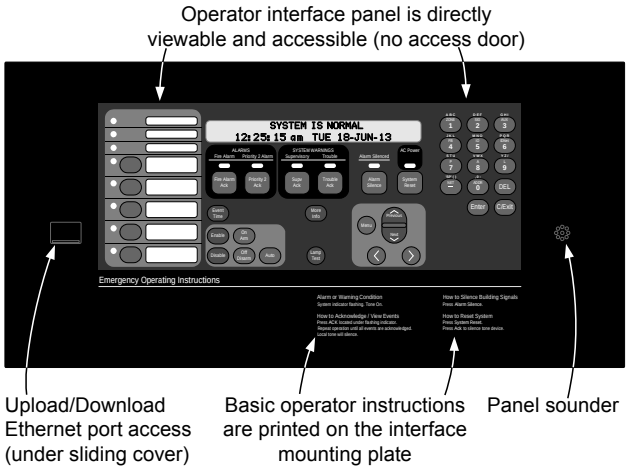
- Boxes can be close-nippled; each box provides convenient stud markers for drywall thickness and nail-hole knockouts for quicker mounting
- Smooth box surfaces are provided for locally cutting conduit entrance holes exactly where required
- Cabinet assembly design has been seismic tested and is certified to IBC and CBC standards as well as to ASCE 7-05 category D, requires 33 Ah or 50 Ah batteries with battery brackets as detailed on data sheet S2081-0019

## Mechanical Description *(Continued)*

- The latching dress panel (retainer) assembly easily lifts off for internal access
- NACs are mounted directly on power supply assemblies providing minimized wiring loss, compact size, and readily accessible terminations
- Packaging supports traditional 4100-style motherboard with daughter cards
- Modules are power-limited (except as noted, such as relay modules)
- The NEMA 1 box is ordered separately and available for early installation
- Doors are available with tempered glass inserts or solid; boxes and doors are available in platinum or red
- Boxes and door/retainer assemblies are ordered separately per system requirements; refer to data sheet S4100-0037 for details

## Operator Interface Detail Reference

The following illustration identifies the primary functions of the operator interface.




## Software Feature Summary

- TrueAlarm individual analog sensing with front panel information and selection access
- "Dirty" TrueAlarm sensor maintenance alerts, service and status reports including "almost dirty"
- TrueAlarm magnet test indication appears as distinct "test abnormal" message on display when in test mode
- TrueAlarm sensor peak value performance report
- ***"Install Mode"*** allows grouping of multiple troubles for uninstalled modules and devices into a single trouble condition (typical with future phased expansion); with future equipment and devices grouped into a single trouble, operators can more clearly identify events from the commissioned and occupied areas
- Module level ground fault searching assists installation and service by locating and isolating modules with grounded wiring
- ***"Recurring Trouble Filtering"*** allows the panel to recognize, process, and log recurring intermittent troubles (such as external wiring ground faults), but only sends a single outbound system trouble to avoid nuisance communications
- WALKTEST silent or audible system test performs an automatic self-resetting test cycle

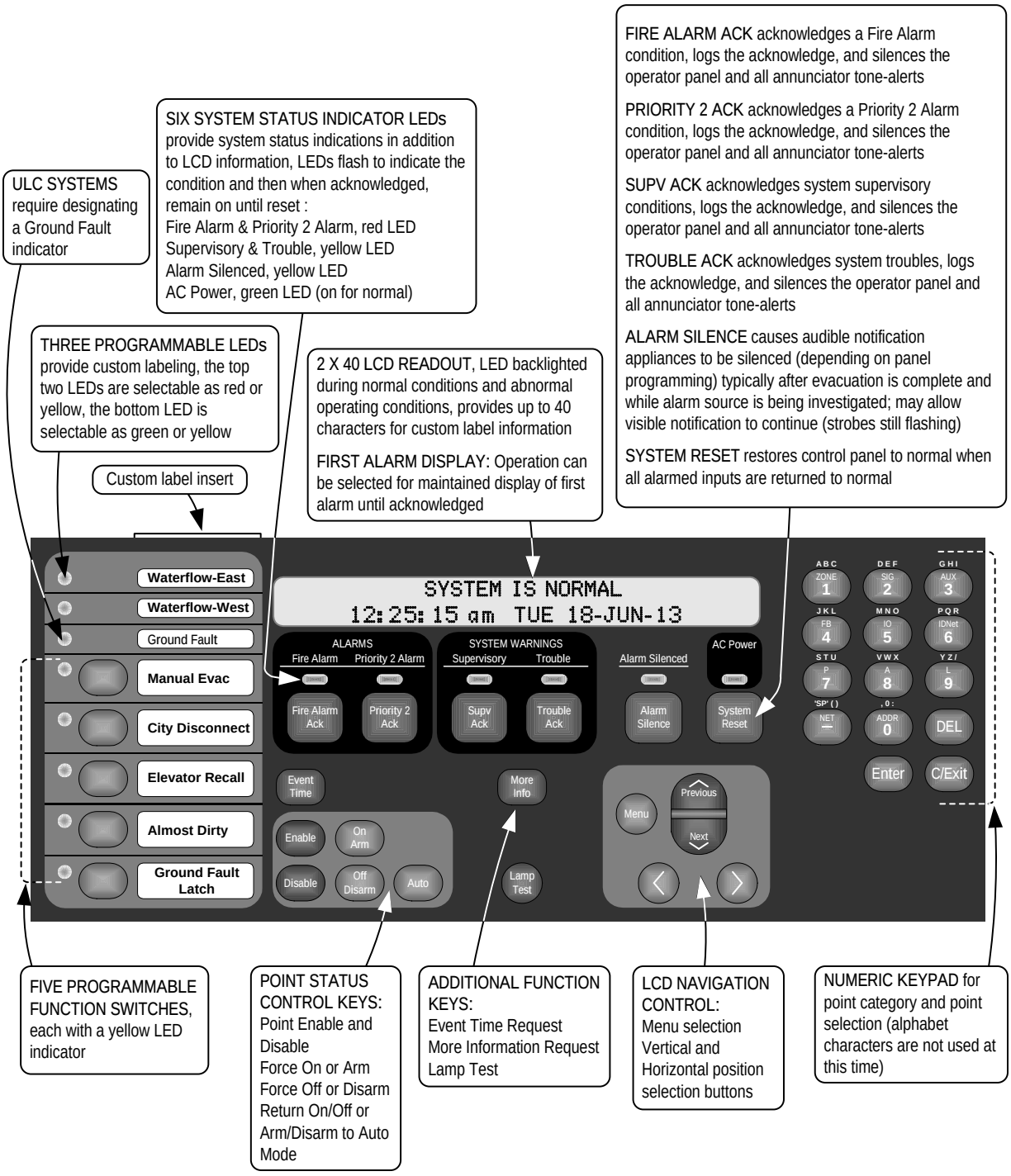
## Operator Interface

**Convenient Status Information.** With the locking door closed, the glass window allows viewing of the display, status LEDs, and available operator switches. Features include a two-line by 40-character, wide viewing angle (super-twist) LCD with status LEDs and switches as shown in the illustration below.

LED indicators describe the general category of activity being displayed with the LCD providing more detail. For the authorized user, unlocking the door provides access to the control switches and allows further inquiry by scrolling the display for additional detail.

## Operator Interface Features

- Convenient and extensive operator information is provided using a logical, menu-driven display
- Multiple automatic and manual diagnostics for maintenance reduction
- Alarm and Trouble History Logs (up to 1250 entries for each, 2500 total events) are available for viewing from the LCD, or capable of being printed to a connected printer, or downloaded to a service computer
- Convenient PC programmer label editing
- Password access control



## Compatible Peripheral Devices

The 4100ES is compatible with an extensive list of remote peripheral devices including printers, CRT/keyboards (up to five total), and both conventional and addressable devices including TrueAlarm analog sensors.

## Addressable Device Control

**Overview.** The 4100ES provides standard addressable device communications for IDNet compatible devices and accepts optional modules for communications with MAPNET II compatible devices. Using a two wire communications circuit, individual devices such as manual fire alarm stations, TrueAlarm sensors, conventional IDC zones, and sprinkler waterflow switches can be interfaced to the addressable controller to communicate their identity and status.

Addressability allows the location and condition of the connected device to be displayed on the operator interface LCD and on remote system annunciators. Additionally, control circuits (fans, dampers, etc.) may be individually controlled and monitored with addressable devices.

**Addressable Operation.** Each addressable device on the communication channel is continuously interrogated for status condition such as: normal, off-normal, alarm, supervisory, or trouble. Both Class B and Class A operation are available. Sophisticated poll and response communication techniques ensure supervision integrity and allow for "T-tapping" of the circuit for Class B operation. Devices with LEDs pulse the LED to indicate receipt of a communications poll and can be turned on steady from the panel.

**IDNet Channel Capacity.** The CPU bay system power supply (SPS) provides an IDNet signaling line circuit (SLC) that supports up to 250 addressable monitor and control points intermixed on the same pair of wires. Additional IDNet circuit modules are available for 64, 127, or 250 addressable devices.

**IDNet/MAPNET II Communications wiring specifications.** Distances are for shielded or unshielded wire. Shielded wire may provide protection from unexpected sources of interference.

**Wiring Specifications**

| | | |
|---|---|---|
| Size | | 18 AWG (0.82 mm$^2$ ) |
| Type | Preferred | Shielded twisted pair (STP) |
| | Acceptable* | Unshielded twisted pair (UTP) |
| Farthest Distance from Control Panel per Device load | 126-250 | Up to 2500 feet (762 m) |
| | up to 125 | Up to 4000 ft (1219 m) |
| Total Wire Length Allowed With “T” Taps for Class B Wiring | | Up to 10,000 ft (3 km); 0.58 µF |

* Some applications may require shielded wiring. Review your system with your local Simplex product supplier.

## True*Alarm* System Operation

Addressable device communications include operation of TrueAlarm smoke and temperature sensors. Smoke sensors transmit an output value based on their smoke chamber condition and the CPU maintains a current value, peak value, and an average value for each sensor. 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** of each sensor can be selected at the control panel for different levels of smoke obscuration (shown directly in percent) or for specific heat detection levels. To evaluate whether the sensitivity should be revised, the peak value is stored in memory and can be easily read and compared to the alarm threshold directly in percent.

**CO sensor bases** combine an electrolytic CO sensing module with a TrueAlarm analog sensor to provide a single multiple sensing assembly using one system address. The CO sensor can be enabled/disabled, used in LED/Switch modes and custom control, and can be made public for communication across a fire alarm Network. (refer to data sheet S4098-0041 for details)

**TrueAlarm heat sensors** can be selected for fixed temperature detection, with or without rate-of-rise detection. Utility temperature sensing is also available, typically to provide freeze warnings or alert to HVAC system problems. Readings can selected as either Fahrenheit or Celsius.

**TrueSense Early Fire Detection.** Multi-sensor 4098-9754 provides photoelectric and heat sensor data using a single 4100ES IDNet address. The panel evaluates smoke activity, heat activity, ***and their combination***, to provide TrueSense early detection. For more details on this operation, refer to data sheet S4098-0024.

## Diagnostics and Default Device Type

**Sensor Status.** TrueAlarm operation allows the control panel to automatically indicate when a sensor is almost dirty, dirty, and excessively dirty. The NFPA 72 requirement for a test of the sensitivity range of the sensors is fulfilled by the ability of TrueAlarm operation to maintain the sensitivity level of each sensor. CO Sensors track their 5 year active life status providing indicators to assist with service planning. Indicators occur at: 1 year, 6 months, and when end of life is reached.

**Modular TrueAlarm sensors** use the same base and different sensor types (smoke or heat sensor) and can be easily interchanged to meet specific location requirements. This allows intentional sensor substitution during building construction when conditions are temporarily dusty. Instead of covering smoke sensors (causing them to be disabled), heat sensors may be installed without reprogramming the control panel. The control panel will indicate an incorrect sensor type, but the heat sensor will operate at a default sensitivity to provide heat detection for building protection at that location.

## CPU Bay Module Details

### Master Controller and Motherboard:

- Mounts in Slot 4 of a two slot motherboard (Slots 3 and 4 of the Master Controller Bay) and provides one Style 4 or Style 7, RUI communications channel, available at Slot 4
- RUI communications controls up to 31 devices per master controller (on one or multiple RUI channels); devices include: MINIPLEX transponders, 4603-9101 LCD Annunciators, 4602-9101 Status Command Units (SCU), 4602-9102 Remote Command Units (RCU), 4602 Series LED Annunciator Panels, and 4100 Series 24 I/O and LED/Switch modules
- Up to four RUI channels are supported; use up to three 4100-1291 RUI expansion modules as required
- Optional Service Modem 4100-6030 mounts onto the master controller board with its own on-board connections
- Slot 3 of the motherboard is primarily for the 4100-6078 Network Interface Board with media modules, and secondarily for the 4100-6038 Dual RS-232 Board (4100-6038 is required for 2120 System connections)

### System Power Supply: (see page 8 for more detail)

- Rating is 9 A total with "Special Application" appliances; 4 A total for "Regulated 24 DC" appliance power
- Outputs are power-limited, except for the battery charger
- Provides system power, battery charging, auxiliary power, auxiliary relay, earth detection, on-board IDNet communications channel for 250 points, three on-board NACs, and provisions for either an optional City Connect Module or an optional Alarm Relay Module
- **IDNet SLC Output** provides Class B or Class A communications for up to 250 addressable devices (as described on page 4)

### System Power Supply *(Continued)*:

- **Three, 3 A On-Board NACs**, conventional reverse polarity operation; rated 3 A for Special Application appliances and 2 A for Regulated 24 DC power, with electronic control and overcurrent protection; selectable as Class B or Class A, and for synchronized strobe or SmartSync horn/strobe operation over two wires
- **NACs can be selected** as auxiliary power outputs derated to 2 A for continuous duty; the total auxiliary power output per SPS is limited to 5 A
- **Battery Charger** is dual rate, temperature compensated, and charges up to 50 Ah sealed lead-acid batteries mounted in the battery compartment (33 Ah for single bay cabinets); also is UL listed for charging up to 110 Ah batteries mounted in an external cabinet (see data sheet S2081-0012 for details)
- **Battery and Charger Monitoring** includes battery charger status and low or depleted battery conditions; status information provided to the master controller includes analog values for: battery voltage, charger voltage and current, actual system voltage and current, and individual NAC currents
- **2 A Auxiliary Power Output** is selectable for detector reset, door holder, or coded output operation
- **Auxiliary Relay** is selectable as N.O. or N.C., rated 2 A @ 32 VDC, and is programmable as a trouble relay, either normally energized or normally de-energized, or as an auxiliary control
- **Optional City Connect Module** (4100-6031, with disconnect switches, or 4100-6032, without disconnect switches) can be selected for conventional dual circuit city connections
- **Optional Alarm Relay Module** (4100-6033) provides three Form C relays that are used for Alarm, Trouble, and Supervisory, rated 2 A resistive @ 32 VDC

## Master Controller Selection Information

**Master Controller and Expansion Bay Selection*** (Canadian models have low battery cutout)

| Model | Model Type and Listing | | | Description | Supv. | Alarm |
|---|---|---|---|---|---|---|
| 4100-9111 | 120 VAC Input | | UL | 4100ES Master Controller Assembly **with LCD and operator interface**, 9 A system power supply/battery charger (SPS), 250 point IDNet interface, 3 NACs, auxiliary relay, and external RUI communications interface | 373 mA | 470 mA |
| 4100-9112 | English | 120 VAC, Canadian | ULC | | | |
| 4100-9113 | French | | | | | |
| 4100-9211 | 220-240 VAC Input | | UL | | | |
| 4100-9131 | 120 VAC Input | | UL | 4100ES Master Controller Assembly, **no display, no operator interface**, 9 A system power supply/battery charger (SPS), 250 point IDNet interface, 3 NACs, auxiliary relay, and external RUI communications interface | 363 mA | 425 mA |
| 4100-9132 | English | 120 VAC, Canadian | ULC | | | |
| 4100-9230 | 220-240 VAC Input | | UL | | | |
| 4100-9121 (not ULC listed) | Redundant Master Controller, two bay assembly; top bay contains LCD and operator interface, CPU card assembly, and 4100ES, 9 A system power supply/battery charger (SPS); second bay contains CPU card in Slot 2, and LCD and operator interface; 120 VAC, 60 Hz input; **NOTE: RUI connections require use of 4100-1291 RUI expansion modules** | | | | 718 mA | 937 mA |
| 4100-2300 | Expansion Bay Assembly; **order for each required expansion bay** (not required for 4100-9121) | | | | | |
| 4100-2303 | Legacy Module Stabilizer Bracket, used when expansion bays have legacy slot style modules | | | | | |

**Master Controller Upgrades for Existing 4100 Series Fire Alarm Control Panels***

| Model | Panel Type | Includes |
|---|---|---|
| 4100-7150 | 1000 pt 4100 (4100+) | New Master Controller and 4100ES user interface door assembly with Ethernet connection |
| 4100-7152 | 512 pt 4100 | Same as 4100-7150 plus includes a Universal Power Supply |
| 4100-7158 | 1000 pt 4100 (4100+) or 4100U | New Master Controller with Ethernet Connection Upgrade Kit; for 4100+ **without** LCD and operator interface, or 4100U **with or without** LCD and operator interface |
| 4100-2301 | Expansion Bay Upgrade Kit for mounting 4100ES style (4" x 5" modules) in existing 4100 style panels; **Note:** When using this kit to upgrade a 4100+ transponder, a **4100-0620 Transponder Interface Card (TIC)** is also required for communications to the 4100ES module | |

* For InfoAlarm Command Center expanded content display products, refer to data sheet S4100-0045. (*Continued on next page)*

## Module Selection Information

### Master Controller Upgrades for Existing 4020 Series Fire Alarm Control Panel

| Model | Description |
|---|---|
| 4100-9833 | 4020 Master Controller Upgrade to 4100ES; Includes New Master Controller with LCD & operator interface assembly, 8 VDC Converter and RUI Interface in a single bay cabinet with locking glass door and retainer; mounts as an adjunct panel close-nippled to existing 4020 cabinet; also includes 8 VDC box-to-box power and communications harness and solid filler panel for the existing 4020 Master Controller bay |

### Communication Modules

| Model | Description | | Size | Supv. | Alarm |
|---|---|---|---|---|---|
| 4100-6078 | For Master Controller; mounts in Slot 3 | Modular Network Interface; each requires two media modules (below) | 1 Slot | 46 mA | 46 mA |
| 4100-6061 | For Redundant Master Controller | | 1 Slot | 46 mA | 46 mA |
| 4100-6056 | Wired Media Module | Select two media cards as required; mounts on 4100-6078 or 4100-6061 | N.A. | 55 mA | 55 mA |
| 4100-6057 | Fiber Optic Media Module | | N.A. | 25 mA | 25 mA |
| 4100-6047 | Building Network Interface Card (BNIC), refer to data sheet S4100-0061 for details | | 2 Blocks | 291 mA | 291 mA |
| 4100-6055 | Network Access Dial-in Service Modem, mounts to 4100-6078 or 4100-6061 Network Interface Card, requires telephone line connection | | N.A. | 60 mA | 60 mA |
| 4100-1291 | Remote Unit Interface Module (RUI); up to three maximum per control panel | | 1 Slot | 85 mA | 85 mA |
| 4100-6030 | Service Port Modem, local panel access only, mounts to Master Controller Module, requires telephone line connection, accesses same information as front panel port | | N.A. | 70 mA | 70 mA |
| 4100-6031 | **Select one per SPS** (fits on SPS) | City Circuit, with disconnect switches; For use with SPS only, not RPS | N.A. | 20 mA | 36 mA |
| 4100-6032 | | City Circuit, w/o disconnect switches; For use with SPS only, not RPS | N.A. | 20 mA | 36 mA |
| 4100-6033 | | Alarm Relay, 3 Form C relays, 2 A @ 32 VDC; for SPS or RPS | N.A. | 15 mA | 37 mA |
| 4100-6101 | Physical Bridge, Class B, includes 1 modem module and 2 wired modules | | 1 Slot | 210 mA | 210 mA |
| 4100-6102 | Physical Bridge, Class X, includes 2 modem and 2 wired modules | | 2 Slots | 300 mA | 300 mA |
| 4100-6038 | Dual Port RS-232 with 2120 interface (slot module) | 3 maximum of RS-232 type modules per panel | 1 Slot | 132 mA | 132 mA |
| 4100-6046 | Dual Port RS-232 standard interface (4 x 5 module) | | 1 Block | 60 mA | 60 mA |
| 4100-6045 | Decoder Module | | 3 Slots | 85 mA | 163 mA |
| 4100-6048 | VESDA Aspiration System Interface | | 1 Slot | 132 mA | 132 mA |
| 4100-6052 | DACT, Point or Event Reporting; 1 shipped unless 4100-7908 is selected; 2 max. per system; includes 2, 2080-9047 cables, 14 ft (4.3 m) long, RJ45 plug and spade lugs | | 1 Slot | 30 mA | 40 mA |

### Expansion, System and Remote Power Supplies and Accessories (Canadian models have low battery cutout)

| Model | Voltage/Listing | | Description | Size | Supv. | Alarm |
|---|---|---|---|---|---|---|
| 4100-5101 | 120 VAC | UL | **Expansion Power Supply (XPS)**; 9 A output, 3 built-in Class A/B NACs; NAC operation is same as SPS, see page 5 for details | 2 Blocks | 50 mA | 50 mA |
| 4100-5103 | 120 VAC, Canadian | ULC | | | | |
| 4100-5102 | 220-240 VAC | UL | | | | |
| 4100-5115 | NAC Expansion Module, 3 NACs, Class A/B, **mounts on XPS only** | | | N.A. | 25 mA | 25 mA |
| 4100-5111 | 120 VAC | UL | **Additional System Power Supply (SPS)**; 9 A power supply/charger with 250 point IDNet channel, 3 Class A/B NACs, add IDNet device currents separately | 4 Blocks | 175 mA | 185 mA |
| 4100-5112 | 120 VAC, Canadian | ULC | | | | |
| 4100-5113 | 220-240 VAC | UL | | | | |
| 4100-5125 | 120 VAC | UL | **Remote Power Supply (RPS)**; 9 A power supply/charger similar to SPS except no IDNet channel or City Circuits; will accept one 4100-6033 | 4 Blocks | 150 mA | 185 mA |
| 4100-5126 | 120 VAC, Canadian | ULC | | | | |
| 4100-5127 | 220-240 VAC | UL | | | | |
| 4100-5152 | 12 VDC Power Option, 2 A maximum | | | 1 Block | 1.5 A maximum | |
| 4100-0156 | 8 VDC Converter, required for multiple Physical Bridge Modules, 3 A maximum | | | 1 Block | included w/loads | |
| 4100-0636 | Box Interconnection Harness Kit (non-audio); **order one for each close-nippled cabinet** | | | | | |
| 4100-0638 | 4100 Slot Module Additional 24 VDC Harness; **need when 4100 Slot module requirements exceed 2 A from SPS** | | | | | |

### 8 Zone Initiating Device Circuits*

| Model | Type | Supv. | Alarm |
|---|---|---|---|
| 4100-5005 | Class B | 75 mA | 195 mA |
| 4100-5015 | Class A | 75 mA | 195 mA |

* IDC Modules are 1 Slot size

### Expansion Signal Module and Options (1.5 A Class B except as noted)

| Model | Description | | Supv. | Alarm |
|---|---|---|---|---|
| 4100-5116 | Converts 1 NAC in to 3 NACs out; 1 Block size | | 18 mA | 80 mA |
| 4100-1266 | Expands 3 NACs to 6 | select one; mounts on 4100-5116 | 0.6 mA | 60 mA |
| 4100-1267 | Converts 3 NACs to Class A | | 0.6 mA | 30 mA |

*Continued on next page*

## Module Selection Information *(Continued)*

### Miscellaneous Accessories

| Model | Description |
|---|---|
| 4100-1279 | Single blank 2” display cover; **4100-2302** provides a single plate for a full bay |
| 4100-9856* | 4100ES Canadian French Appliqué Kit; Simplex, 4100ES, Controle Incendie |
| 4100-9857* | 4100ES English Appliqué Kit; Simplex, 4100ES, Fire Control |
| 4100-9858* | 4100ES InfoAlarm Remote Display English Appliqué Kit; Simplex, Operator Interface, 4100ES |
| 4100-9859* | 4100ES InfoAlarm Remote Display Canadian French Appliqué Kit; Simplex, Interface de l’operateur, 4100ES |
| 4100-9835 | Termination and Address Label Kit (for module marking); provides additional labels for field installed modules |
| 4100-6029 | Smoke Management Application Guide; **required for UUKL listing** |
| 4100-6034 | Tamper Switch, one per cabinet assembly if required; monitors solid door for panels with solid door; monitors the internal retainer panel for panels with glass door (not the glass door); has a built-in addressable IDNet IAM |
| 2081-9031 | Series resistor for WSO, IDCs (N.O. water flow and tamper on same circuit, wires after water flow and before tamper) 470 Ω, 1 W, encapsulated, two 18 AWG leads (0.82 $mm^2$ ), 2-1/2” L x 1-3/8” W x 1” H (64 mm x 35 mm x 25 mm) |

*** Note:** 4100ES **English** Appliqués are included with 4100ES Upgrade and Retrofit Kits for mounting 4100ES in 4100, 2120, 2001, and Autocall back boxes so that upgrades can be easily identified as 4100ES. 4100ES Appliqué Kits are available for applications such as to update Remote InfoAlarm Displays connected to a panel that was upgraded to 4100ES or for an existing 4100U when the New Master Controller is upgraded to 4100ES and only a software upgrade is required. **When required, French appliqués are ordered separately.**

### Addressable Interface Modules (refer to location reference on pages 8 and 9)

| Model | Description | | Supv. | Alarm |
|---|---|---|---|---|
| 4100-3101 | IDNet Module, 250 point capacity | With 250 IDNet devices, add | 200 mA | 250 mA |
| 4100-3104 | IDNet Module, 127 point capacity | With 127 IDNet devices, add | 102 mA | 127 mA |
| 4100-3105 | IDNet Module, 64 point capacity | With 64 IDNet devices, add | 51 mA | 64 mA |
| **IDNet Modules, Specifications for each capacity;** Module size = 1 Block | | Module without devices | 75 mA | 115 mA |
| | | Loading per IDNet device | 0.8 mA | 1 mA |

| Model | Description | | Supv. | Alarm |
|---|---|---|---|---|
| 4100-3102 | MAPNET II Module, 127 point capacity, add devices separately; Module size = 2 Slots; Loading per MAPNET II device = 1.7 mA | Module without devices | 255 mA | 275 mA |
| | | Fully loaded module, total | 471 mA | 491 mA |
| 4100-3103 | Isolator Module **for MAPNET II or IDNet**; converts a single connected SLC into four isolated outputs selectable as Class A or Class B; up to two Isolator Modules can be connected to one SLC; Module size = 1 Slot; **NOTE:** Compatible with MAPNET II Remote Isolators only; for quad isolation with IDNet Remote Isolators, use 4100-3107 IDNet+ Module (see data sheet S4100-0046 for details) | | 50 mA | 50 mA |

### Relay Modules; Nonpower-limited (for mounting in expansion bay only, refer to location reference on pages 8 and 9)

| Model | Description | Resistive Ratings | | Inductive Ratings | | Size | Supv. | Alarm |
|---|---|---|---|---|---|---|---|---|
| 4100-3202 | 4 DPDT w/feedback | 10 A | 250 VAC | 10 A | 250 VAC | 2 Slots | 15 mA | 175 mA |
| 4100-3204 | 4 DPDT w/feedback | 2 A | 30 VDC/VAC | 1/2 A | 30 VDC/120 VAC | 1 Block | 15 mA | 60 mA |
| 4100-3206 | 8 SPDT | 3 A | 30 VDC/120 VAC | 1-1/2 A | 30 VDC/120 VAC | 1 Block | 15 mA | 190 mA |

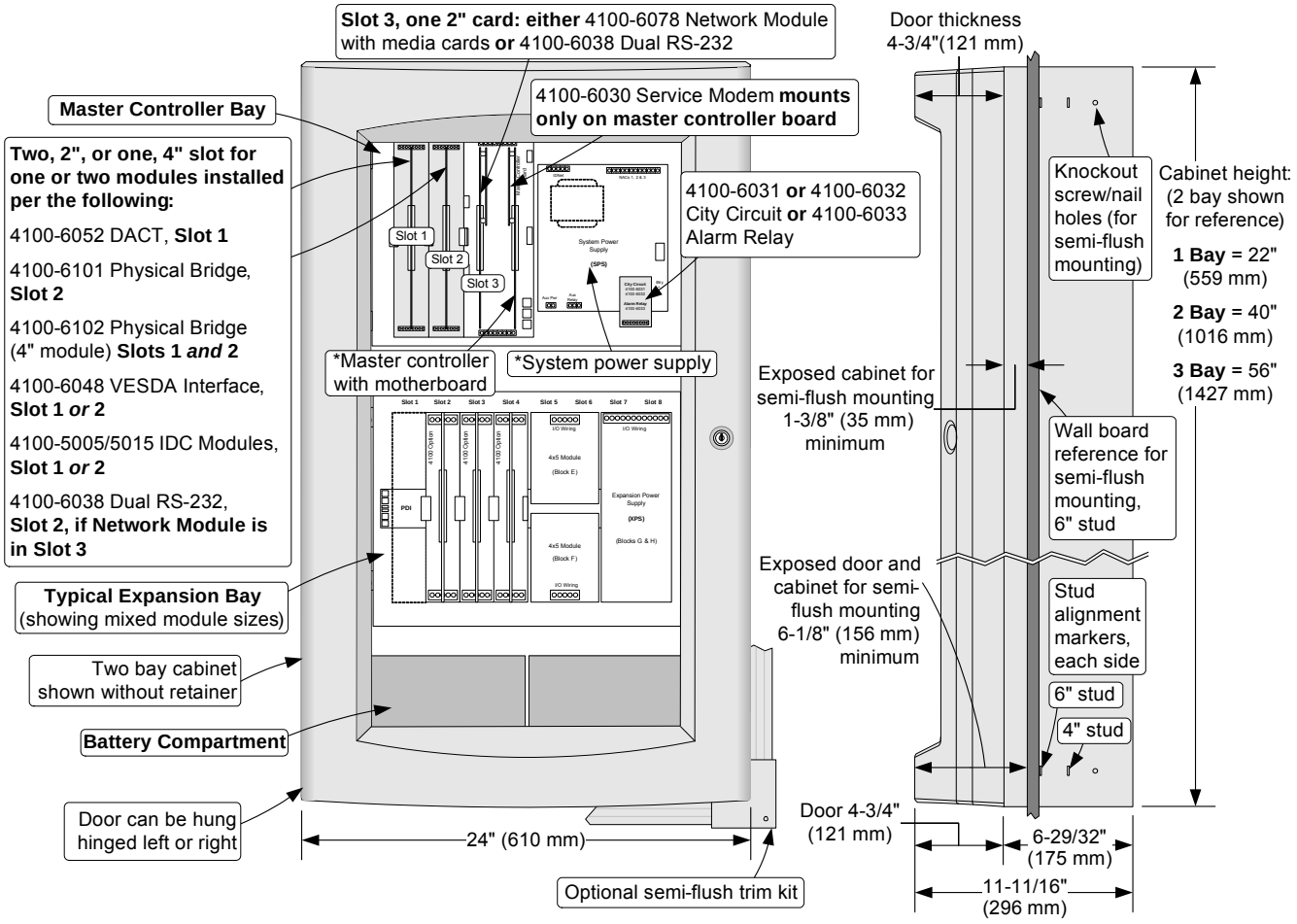
**Current Calculation Notes:**

1. To determine total supervisory current, add currents of modules in panel to base system value **and** all external loads powered by panel power supplies.
2. To determine total alarm current, add currents of modules in panel to base system alarm current **and** add all panel NAC loads **and** all external loads powered from panel power supplies.

## General Specifications

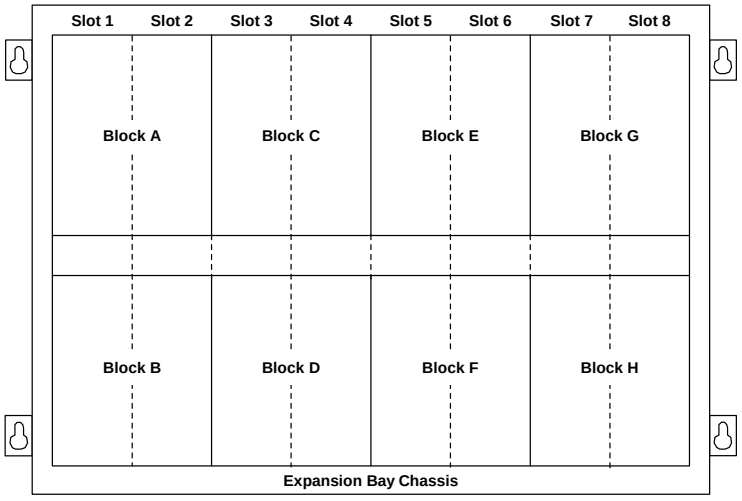
| | | | | |
|---|---|---|---|---|
| **Input Power** | System Power Supplies (SPS)<br>Expansion Power Supplies (XPS)<br>Remote Power Supplies (RPS) | 120 VAC Models | 4 A maximum @ 102 to 132 VAC, 60 Hz | |
| | | 220-240 VAC Models | 2 A maximum @ 204 to 264 VAC, 50/60 Hz; separate taps for 220/230/240 VAC | |
| **Power Supply Output Ratings for SPS, XPS, and RPS** (nominal 28 VDC on AC; 24 VDC on battery backup) | Total Power Supply Output Rating | **Including module currents and auxiliary power outputs;** 9 A total for "Special Application" appliances; 4 A total for "Regulated 24 DC" power (see below for details) | | Output switches to battery backup during mains AC failure or brownout conditions |
| | Auxiliary Power Tap | 2 A maximum | Rated 19.1 to 31.1 VDC | |
| | NACs Programmed for Auxiliary Power | 2 A maximum per NAC; 5 A maximum total | | |
| **Special Application Appliances** | Simplex 4901, 4903, 4904, and 4906 Series horns, strobes, and combination horn/strobes and speaker/strobes (contact your Simplex product representative for compatible appliances) | | | |
| **Regulated 24 DC Appliances** | Power for other UL listed appliances; use associated external synchronization modules where required | | | |
| **Battery Charger Ratings for SPS and RPS** (sealed lead-acid batteries) | Battery capacity range | UL listed for battery charging of 6.2 Ah up to 110 Ah (batteries larger than 50 Ah require a remote battery cabinet); ULC listed for charging up to 50 Ah batteries | | |
| | Charger characteristics and performance | Temperature compensated, dual rate, recharges depleted batteries within 48 hours per UL Standard 864; to 70% capacity in 12 hours per ULC Standard S527 | | |
| **Environmental** | Operating Temperature | 32° to 120°F (0° to 49° C) | | |
| | Operating Humidity | Up to 93% RH, non-condensing @ 90° F (32° C) maximum | | |
| **Additional Technical Reference** | Installation Instructions | 574-848 | | |
| | Operating Instructions | 579-197 | | |

## Mounting and CPU Bay Module Reference (* indicates supplied modules)




**NOTE**: A system ground must be provided for Earth Detection and transient protection devices. This connection shall be made to an approved, dedicated Earth connection per NFPA 70, Article 250, and NFPA 780.

## Expansion Bay Module Loading Reference




**Size Definitions:** Block = 4" W x 5" H (102 mm x 127 mm) card area
Slot = 2" W x 8" H (51 mm x 203 mm) motherboard with daughter card

| Description | | Mounting |
|---|---|---|
| IDNet Modules | | 1 Block |
| 4, 2 A Relays | **NON Power-limited** | 1 block |
| 4, 10 A Relays | | 4", 2 slots |
| 8, 3 A Relays | | 1 block |
| VESDA Interface | | 2", 1 Slot |
| Class B IDC | | 2", 1 Slot |
| Class A IDC | | 2", 1 Slot |
| MAPNET II Module | | 4", 2 Slots |
| MAPNET II/IDNet Isolator | | 2", 1 Slot |
| Class B Physical Bridge | | 2", 1 Slot |
| Class X Physical Bridge | | 4", 2 Slots |
| Decoder Module | | 6", 3 Slots |
| System or Remote Power Supply | | Blocks E, F, G & H ONLY |
| Expansion Power Supply | | Blocks G & H ONLY |
| NAC Expansion Module | | On XPS ONLY |

## Additional 4100ES Data Sheet Reference

| Subject | Data Sheet | Subject | Data Sheet |
|---|---|---|---|
| Introducing the 4100ES | S4100-0060 | Agent Release Applications | S4100-0040 |
| 4100ES Enclosures | S4100-0037 | Fire Alarm Network Overview | S4100-0055 |
| 4100ES Control Panels with EPS+ Power Supplies for TrueAlert Addressable Notification | S4100-0100 | Network Communications | S4100-0056 |
| 4100ES Audio and Firefighter Phone Modules | S4100-0034 | Network Display Unit (NDU) | S4100-0036 |
| LED/Switch Modules & Printer | S4100-0032 | Addressable Device Compatibility | S4090-0011 |
| Remote Annunciators | S4100-0038 | IDNet+ Module w/Quad Isolator | S4100-0046 |
| MINIPLEX Transponders | S4100-0035 | Remote Battery Charger | S4081-0002 |
| Building Network Interface (BNIC) | S4100-0061 | TFX Interface Module | S4100-0042 |
| InfoAlarm Command Center | S4100-0045 | Master Clock Interface | S4100-0033 |
| Graphic I/O Modules | S4100-0005 | 2120 BMUX Module | S4100-0048 |
| SafeLINC Internet Interface | S4100-0028 | TrueInsight Remote Service | S4100-0063 |

Simplex

*Tyco Fire Protection Products • Westminster, MA • 01441-0001 • USA*

S4100-0031-23 6/2013

*www.simplexgrinnell.com*

Simplex®

# 4100ES Fire Control Panels

*UL, ULC, CSFM Listed; FM Approved;*
*MEA (NYC) Acceptance**

## Cabinet Reference; Boxes, Doors, Dress Panels, Rack Mounting, and Accessories

## Features

### 4100ES Box and door options:

- Boxes are available sized for one, two, or three equipment bays, each with a battery bay located at the bottom
- Colors include platinum or red
- Doors are glass front with modular dress panels, or solid
- Models are available with box and door combined for single package shipping, or packaged separately
- Enclosures are NEMA 1 rated
- Refer to individual 4100ES data sheets for product application listings (see list on page 2)

### Door and dress panel selection is coordinated with cabinet function:

- Glass doors with modular dress panels provide visibility of annunciation and interface modules for Control Panels, Network Display Units (NDU), and Remote Annunciators
- Solid doors are for MINIPLEX Transponders and utility function cabinets where module visibility is not required

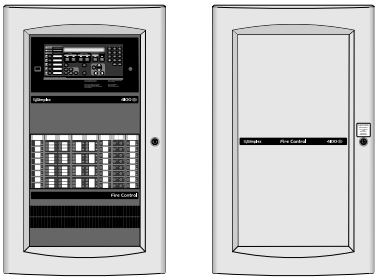
### 4100ES Enclosure details:

- Latching dress panels easily lift off for internal access
- Smooth box surfaces are provided for locally cutting conduit entrance holes exactly where required
- Alignment markers are provided at the top and bottom of each box side for 6” (152 mm) or 4” (102 mm) wall studs
- Knockout screw/nail holes are supplied for semi-flush mounting

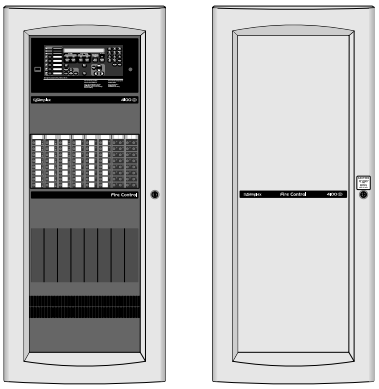
### Upright cabinet rack packaging reference:

- For use with Bud Industries Inc. special cabinet rack model number 45964
- Refer to page 2 for cabinet rack listing

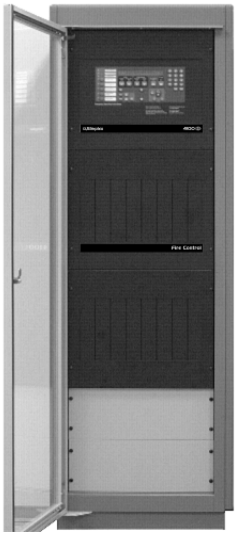
4100ES One Bay Cabinets



4100ES Two Bay Cabinets



4100ES Three Bay Cabinets



Cabinet Rack Enclosure (shown with door open)

* For 4100ES one, two, and three bay cabinets with associated equipment: Products are listed by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7165-0026:251 for allowable values and/or conditions concerning material presented in this document. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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.

## Enclosure Selection Chart (refer to pages 3 and 4 for dimensions)

***Combined* Box and Door Selection** (select if box and door are to be shipped together)

| Description | Platinum 1 Bay | Platinum 2 Bay | Platinum 3 Bay | Red 1 Bay | Red 2 Bay | Red 3 Bay |
|---|---|---|---|---|---|---|
| Box with Glass Door and Dress Panel | 2975-9444 | 2975-9445 | 2975-9446 | 2975-9441 | 2975-9442 | 2975-9443 |
| Box with Solid Door | 2975-9450 | 2975-9451 | 2975-9452 | 2975-9447 | 2975-9448 | 2975-9449 |

***Separate* Box and Door Selection** (select if boxes and doors are required to be shipped separately)

| Description | Platinum 1 Bay | Platinum 2 Bay | Platinum 3 Bay | Red 1 Bay | Red 2 Bay | Red 3 Bay |
|---|---|---|---|---|---|---|
| Box | 2975-9438 | 2975-9439 | 2975-9440 | 2975-9407 | 2975-9408 | 2975-9409 |
| Glass Door and Dress Panel | 4100-2104 | 4100-2105 | 4100-2106 | 4100-2124 | 4100-2125 | 4100-2126 |
| Solid Door | 4100-2114 | 4100-2115 | 4100-2116 | 4100-2134 | 4100-2135 | 4100-2136 |

**Cabinet Rack Mounting** (refer to page 4 for additional details)

| Model | Description | #45964 Listings |
|---|---|---|
| #45964, from Bud Industries Inc. | Special upright cabinet rack for 4100ES; 19" (483 mm) E.I.A.; gray texture; includes front polycarbonate door and rear louvered door, both keyed with Simplex "B" keys | UL and ULC listed only as of document revision date; cabinets are listed with the Simplex 4100ES product line |
| 4100-2140 | Master Controller Rack Mount Kit, **one required per master controller** | Master Controller and Option Bays each require 9 Rack Units; 15.75" height (400 mm) |
| 4100-2145 | Option Bay Rack Mounting Kit, **one required per expansion bay** | |
| 4100-2144 | Power Distribution Module (PDM) Rack Mount Kit, order PDM separately per system voltage, **one required per cabinet rack** | |

**Power Distribution Modules**

| Model | Voltage | Description |
|---|---|---|
| 4100-0634 | 120 VAC | Power Distribution Module (PDM); select per system voltage; **one required per 4100ES box or cabinet rack** |
| 4100-0635 | 220/230/240 VAC | |

**Miscellaneous Accessories**

| Model | Description | |
|---|---|---|
| 4100-9856 | Canadian French Appliqué Kit, for 1, 2, or 3 bay sizes | |
| 4100-9857 | 4100ES Appliqué Retrofit Kit, for 1, 2, or 3 bay sizes; use to identify 4100ES features when new door is not used; included with Master Controller Upgrade kits as detailed on data sheet S4100-0031 | |
| 4100-9835 | Termination and Address Label Kit, for module marking | **NOTE:** One kit is supplied for each cabinet; order this if required for additional field module installation |
| 4100-9837 | Green LED Power-on Indicator Kit, **required for ULC listing of MINIPLEX transponder** | Mounts using knockout provided in solid door |
| 2975-9813 | Platinum semi-flush box trim | 1 $^{7}/_{16}$" (37 mm) wide, four corners and trim pieces for top, bottom, and sides |
| 2975-9812 | Red semi-flush box trim | |

**Battery Reference**

| Model | Capacity | Model | Capacity | Battery Notes |
|---|---|---|---|---|
| 2081-9272 | 6.2 Ah | 2081-9287 | 25 Ah | 1. Sealed lead-acid batteries, 12 VDC each; two required per battery location.<br>2. Battery selection is required if batteries are internal.<br>3. Select one size per battery set<br>4. Refer to data sheet S2081-0006 for battery details. |
| 2081-9274 | 10 Ah | 2081-9276 | 33 Ah | |
| 2081-9288 | 12.7 Ah | 2081-9296 | 50 Ah | |
| 2081-9275 | 18 Ah | | | |

**Battery Accessories**

| Model | Description |
|---|---|
| 4100-0650 | Battery Shelf, **required for 50 Ah batteries** |
| 4100-5128 | Battery Distribution Terminal Block, mounts to side of box, required for all close-nippled cabinets unless cabinet receives all power from power supplies and batteries located in the adjacent cabinet |

## Additional Data Sheet Reference

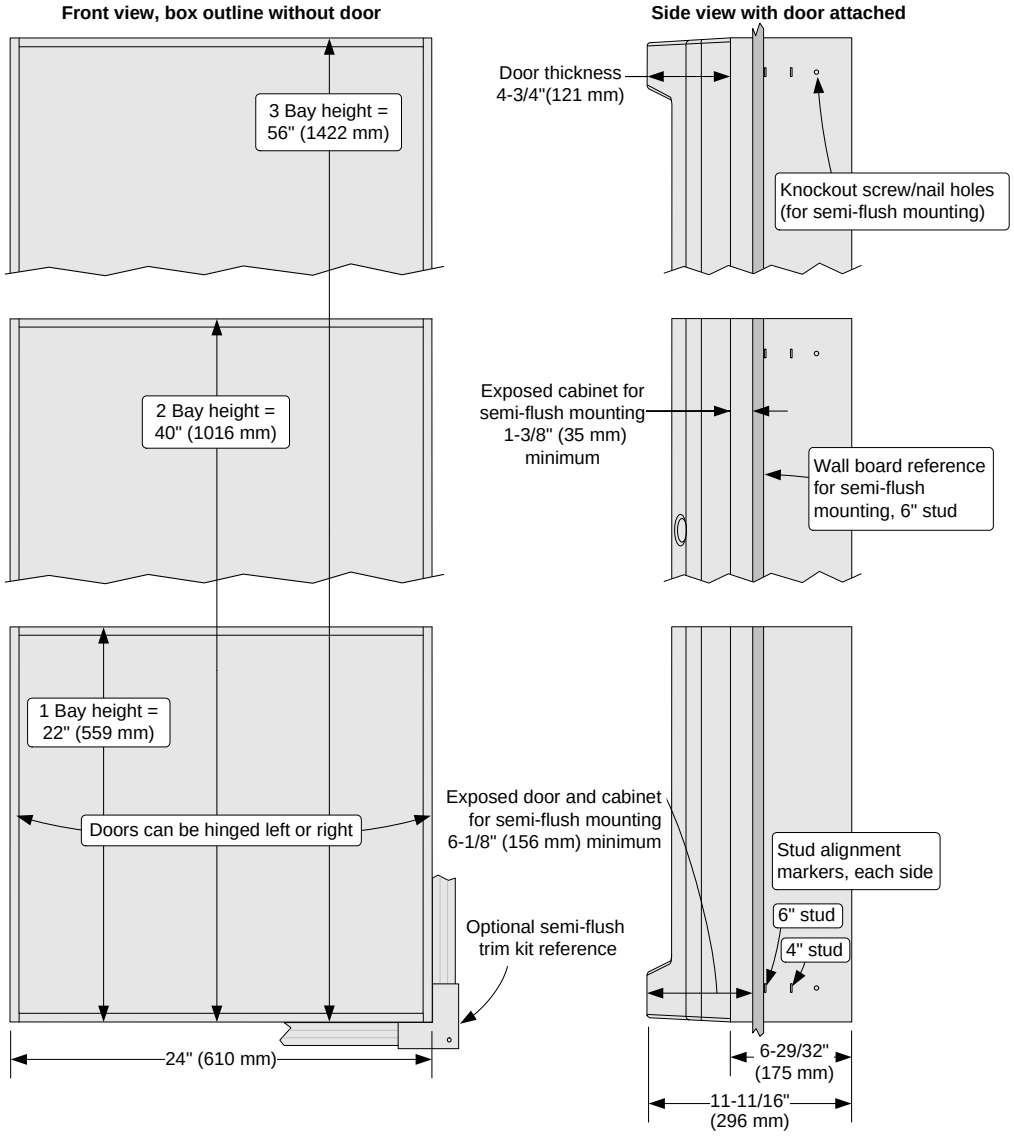
| Subject | Data Sheet | Subject | Data Sheet |
|---|---|---|---|
| 4100ES Panels with EPS Power Supplies | S4100-0100 | Network Display Unit (NDU) with EPS Power Supplies | S4100-0102 |
| 4100ES Basic Panel Modules and Accessories | S4100-0031 | | |
| MINIPLEX Transponders with EPS Power Supplies | S4100-0103 | Network Display Unit (NDU) | S4100-0036 |
| MINIPLEX Transponders | S4100-0035 | Remote Annunciators | S4100-0038 |
| LED/Switch Modules | S4100-0032 | InfoAlarm Command Center | S4100-0045 |
| 4100ES Audio/Phone Modules | S4100-0034 | Remote Battery Charger | S4081-0002 |

## Wall Mounted Enclosure Installation Reference

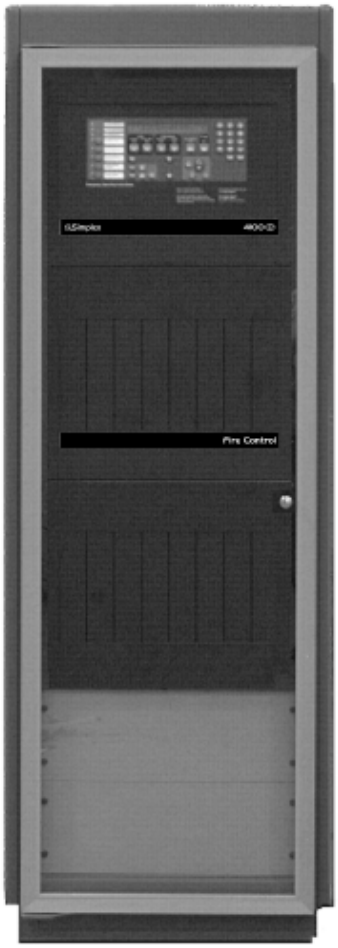
**NOTE**:

A system ground must be provided for Earth Detection and transient protection devices. This connection shall be made to an approved, dedicated Earth connection per NFPA 70, Article 250, and NFPA 780.

For additional installation information refer to Installation Instructions 579-117.



## Console Package Reference




Front View

Side View

Rear View

## Cabinet Rack Specifications

| | | |
|---|---|---|
| Type | | Upright cabinet rack for exclusive use with Simplex 4100ES Fire Alarm Products |
| Supplier | | Order from Bud Industries Inc. (www.budind.com) |
| Model Number | | 45964 |
| Outside Dimensions | Height | 69-7/8” (1775 mm) |
| | Width | 24-1/16” (611 mm) |
| | Depth | 22” (559 mm) |
| Color | | Gray texture |
| Panel Space Width | | 19” E.I.A. (483 mm) |
| Front Door | | Surface mount with 1/8” thick (3.18 mm) smoke gray polycarbonate, locked with Simplex “B” key, hinged on left of cabinet |
| Rear Door | | Ventilated top and bottom, locked with Simplex “B” key |
| Sides | | Side panels are removable from the inside for rack-to-rack mounting |
| Bottom | | Pan attached for battery mounting |
| Levelers | | Includes 4 stem levelers on bottom |
| Installation Instructions | | 579-229 |

# LifeAlarm Fire Alarm Controls

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

4009 IDNet NAC Extender for Control from 4010, 4010ES, 4100ES/4100U IDNet Communications, or Conventional NACs

## Features

**Provides additional notification appliance circuit (NAC) capacity with flexible operation modes and power-limited design**

**Four, Class B NACs are standard:**

- Rated 2 A each for conventional reverse polarity 24 VDC notification appliances and providing multiple operation modes
- Can be selected to provide synchronization for Simplex® visible notification strobe flashes
- Capable of controlling TrueAlert non-addressable notification appliances operating with SmartSync two-wire control mode**

**Input control options:**

- IDNet addressable communications from a Simplex model 4010, 4010ES, 4100U, or 4100ES Fire Alarm Control Panel**
- Or from one or two conventional 24 VDC NACs with multiple output control options

**IDNet communications control benefits:**

- Provides status monitoring and individual NAC control using a single address per 4009 IDNet NAC Extender
- Supports IDNet "Device Level" earth fault location

**WALKTEST operation is available with either input choice**

**Internal 8 A power supply/battery charger:**

- Charges internal batteries up to 12.7 Ah or up to 18 Ah batteries in external cabinet
- Provides status monitoring of battery, input power, and earth faults
- Rated 8 A for "Special Application" appliances; including Simplex 4901, 4903, 4904, and 4906 Series horns, strobes, horn/strobes, and speaker/strobes
- Rated 6 A for "Regulated 24 DC" appliance power

**Optional 4009 IDNet NAC Extender modules:**

- IDNet Communications Repeater provides Class B or Class A output
- IDNet Communications Fiber Optic Receiver/Repeater, available as Class B or Class X
- Four additional Class B NACs, rated 1.5 A for Special Application appliances; 1 A for Regulated 24 DC appliance power
- Class A, Two Circuit Adapter Module

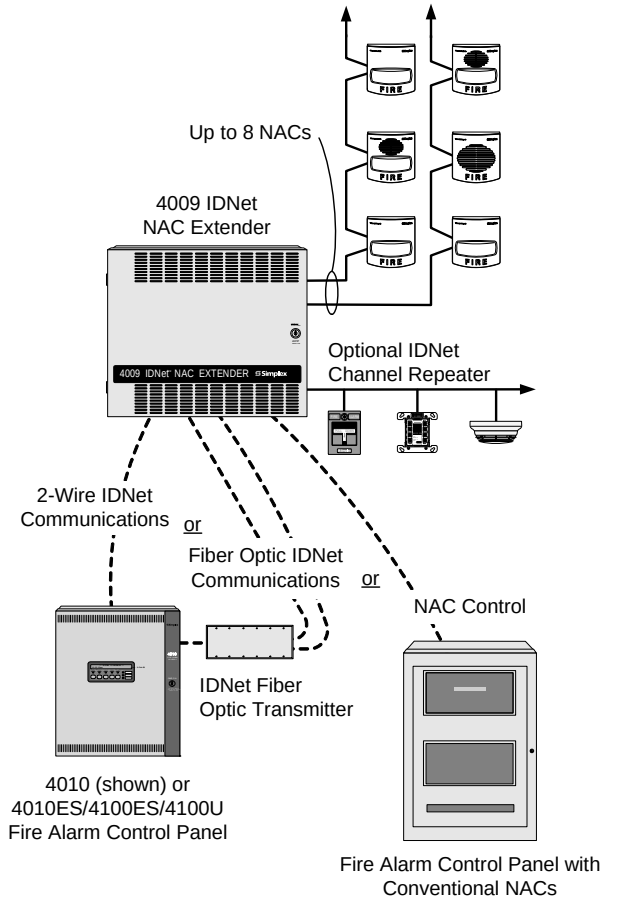
**UL Listed to Standard 864**

## External Accessories

**IDNet communication fiber optic transmitters:**

- For applications requiring the data integrity available with fiber optic communications
- Available as Class B or Class X
- Mounts in standard six-gang electrical box

**External battery cabinet for 18 Ah batteries**




4009 IDNet NAC Extender Connection Reference Drawing

## Introduction

**ADA Compliance.** Complying with the notification requirements of ADA (Americans with Disabilities Act) may require more notification appliance power than is available within the fire alarm control panel. When additional power is required, a Simplex 4009 IDNet NAC Extender can provide up to 8 A of NAC power with up to eight, supervised reverse polarity NACs.

**Location Flexibility.** The 4009 IDNet NAC Extender can be mounted close to a compatible dedicated host panel or can be located remotely for convenient power distribution. Multiple operation modes and multiple connection options further increase location flexibility.

**Additional Information.** For additional operation detail and application information, refer to Installation Instructions 574-181 and field wiring diagram 842-068.

* ULC listed model is 4009-9202CA. This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:214 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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 SimplexGrinnell LP, Westminster.

** 4100U requires revision 11 software or higher for compatibility. 4010 requires revision 2 software or higher for compatibility.

## Application and Operation Information

**IDNet Addressable Communications Compatible.** Up to ten (10), 4009 IDNet NAC Extenders can be controlled per 4010ES/4100ES/4100U IDNet communications channel; up to five (5) can be controlled on the 4010 IDNet communications channel. Each output NAC can be individually controlled for general alarm or selective area notification requiring only one point address per Extender. Individual Extender NACs can also be manually controlled from the host panel. IDNet controlled extenders will inform the host panel of troubles via IDNet communications. 4010ES/4100ES/4100U control panels control using multi-point rules, refer to data sheet S4090-0011 for details.

**Optional IDNet Repeaters.** IDNet communications can be repeated with the optional IDNet Repeater Module or with the optional Fiber Optic Receiver Module. Up to 100 of the IDNet channel points can be repeated once (refer to pages 3 and 5 for details). Repeated IDNet communications also support the "device level" earth fault location utility of the host panel.

**Hardwire Control Applications.** For applications where an existing (or new) conventional NAC needs additional power, the 4009 IDNet NAC Extender can be controlled directly from the NAC. Either one or two NACs, from either the same, or from different host fire alarm control panels, can be connected to control the 4009 IDNet NAC Extender output NACs. Multiple control selections provide flexible operation. (Refer to page 4 for more detail.) Alarms from the host panel will activate the four, 4009 IDNet NAC Extender NACs (or optionally, eight NACs) to extend the alarm.

The 4009 IDNet Extender monitors itself and each of its output NACs for trouble conditions, including earth faults. Extenders wired to conventional NACs will indicate a trouble by opening the path to the NAC's end-of-line resistor, but retaining the ability to respond to alarms. Individual troubles are also annunciated by LEDs located on the 4009 IDNet NAC Extender main circuit board. (Refer to page 7 for more diagnostic information.)

## Product Selection

### Standard Models

| Model | Description | |
|---|---|---|
| 4009-9201 | 120 VAC input | 4009 IDNet NAC Extender with 4, Class B NACs and 8 A power supply |
| 4009-9202CA* | | |
| 4009-9301 | 240 VAC input | |

* ULC listed model

### Optional Modules (for on-site installation)

| Model | Description | | Comments |
|---|---|---|---|
| 4009-9807 | Additional four point NAC module, rated 1.5 A Special Application appliances; 1 A for Regulated 24 DC appliance power, Class B | | One maximum |
| 4009-9808 | Dual Class A adapter (for two NAC outputs) | | Select as required (4 maximum) |
| 4009-9809 | IDNet Repeater, output is Class A or Class B | | Select **either** an IDNet Repeater **or** a Fiber Optic Receiver as required; one transmitter can connect to one receiver |
| 4009-9810 | Fiber Optic Receiver | Class B | |
| 4009-9811 | | Class A (IDNet), Class X (fiber) | |
| 4009-9805 | Red Appliqué for door | | Select if required |
| 2975-9801 | Semi-Flush Trim Kit | Beige trim | 1-7/16" wide (78 mm), use if required for semi-flush installations |
| 2975-9802 | | Red trim | |

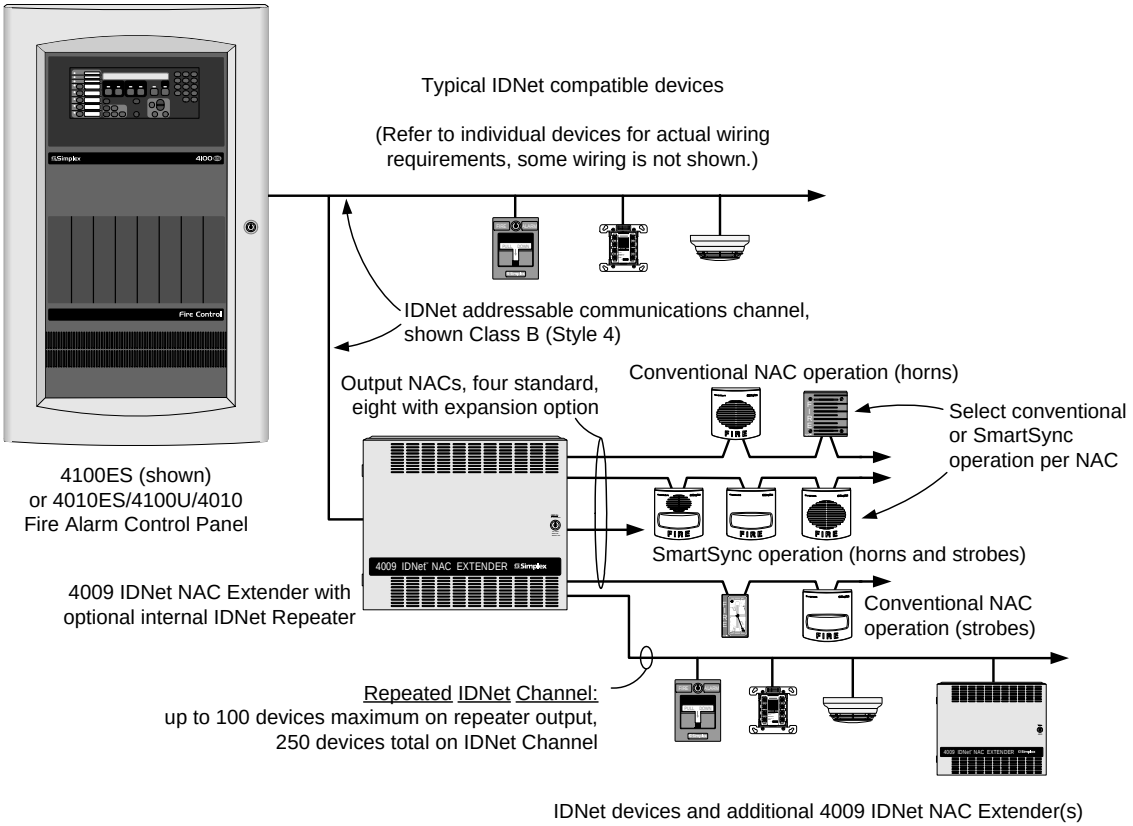
### Battery Selection (select battery size per system requirements)

| Model | Description | Comments |
|---|---|---|
| 2081-9272 | 6.2 Ah Battery, 12 VDC | Two batteries are required, 24 VDC operation |
| 2081-9274 | 10 Ah Battery, 12 VDC | |
| 2081-9288 | 12.7 Ah Battery, 12 VDC | |
| 2081-9275 | 18 Ah Battery, 12 VDC | Requires external battery cabinet, two batteries are required, 24 VDC operation |

### External Accessories (select per system requirements)

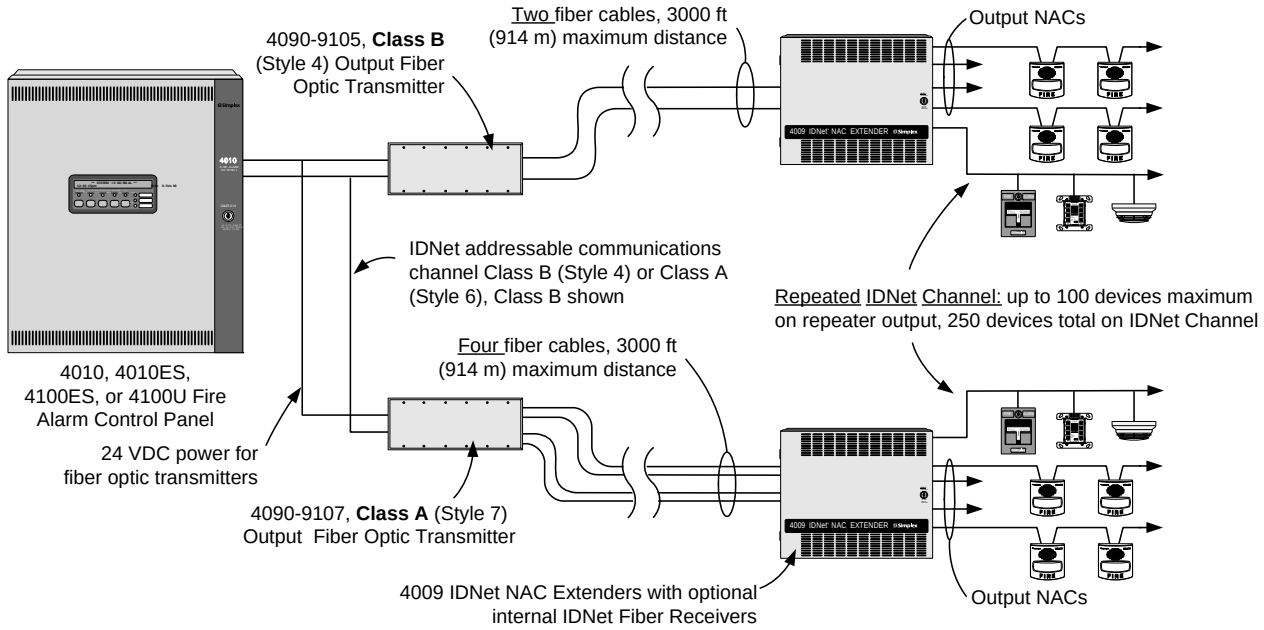
| Model | Description | | Comments |
|---|---|---|---|
| 4090-9105 | IDNet Fiber Optic Transmitter | Class B operation | Mounts in six-gang electrical box, refer to page 4 for mounting details |
| 4090-9107 | | Class X operation | |
| 4009-9801 | External battery cabinet for up to 18 Ah batteries, beige | | 16-1/4" W x 13-1/2" H x 5-3/4" D (413 mm x 343 mm x 146 mm) |
| 4081 Series | End-of-Line Resistor Harnesses; see data sheet S4081-0003 for details | | |

## Typical IDNet Connection Example




**NOTE:** Up to ten (10) 4009 IDNet NAC Extenders may be connected per 4010ES, 4100ES or 4100U IDNet channel, up to five (5) on the 4010 IDNet channel. IDNet communications can be repeated only once (can pass through only one series connected repeater or one fiber optic receiver).

## Typical Fiber Optic System Connections




**NOTE:** Up to ten (10) 4009 IDNet NAC Extenders may be connected per 4010ES, 4100ES or 4100U IDNet channel, up to five (5) on the 4010 IDNet channel. IDNet communications can be repeated only once (can pass through only one series connected repeater or one fiber optic receiver). Fiber optic transmitters connect to only one receiver in a 4009 IDNet NAC Extender.

## Hardwire Control Connection Information

**NAC Input Selections.** The 4009 IDNet NAC Extender can be selected to:

- Track input NAC operation **or** to provide a locally generated code, selectable per NAC input
- If selected for local coding, NAC outputs can be either **Temporal Coded** or **60 Beats/min March Time Coded,** one code selection per extender (input NACs must be on continuous with Alarm)
- Additionally, NAC outputs can be selected to provide the Simplex strobe synchronization signal. This signal will synchronize the flashes of synchronized strobes but will be ignored by free-run strobes and audible devices. (Strobes are for operation by noncoded NACs.)

**NAC input to NAC output control** can be selected for standard and optional NACs per the following table:

**Conventional NAC Output Operation Options**

| Input | A | B | C |
|---|---|---|---|
| NAC 1 | NACs 1 & 2, 5 & 6 | NACs 1-4 | NACs 1-8 |
| NAC 2 | NACs 3 & 4, 7 & 8 | NACs 5-8 | None |

**SmartSync NAC Output Operation**

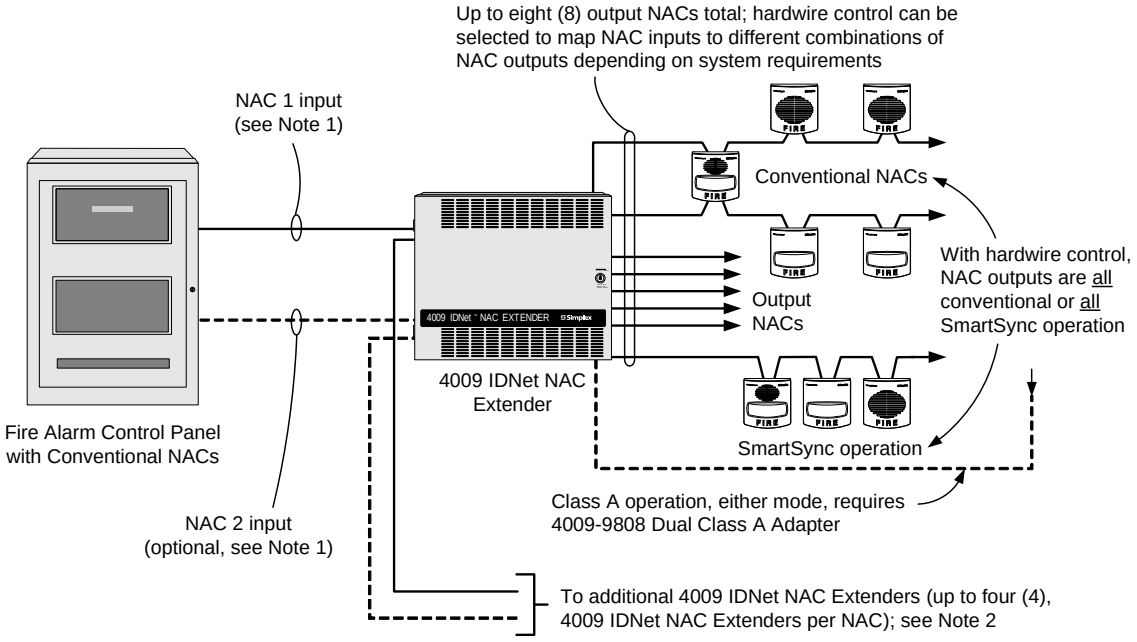
| Input | NAC Control Function | |
|---|---|---|
| NAC 1 | Strobe Control | All NAC outputs (1-8) |
| NAC 2 | Horn Control | |

## SmartSync Notification Appliance Control

**The TrueAlert Notification Appliance** product line includes addressable and non-addressable operation. Non-addressable models are available with 2-wire SmartSync operation or conventional 4-wire operation. The following details apply to use with the 4009 IDNet NAC Extender:

- TrueAlert non-addressable models with SmartSync operation allow audible notification to be separately controlled over the same wire pair that controls visible notification
- 4009 IDNet NAC Extenders can be selected to provide SmartSync operation whether controlled by IDNet communications or conventional NACs
- IDNet control allows output NACs to be **individually selected** for conventional **or** SmartSync operation
- With NAC input control, **all** output NACs are selected for either conventional **or** SmartSync operation
- Refer to data sheet S4009-0003 for TrueAlert Addressable operation details, contact your local Simplex product supplier for further information on specific TrueAlert notification appliances

## Hardwire Control NAC Connection One-Line Reference Diagram




**Notes:**

1. For separate audible and visible output NAC control, or SmartSync NAC output operation, two (2) input NACs are required. NAC 1 is "on-until-reset" and NAC 2 is "on-until-silenced."
2. To synchronize strobe flash outputs for up to four (4) 4009 IDNet NAC Extenders, use the synchronized strobe output from a Synchronized Flash Module (4905-9914 for Class B operation, 4905-9922 for Class A operation) or, if available, from a NAC selected to provide synchronized strobe flash output. **NOTE: DO NOT USE a NAC selected for SmartSync operation for this function.**

***Refer to Installation Instructions 574-181 for additional information and application guidance***

## 4009 IDNet NAC Extender Specifications

| | | |
|---|---|---|
| **Input Ratings** | 120 VAC Input (4009-9201) | 3A @ 102-132 VAC, 60 Hz |
| | 240 VAC Input (4009-9301) | 1.5A @ 204-264 VAC, 50/60 Hz |
| | Hardwire Control from External NACs, Input Requirements | Conventional reverse polarity operation |
| | | 5 mA maximum; 16 to 33 VDC |
| **Output Ratings** | Total Rating | 8 A, Special Application appliances<br>6 A, Regulated 24 DC appliance power |
| | Standard NACs | 2 A each, Special Application or Regulated 24 DC appliance power |
| | Optional NACs (requires 4009-9807) | 1.5 A each, Special Application appliances<br>1 A each, Regulated 24 DC appliance power |
| | Special Application Appliances | Simplex 4901, 4903, 4904, and 4906 Series non-addressable horns, strobes, and combination horn/strobes and speaker/strobes (contact your Simplex product representative for compatible appliances) |
| | Regulated 24 DC Appliances | Power for other UL listed appliances; use associated external synchronization modules where required |
| | Strobe Operation | Up to 33 strobes per NAC can be synchronized; output NACs configured for Simplex synchronized strobe operation are synchronized to each other |
| | Auxiliary Output | 500 mA @ 24 VDC nominal |

### Optional Modules Ratings

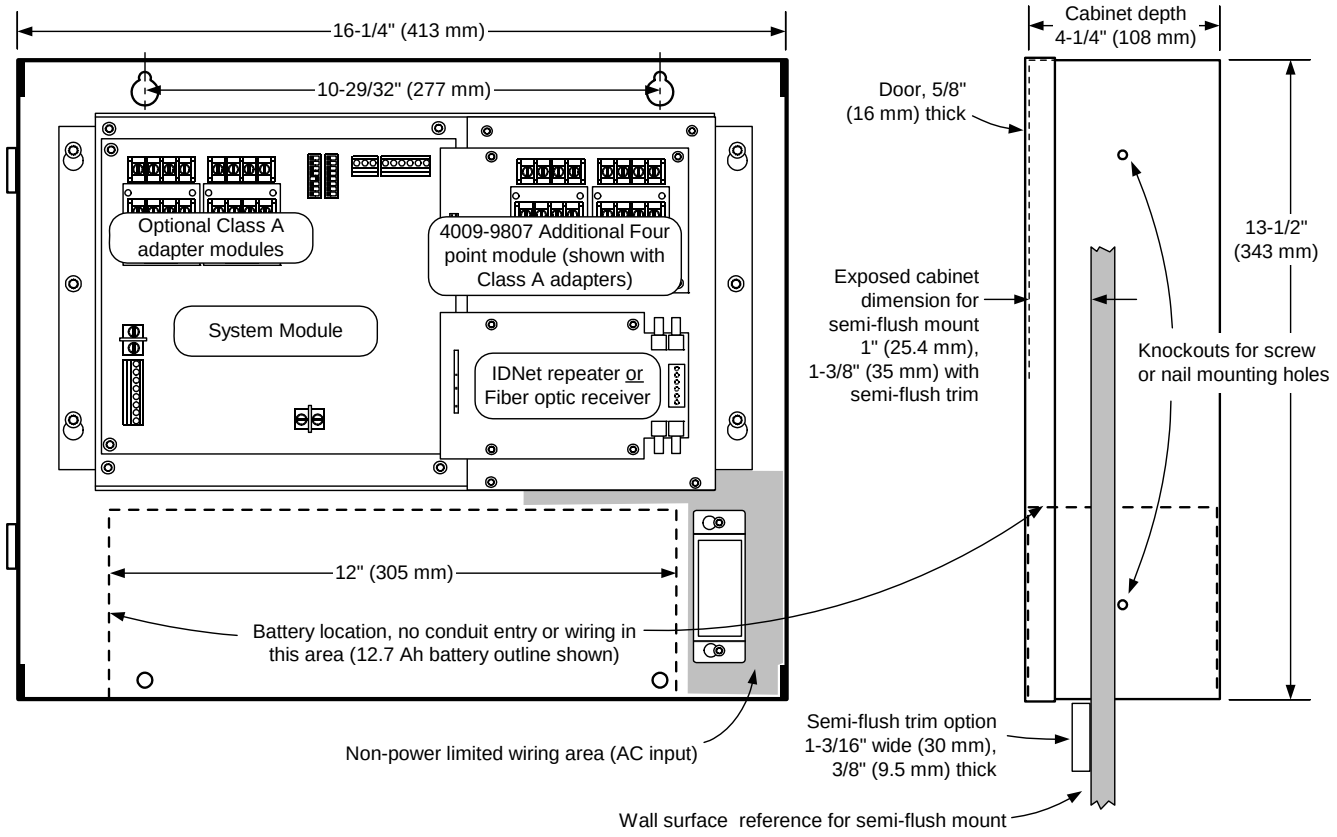
| | | |
|---|---|---|
| **IDNet Repeater Module** (4009-9809) | Input Power | 70 mA @ 24 VDC, system supplied |
| | IDNet Input, One Address | Maximum distance from IDNet source is 2500 ft (762 m) |
| | IDNet Output Specifications | Repeated IDNet output for up to 100 devices (total IDNet devices not to exceed 250 per channel) |
| | | Maximum distance to farthest device is 2500 ft (762 m) |
| | | Total distance including “T-taps” is 10,000 ft (3048 m) |
| | | Class A loop maximum distance is 2500 ft (762 m), no “T” taps |
| **Fiber Optic Receiver Modules** | | |
| Input Current | | 4009-9810, Class B, 65 mA @ 24 VDC, system supplied |
| | | 4009-9811, Class X, 80 mA @ 24 VDC, system supplied |
| IDNet Output Specifications | | Same as those for Repeater Module (see above) |
| Fiber Optic Transmission Distance | | 3000 ft (914 m) maximum |
| **General** (LED status indicators are listed on page 7, dimensions and mounting details are on page 6) | | |
| Operating Temperature | | 32° to 120° F (0° to 49° C) |
| Operating Humidity Range | | 10% to 90% RH from 32° F to 104° F (0° C to 40° C) |
| Wiring Connections* | | Terminal blocks for 18 AWG (stranded) to 12 AWG (solid) |

## Fiber Optic Transmitter Specifications

| | |
|---|---|
| Input Voltage | 18.9-32 VDC from compatible listed fire alarm supply |
| Input Current | 4090-9105, Class B, 30 mA @ 24 VDC |
| | 4090-9107, Class X, 35 mA @ 24 VDC |
| Fiber Optic Connections and cable requirements | Multimode, graded index, 50/125µm, 62.5/125 µm, 100/40 µm, or 200 µm |
| | Type ST connectors |
| | 4090-9105, Class B operation, two fiber cables required |
| | 4090-9107, Class X operation, four fiber cables required |
| Module Size (with mounting bracket) | 6-13/16” W x 3-3/4” H x 1-1/8” D (173 mm x 95 mm x 29 mm) |
| On-board Status Indicators | Green LED flashing = transmit |
| | Red LED flashing = receive |
| | Separate red LED on 4090-9107 = Class X receive |
| Communications | Simplex IDNet |
| Fiber Optic Transmission Distance | 3000 ft (914 m) maximum |
| Wiring Connections* | Terminal blocks for 18 AWG (stranded) to 12 AWG (solid) |
| Operating Humidity | 10% to 90% RH from 32° to 104° F (0° to 40° C) |
| Operating Temperature | 32° F to 120° F (0° to 49° C) |

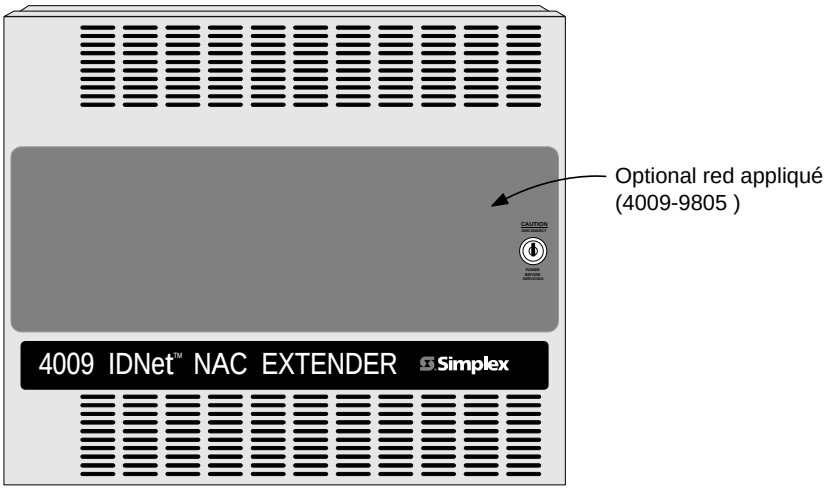
* Metric wire equivalents: 18 AWG = 0.82 $mm^2$; 12 AWG = 3.31 $mm^2$

## 4009 IDNet NAC Extender Mounting and Module Placement Information

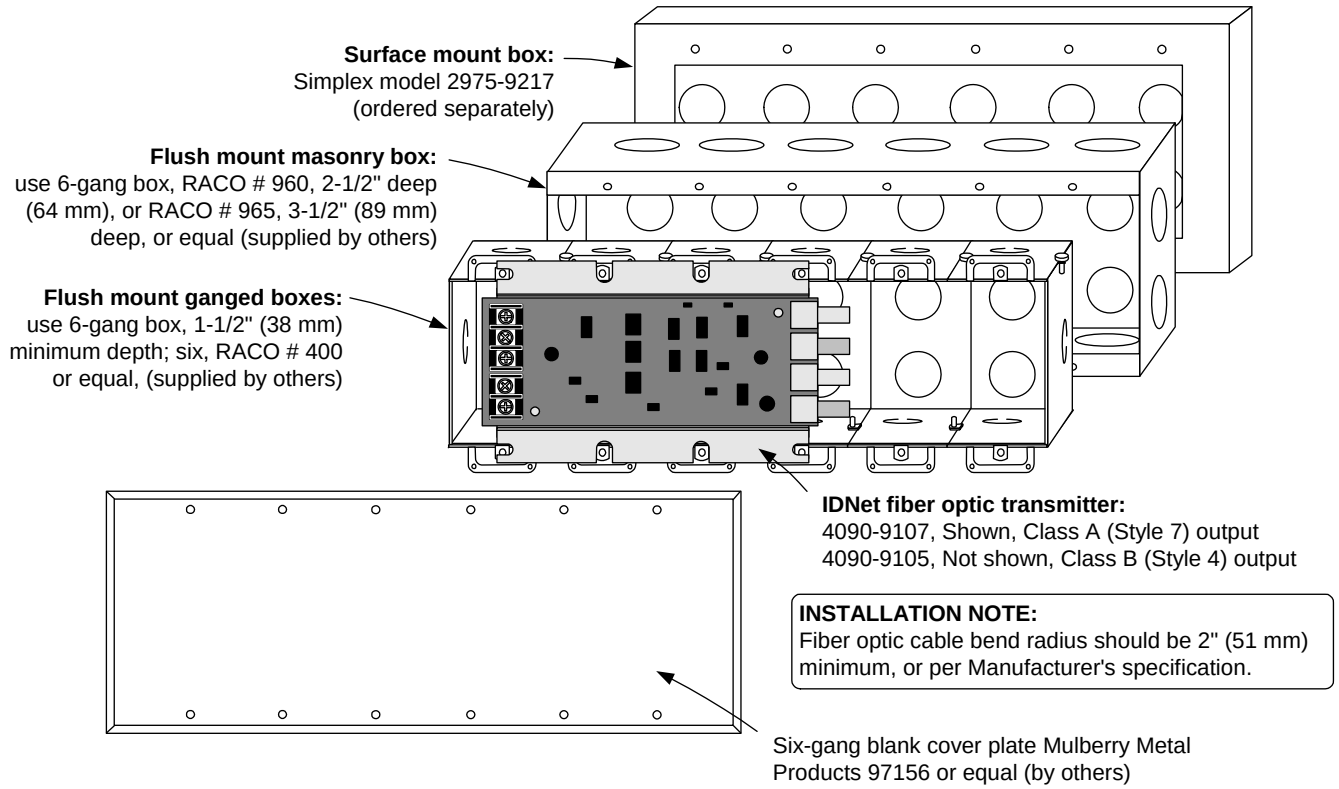



**NOTE:** Recommended conduit entrance varies with module selection. Refer to general installation instructions 574-181, specific module installation instructions, and to field wiring diagrams 842-068 before locating conduit entrance.

## 4009 IDNet NAC Extender Cabinet with Door Detail



## 4090-9105/9107 IDNet Fiber Optic Transmitter Mounting Information




## Service Diagnostic Features

**Power-up Self-Diagnostics.** Upon power-up, the 4009 IDNet NAC Extender tests each module and performs earth fault diagnostics. Trouble conditions are communicated to the host control panel and are also displayed on diagnostic status LEDs in the 4009 IDNet NAC Extender. When connected via IDNet communications, detailed status information is available at the host. When controlled with conventional NAC inputs, common troubles are signaled by providing a polarized open circuit that disconnects the NAC wiring from its end-of-line resistor but still allows a reversed polarity alarm to be received.

**Door Mounted Reference Label.** The 4009 IDNet NAC Extender has a detailed programming and diagnostic label inside the front door that provides a quick reference for both installation and checkout.

**LED Status Indicators** are provided for the following:

- **Each NAC** (standard and optional) has a dedicated yellow LED that:
  - During supervision provides a slow flash to indicate a short circuit condition and a fast flash to indicate an open circuit
  - During an alarm, the LED follows the NAC output (on steady or flashing with coded output)
- **Four, general status yellow LEDs** provide nine separate indications listed in priority of urgency. As a trouble is eliminated, any remaining trouble(s) will then be indicated until the 4009 IDNet NAC Extender is returned to normal operation.
- **AC power status** is indicated by a green LED that is on when AC is normal. During low AC (brownout) conditions or with no AC, the LED is off. Additional power and battery status is indicated by the general status LEDs.

# 4009 IDNet NAC Extender Current Calculation Chart

## Step 1. Calculate Basic Extender Battery Requirements (minus NAC loads)

**Panel, NAC Options, and Auxiliary Power** (underlined model numbers are optional modules)

| Model | Description | | Supervisory Current | Actual Supervisory | Alarm Current | Actual Alarm |
|---|---|---|---|---|---|---|
| **4009-9201** | 120 VAC input | Basic Panel | 85 mA | 85 mA | 185 mA | 185 mA |
| **4009-9301** | 240 VAC input | | | | | |
| **4009-9807** | Additional Four Point NAC | | 40 mA | +_____ | 40 mA | +_____ |
| **4009-9808** | Dual Class A Adapter (no additional current) | | – | – | – | – |
| **Auxiliary Power Output** | | | (500 mA maximum) | +_____ | (500 mA maximum) | + **[A1]** _____ |
| | | | | Basic Panel Supervisory Current | = **[S1]** _____ | |
| | | | | | Basic Panel Alarm Current | = **[A2]** _____ |

## Step 2. Calculate IDNet Output Module and Device Current (if used)

| | | | | | | |
|---|---|---|---|---|---|---|
| **4009-9809** | IDNet Repeater | Select one per Extender | 70 mA | +_____ | 70 mA | +_____ |
| **4009-9810*** | Fiber Optic Receiver, Class B | | 65 mA | | 65 mA | |
| **4009-9811*** | Fiber Optic Receiver, Class X | | 80 mA | | 80 mA | |
| **IDNet Devices** (connected to Repeater or Receiver above), 0.7 mA each, maximum of 100 | | | Total devices x 0.7 mA each | +_____ | Total devices x 0.7 mA each | +_____ |
| | | | | IDNet Module Supervisory Current | **[S2]** = ____ | |
| | | | | | IDNet Module Alarm Current | = **[A3]** _____ |

* Note: IDNet Fiber Optic Transmitter current is supplied from the host fire alarm control panel

## Step 2. Calculate Available NAC Current

| | |
|---|---|
| Maximum Available Current | **= 8 A*** |
| Subtract Auxiliary Power Output | **- [A1]** _____ |
| Subtract IDNet Module Current | **- [A3]** _____ |
| **Available NAC Current** | **= [A4]** _____ |

* 8 A for Special Application Appliances; 6 A for Regulated 24 DC Appliances

## Step 3. Calculate Actual NAC Loading (Limited to Available NAC Current per Step 2.)

| NAC Type | NAC Circuit # | NAC Alarm Current |
|---|---|---|
| **Standard Panel NACS**, 2 A maximum per NAC | Circuit 1 | +_____ |
| | Circuit 2 | +_____ |
| | Circuit 3 | +_____ |
| | Circuit 4 | +_____ |
| **Optional Four Point NAC Module**, 1.5 A maximum Special Application rating, 1 A maximum Regulated 24 DC rating, per NAC | Circuit 5 | +_____ |
| | Circuit 6 | +_____ |
| | Circuit 7 | +_____ |
| | Circuit 8 | +_____ |
| | Total Actual NAC Load Alarm Current | = **[A5]** _____ |

## Step 4. Calculate Total Supervisory Current

**Total Supervisory Current** = Basic Panel Current **[S1]** + IDNet Module Current **[S2]** = _____

## Step 5. Calculate Total Alarm Current

**Total Alarm Current** = Basic Panel Current **[A2]** + IDNet Module Current **[A3]** + Actual NAC Current **[A5]** = _____

# Fire Alarm Control Panel Accessories

*Listings**

System Batteries, Sealed Lead-Acid; with Applications Reference for Battery Cabinets, and Battery Cabinets with Charger

## Features

**Rechargeable, sealed lead-acid batteries:**

- Lead-calcium grid structure with immobilized electrolyte in absorbent separator
- Low maintenance with no need to add water
- Low self-discharge characteristics
- One-piece, high impact polystyrene cell cover with high reliability dual seal construction
- UL 924 recognized pressure relief valves

**Available in a variety of capacities:**

- Batteries for internal mounting range from 6.2 Ah up to 50 Ah, depending on control panel cabinet size
- Larger batteries, up to 110 Ah, mount in external battery cabinets with models available with internal chargers

**Battery cabinets with chargers:**

- Battery cabinets with charger communicate with their connected fire alarm control panel and are available for 4100ES/4010ES/4100U Series and 4010 Series panels

## Description

Simplex® rechargeable sealed-lead acid batteries provide reliable and repeatable discharge and recharge characteristics for use in fire alarm and other systems applications. They are designed with immobilized electrolyte in an absorbent separator, allowing them to provide rated capacity on the first cycle.

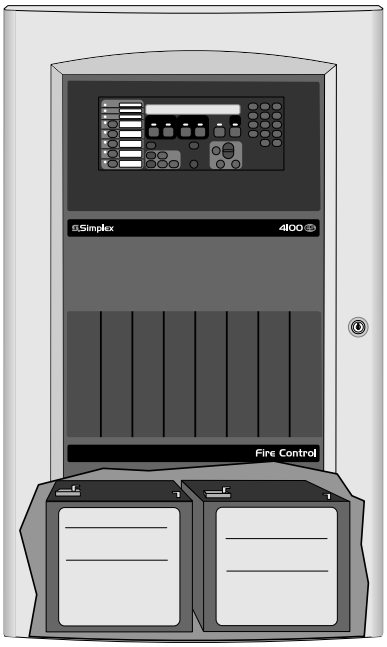
Because of their sealed construction, packaging is allowed within the system electronics enclosure (see illustration on page 2). When this is applicable, the quantity of system cabinets and the battery wiring distances are both minimized. Where required, external battery cabinets can be close-nippled to the control panel to house larger batteries with battery chargers available in some battery cabinet sizes.

## Battery Details

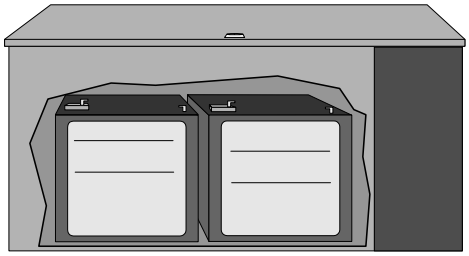
**Charging.** These batteries are intended to be used with compatible Simplex battery chargers.

**Series Connections.** These batteries are required to be connected in series to produce 24 V system voltage. Battery sets must be of identical voltage, model number, appearance, and approximately the same date of manufacture for proper operation.

**Testing.** Battery capacity testing is recommended to be performed by using a sealed lead-acid battery tester designed to withdraw a minimum of battery charge. The preferred tester applies a variety of amplitude and duration controlled test pulses that compares terminal voltage against those predicted for the specific battery size. (Testing is available through your local Simplex product supplier.)




Compatible Sealed Lead-Acid Batteries can be Installed Inside Fire Alarm Control Panel Cabinets



Remote Battery Cabinets are Available for Larger Battery Requirements

## Battery Details *(Continued)*

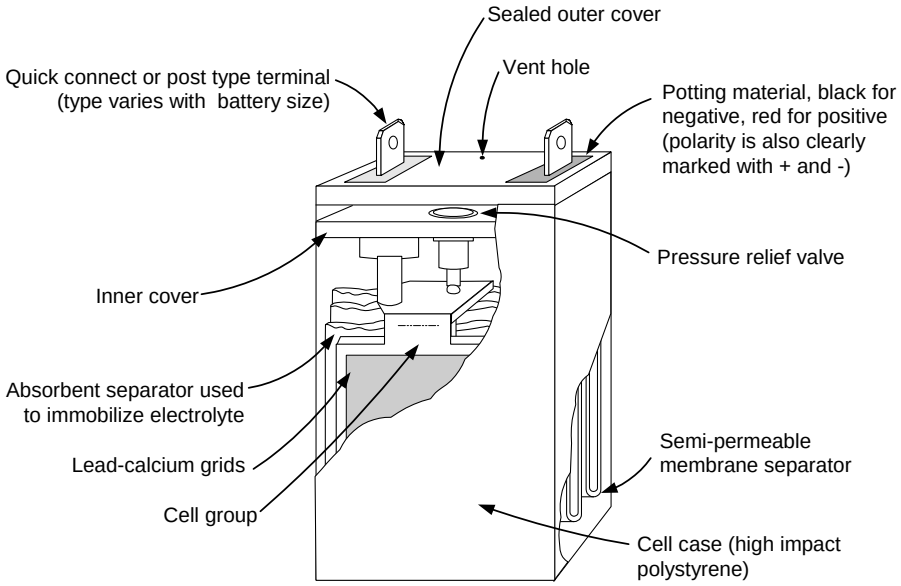
**Shipping.** Sealed lead-acid batteries are shipped via ground or sea transportation only. They are not shipped via air.

**Disposal.** Battery chemicals and materials can be recycled. Refer to information shipped with the battery or on its case. Return to the battery manufacturer or to a similarly qualified battery processing facility for proper disposal.

* Refer to details on page 4 and to the referenced individual product data sheets for agency listing status of battery cabinets and chargers. The batteries detailed in this document meet the requirements of UL, ULC, and Factory Mutual for use with respective equipment battery chargers as listed on page 3. Contact your local Simplex product supplier for proper battery selection per system requirements. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Fire Protection Products.

## Battery Construction Reference

Actual appearance will vary with battery size.




## Battery Size Specifications

| Battery Model | Capacity @ 20 Hour Discharge Rate | Width* | Depth* | Height with Terminals | Approximate Weight* |
|---|---|---|---|---|---|
| **2081-9272** | **6.2 Ah** | 6-1/8” (156 mm) | 2-5/8” (67 mm) | 4” (102 mm) | 5.75 lbs (2.6 kg) |
| **2081-9274** | **10 Ah** | 6” (153 mm) | 4-1/16” (103 mm) | 4” (102 mm) | 9.2 lbs (4.2 kg) |
| **2081-9288** | **12.7 Ah** | 6” (153 mm) | 4” (102 mm) | 4” (102 mm) | 9 lbs (4.1 kg) |
| **2081-9275** | **18 Ah** | 7-1/4” (184 mm) | 3-3/8” (86 mm) | 6-5/8” (168 mm) | 14.3 lbs (6.5 kg) |
| **2081-9287** | **25 Ah** | 6-5/8” (168 mm) | 5” (127 mm) | 7” (178 mm) | 19.4 lbs (8.8 kg) |
| **2081-9271** (rectangular case, typically for service) | **33 Ah** | 12-1/2” (318 mm) | 3-3/8” (86 mm) | 7-1/16” (179 mm) | 26.6 lbs (12.1 kg) |
| **2081-9276** (“square” case, use for new) | **33 Ah** | 7-3/4” (197 mm) | 5-1/4” (133 mm) | 6-3/4” (171 mm) | 26.5 lbs (12 kg) |
| **2081-9296** | **50 Ah** | 9” (229 mm) | 5-1/2” (140 mm) | 8-7/8” (225 mm) | 41.8 lbs (19 kg) |
| **2081-9279** | **110 Ah** | 11-3/16” (284 mm) | 10-1/2” (267 mm) | 9” (230 mm) | 82 Lbs (37 kg) |

* Dimensions and weight are per battery and are for reference only. Exact size may vary. Refer to the tables on page 3 for mounting compatibility. These batteries are 12 V each and series connected for 24 V system use.

**NOTE: When wired in series for 24 V output, these batteries are to be of identical voltage, appearance, model number, and approximately the same date of manufacture.**

## General Battery Specifications

| | |
|---|---|
| Nominal Voltage Rating | 12 Volts per battery |
| Discharge Rating | 20 Hour Rate |
| Typical Charge/Discharge Cycles | 100 to 150 |
| Preferred Charge Temperature Range | 60° F to 90° F (15.6°C to 32.2° C) |

## Battery Compatibility for Fire Alarm Control Panel Mounting

**NOTE:** Refer to individual fire alarm control panel product data sheets for additional battery application information

| Battery Model | Capacity | Simplex Control Panel Model Series (see legend and notes below) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4003EC | 4004R | 4005 | 4006 & 4008 | 4009 (all models) | 4010 | 4010ES | 4100ES/ 4100U | 4100 & 4120 (2, 4 or 6-Unit) | 4020 (2, 4 or 6-Unit) |
| 2081-9272 | 6.2 Ah | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2081-9274 | 10 Ah | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2081-9288 | 12.7 Ah | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2081-9275 | 18 Ah | **Ext** | Note 3 | ✓ | **Ext** | **Ext** | Note 2 | ✓ | ✓ | ✓ | ✓ |
| 2081-9287 | 25 Ah | **Ext** | Note 3 | **Ext** | **Ext** | **NA** | ✓ | ✓ | ✓ | ✓ | **Ext** |
| 2081-9271 rectangular | 33 Ah | **Ext** | Note 3 | **Ext** | **NA** | **NA** | Note 3 | ✓ | ✓ | **Ext** | Note 4 |
| 2081-9276 "square" | 33 Ah | **Ext** | Note 3 | **Ext** | **NA** | **NA** | Note 3 | ✓ | ✓ | ✓ | **Ext** |
| 2081-9296 | 50 Ah | **NA** | Note 3 | **NA** | **NA** | **NA** | Note 3 | Note 6 | **2 or 3 bay** | **Ext** | **Ext** |
| 2081-9279 | 110 Ah | Requires external battery cabinet, compatible with 4100ES, 4010ES, 4100, and 4120 Series only | | | | | | | | | |

✓ **=** Can be placed in the respective equipment cabinet

**Ext =** External battery cabinet is required, refer to selection chart on page 4

**NA =** Not applicable/not compatible

**NOTES:**

1. These batteries meet the requirements of UL, ULC, and Factory Mutual for use with respective equipment battery chargers listed above. Contact your local Simplex product supplier for proper battery selection per system requirements.
2. 4010 Cabinets will accommodate 2081-9275, 18 Ah batteries, but will not allow bottom entry conduit.
3. Use 4081 series companion cabinet and charger, refer to page 4.
4. 4020 Cabinets will accommodate 2081-9271, 33 Ah batteries, but will not allow bottom entry conduit.
5. Some control panel models are listed for battery replacement reference only.
6. For 2 bay international applications only, 50 Ah batteries will fit in the cabinet.

## External Battery Cabinet Compatibility Reference

### Battery Cabinets without Chargers (connects to charger in panel)

| Cabinet | Panel Compatibility | Battery | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2081-9275 18 Ah* | 2081-9287 25 Ah | 2081-9271 Rectangular 33 Ah | 2081-9276 Square 33 Ah | 2081-9296 50 Ah | 2081-9279 110 Ah |
| 2081-9280 | 4100ES, 4010ES, 4100U, and 4100+ | **NA** | **NA** | **NA** | **NA** | **NA** | ✓ |
| 2081-9281 2081-9282 | multiple | ✓ | ✓ | ✓ | ✓ | ✓ | **NA** |
| 4009-9801 | multiple | ✓ | ✓** | **NA** | **NA** | **NA** | **NA** |
| 4009-9802 | multiple | ✓ | **NA** | ✓ | **NA** | **NA** | **NA** |

### Battery Cabinets with Chargers

| Cabinet | Panel Compatibility | 2081-9275 18 Ah* | 2081-9287 25 Ah | 2081-9271 Rectangular 33 Ah | 2081-9276 Square 33 Ah | 2081-9296 50 Ah | 2081-9279 110 Ah |
|---|---|---|---|---|---|---|---|
| 4081-9301 4081-9302 | 4004R and 4010 | ✓ | ✓ | ✓ | ✓ | ✓ | **NA** |
| 4081-9306 4081-9308 | 4100ES, 4010ES, and 4100U | **NA** | **NA** | **NA** | **NA** | ✓ | ✓ |

* Batteries smaller than those listed are normally mounted in the product cabinet

** 25 Ah capacity was effective as of 7/2005.

✓ = Can be placed in the respective equipment cabinet

**NA =** Not applicable/not compatible

## External Battery Cabinet Specification Reference

### Battery Cabinets Without Chargers; Shallow Design with Front Door

| Model | Color | Listings | Description | | Dimensions |
|---|---|---|---|---|---|
| 2081-9281 | Beige | UL and FM | 2-Unit, 4100 style cabinet **without** charger; with locking solid door and battery shelf, primarily for use with 50 Ah batteries | | 25-3/4" W x 20-3/4" H x 6-3/4" D (654 mm x 527 mm x 171 mm) |
| 2081-9282 | Red | | | | |
| 4003-9860 | Beige | Multiple | Intended for use with 4003EC systems, for up to 33 Ah batteries (refer to 4003EC data sheet S4003-0002) | | 9-1/2" H x 24" W x 9" D (241 mm x 610 mm x 229 mm) |
| 4009-9801* | Beige | UL and FM | For up to 25 Ah batteries* | External battery cabinet **without** charger, with locking solid door and battery harness; for close-nippled mounting to fire alarm control panel cabinet | 16-1/4" W x 13-1/2" H x 5-3/4" D (413 mm x 343 mm x 146 mm)* |
| 4009-9802 | Beige | UL | For up to 33 Ah batteries | | 25-3/4" W x 20-3/4" H x 4-1/8" D (654 mm x 527 mm x 105 mm) |

* Depth increased for 25 Ah batteries effective 7/2005.

### Chargers for use with 4010 Fire Alarm Control Panels and 4004R Suppression Release Systems

*(refer to data sheet S4081-0001)*

| Model | Color | Input Voltage | Description | Dimensions |
|---|---|---|---|---|
| 4081-9301 | Beige | 120 VAC | Battery cabinet **with** charger for the 4010 and 4004R fire alarm control panel; **for up to 50 Ah batteries**; with front door<br>*Listings include: UL, ULC, FM, CSFM, and MEA (NYC), see data sheet for details* | 22-1/2" W x16-3/4" H x 8-3/8" D (572 mm x 425 mm x 213 mm) |
| 4081-9302 | Red | | | |

### Battery Cabinet Without Charger for 110 Ah Batteries; for use with compatible panel mounted chargers

*(refer to data sheet S2081-0012)*

| Model & Listings | Color | Cabinet Description | Compatible Chargers | Charger Description | Dimensions |
|---|---|---|---|---|---|
| 2081-9280 *Listings include: UL and CSFM* | Red | Battery cabinet for 2081-9279, 110 Ah batteries; includes 80 A battery fuse, terminals and battery connection cables; see data sheet for details | 4010-9xxx Series | 4010ES Main System Supply (MSS) | 26-1/2" W x 12" H x 12" D (673 mm x 305 mm x 305 mm) |
| | | | 4100-9xxx Series | 4100ES/4100U System Power Supplies (SPS) | |
| | | | 4100-5111<br>4100-5112<br>4100-5113 | 4100ES/4100U Additional SPS | |
| | | | 4100-5125<br>4100-5126<br>4100-5127 | 4100ES/4100U Remote Power Supply (RPS) | |
| | | | 4100-5120<br>4100-5121<br>4100-5122 | 4100ES/4100U TrueAlert Addressable Power Supply (TPS) | |
| | | | 4100-0104<br>4100-0114<br>4100-0124 | 4100 Legacy power supplies | |

### 4100ES/4010ES/4100U Compatible Battery Cabinet With Charger for 110 Ah Batteries (for ULC listed systems and for other applications unable to use panel mounted power supply charger; *refer to data sheet S4081-0002*)

| Model | Color | Input Voltage | Description | Dimensions |
|---|---|---|---|---|
| 4081-9306 | Red | 120 VAC | Battery cabinet with charger for up to 110 Ah batteries;<br>**NOTE:** Required for ULC listed charging of 110 Ah batteries*; Listings include: UL, ULC, FM, CSFM, and MEA (NYC), see data sheet for details* | 27-7/8" W x 13-1/2" H x 14-5/8" D (708 mm x 343 mm x 371 mm) |
| 4081-9308 | Red | 220/230/240 VAC, multi-tapped | | |
| 4100-9837 | Green LED Power-on Indicator Kit, **required for ULC listing,** mounts above access panel using knockout provided | | | |

# 7788F/7744F Series

## Wireless Fire Alarm Communicators for IntelliNet

Model 7788F

LISTED

### Advanced Wireless Alarm Monitoring

As expensive dedicated landlines, required for UL864 compliance disappear, and the future of GSM for alarm transmission becomes increasingly uncertain, the AES IntelliNet mesh radio network continues to offer unmatched reliability and speed in delivering wireless alarm signals to a central station without any third-party fees or reliance on networks operated by companies outside the alarm industry. The 7788F/7744F Series Subscribers provide the wireless communications link between the fire alarm panel and the central station receiver. Ideal for most commercial fire alarm applications, each 7788F/7744F Series Subscriber is housed in a full-sized, red, locked steel cabinet and supports a range of alarm panel inputs, including EOL fire, EOL supervised, and direct voltage from the panel (non-fire applications).

### Supervised Operation

AES Subscribers offer fully-supervised operation that includes monitoring of operating power (both primary AC and battery back-up) and the connection to the mesh radio network. Each subscriber "checks-in" with the AES central station receiver at least once every 24 hours. The supervision check-in time can be set to as often as needed for the application, as appropriate for the network. Because the central station operates the wireless network, there is no additional cost for air time to transmit supervisory signals.

### Full Data Reporting from Alarm Panel Digital Dialer

Models 7788F-ULP and 7744F-ULP come equipped with an IntelliPro-Fire Full Data Module (AES-7794) which enables reporting of full alarm data captured from the alarm panel's digital communicator. IntelliPro-Fire supports most alarm communication formats including Contact ID, Pulse, as well as Bosch Modem IIe and Modem IIIa2 (when converted to Contact ID format).

AES CORPORATION | IntelliNet For Alarm Monitoring

### Features – All models

- UL Listed commercial fire alarm applications.
- Meets NFPA 72 requirements
- Direct reporting to AES receiver across IntelliNet mesh radio network
- Each Subscriber acts as transmitter/receiver/repeater
- Simple and fast activation on network
- On board status LEDs for easy set up
- 8 programmable zone inputs – 7788F
- 4 programmable zone inputs and 4 reverse polarity inputs – 7744F
- Easy programming via AES handheld programmer or PC
- Rugged metal housing ideal for any commercial fire alarm application
- Narrowband compliant

### Models 7788F/7744F-ULP with IntelliPro Fire also includes

- IntelliPro Fire transmits full alarm data from virtually any fire alarm panel digital communicator
- Alarm format support for Contact ID, Pulse, as well as Bosch Modem IIe and Modem IIIa
- Easy installation in AES subscriber
- Operates in applications with or without a phone line

Wireless mesh networking is an innovative technology adopted by many industries with applications that need to communicate data over a large geographicv area with a high level of reliability at a low total cost of ownership.

The advanced design and 2-way communications capability provides easy installation, expansion, and management when compared to alternative communication methods, both wired and wireless.

# 7744F/7788F Series

AES CORPORATION | IntelliNet For Alarm Monitoring

## Technical Specifications

### 7788F/7744F Series Subscriber

**Dimensions**
- 13.25"H x 8.5"W x 4.3"D (34cm H x 21.5cm W x 11cm D)

**Weight**
- Approx. 7 pounds (3.2 kilograms), excludes battery.

**Radio Frequency**
- Standard Frequency Range: 450-470MHz (others available in 400-512MHz range)
- Output Power – 2 Watts

**Antenna**
- Included 2.5 db tamper resistant antenna mounts on enclosure
- Multiple remote antenna options available

**Power Input**
- 16.5VAC, 40VA transformer (not included) (AES 1640, ELK TRG1640, MG Electronics MGT1640 – UL Listed for use)

**Backup Battery**
- Will charge 12V battery up to 7.5 AH. Requires 12VDC 7.5 AH battery for UL 864.

**Alarm Signal Inputs (subscriber)**
- 7788F – 8 individually programmable zones
- 7744F – 4 individually programmable zones and 4 reverse polarity inputs

**UL Standards**
- UL 864 Edition 9 – Standard for Control Units and Accessories for Fire Alarm Systems
- UL 365 – Standard for Police Station Connected Burglar Alarm Units and Systems
- UL 1681 – Standard for Central Station Burglar Alarm Units

**Antenna Cut / Communication**

**Trouble Output**
- Form C relay; fail secure; rated for 24 VDC 1A resistive

**Reset Button**
- Located on main circuit board.

**Operating Temperature**
- 0° to 50° C (32° to 122°F)

**Storage Temperature**
- –10° to 60° C (14° to 140°F)

**Relative Humidity**
- 0 to 85% RHC, Non Condensing

### AES-7794 IntelliPro Fire

**Packaged with 7744F-ULP and 7788F-ULP**

**Input / Output Connections**
- RJ11 connection to AES subscriber for module data and power
- RJ11 connector for Handheld Programmer/PC programming
- RJ31X Telco connections - T and R both in and out via terminal strip and RJ45
- Alarm Panel digital communicator T and R both in and out via termina strip and RJ45
- Trouble output: Form C relay detects if Subscriber is off the network

**Alarm Formats**
- Support for Contact ID and Pulse formats as well as Modem IIe and Modem IIIa2 converted to CID

**Size**
- 2.8 x 5.0 inches (7.1cm x 12.7cm)

**Power Requirements**
- 12 VDC nominal - primary and backup power provided by the AES 7788F/7744F or other Subscriber

## How to Order

| Model | Description |
|---|---|
| **7744F** | 4 Zone Fire Alarm Subscriber with 4 reverse polarity inputs |
| **7744F-ULP** | 7744F Fire Alarm Subscriber with IntelliPro Fire full data module |
| **7788F** | 8 Zone Fire Alarm Subscriber |
| **7788F-ULP** | 7788F Fire Alarm Subscriber with IntelliPro Fire full data module |

## Optional Accessories

| | |
|---|---|
| **7041E** | Subscriber Handheld Programmer |
| **7794** | IntelliPro Fire Full Data Module |
| **1640** | Plug-in Transformer: 16.5VAC, 40VA |

*AES-IntelliNet™ is the industry leader in delivering high-quality mesh radio networks to the fire and security industry in commercial, corporate, government, and educational applications with its broad line of products and advanced network management tools. Users of AES-IntelliNet networks have gained significant revenue, communications, and cost advantages while meeting the high standards of reliability required for the fire and security industry. AES-IntelliNet alarm monitoring systems are deployed at hundreds of thousands of locations in over 130 countries.*

AES CORPORATION | IntelliNet For Alarm Monitoring

**For more information**
**Call 800-AES-NETS (800-237-6387)**

AES Corporation | 285 Newbury Street | Peabody, MA 01960 USA
Tel. +1 978-535-7310 | Fax +1 978-535-7313
Email info@aes-intellinet.com | Web www.aes-intellinet.com



7788-7744F/1/12/R4

NO EXCUSES!

# FAD


## FIRE ALARM DOCUMENTS

The FAD is the perfect fit to meet the demanding code requirements today. SAE's number one goal is to manufacture code compliant solutions and this product allows you to do just that. NFPA 72 2010 section 6.2.2.1 states, "A record of installed software and firmware version numbers shall be maintained at the location of the fire alarm control unit."

This durable 16 gauge steel enclosure with a solid piano hinge and key lock will keep all of your code required documents in one safe place. With a 4GB USB flash drive it stores your fire alarm software safe and secure eliminating the occurrences of the software not being on site when technicians arrive to service the system. Along with your fire alarm software you can store your test & inspection documents, service records, manuals & AS built drawings for the system. Using a standard USB B connector it allows you to plug in with any standard SB printer cable to upload or download information.

The FDB is designed to hold critical manuals and documents with a durable steel retainer. It has designated hooks to organize key rings and hold important business cards for easy access and reference. Inside the cover it has a organized note table that allows for documentation for passwords and other critical system information.

## Standard Features:

- Installed with a 4 gig digital flash drive with USB B connector
- 2 Key ring hooks to hold system keys
- Business card holder for key contacts
- Overall Dimensions are 12” x 13” tall and 2 ¼ deep
- 16 gauge steel box and cover for security
- Durable powercoat baked on finish other colors available
- Standard ¾”cat 30 key lock other lock assemblies available
- Solid stainless steel piano hinge
- Permanently screened white ink 1” high “Fire Alarm Documents”
- Legend sheet for passwords and system information

NEMA NFPA Made In U.S.A.

ISO 9001 REGISTERED COMPANY

ADA

ACEBOX
Space Age Electronics, Inc.
www.1sae.com
**800.486.1723** Toll Free
508.485.0966 Local
508.485.4740 Fax

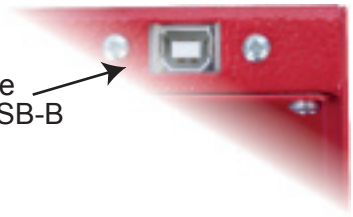


*No Excuses, Just Solutions!*

SPACE AGE ELECTRONICS, INC.

# Specifications:

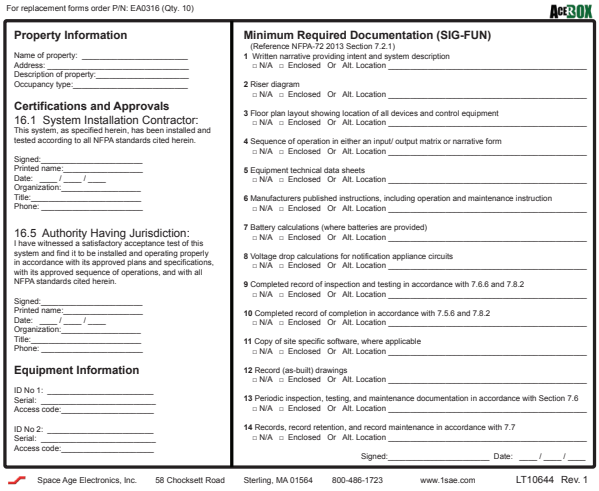
The fire alarm documents box (FAD) shall be constructed of 18 gauge cold rolled steel. It shall have a red powder coat epoxy finish. The cover shall be permanently screened with 1" high lettering "FIRE ALARM DOCUMENTS " with white indelible ink. The access door shall be locked with a 3/4" barrel lock and the hinge shall be a solid width 12" stainless steel piano hinge. The enclosure will supply 4 mounting holes. Inside the enclosure will accommodate standard 8 1/2 x 11 manuals and loose document records that will be protected within the enclosure. A legend sheet will be permanently attached to the door for system required documentation, key contacts and system information. The FAD will have securely mounted inside a minimum of 4 Gigabyte digital flash memory drive with a standard USB B connector for uploading and downloading information. The drive shall not be accessible without tools to any person whom gains access to the records. The enclosure shall also provide 2 key ring holders with a location to mount standard business type cards for key contact personnel.

USB Storage Interface
Requires Standard USB-B
Connector

Key Ring
Hooks

Business
Card Holder



For replacement forms order P/N: EA0316 (Qty. 10)

**Property Information**

Name of property: _____
Address: _____
Description of property: _____
Occupancy type: _____

**Certifications and Approvals**

16.1 System Installation Contractor:
This system, as specified herein, has been installed and tested according to all NFPA standards cited herein.

Signed: _____
Printed name: _____
Date: ___/___/___
Organization: _____
Title: _____
Phone: _____

16.5 Authority Having Jurisdiction:
I have witnessed a satisfactory acceptance test of this system and find it to be installed and operating properly in accordance with its approved plans and specifications, with its approved sequence of operations, and with all NFPA standards cited herein.

Signed: _____
Printed name: _____
Date: ___/___/___
Organization: _____
Title: _____
Phone: _____

**Equipment Information**

ID No 1: _____
Serial: _____
Access code: _____

ID No 2: _____
Serial: _____
Access code: _____

**Minimum Required Documentation (SIG-FUN)**
(Reference NFPA-72 2013 Section 7.2.1)

1 Written narrative providing intent and system description
□ N/A □ Enclosed Or Alt. Location _____

2 Riser diagram
□ N/A □ Enclosed Or Alt. Location _____

3 Floor plan layout showing location of all devices and control equipment
□ N/A □ Enclosed Or Alt. Location _____

4 Sequence of operation in either an input/ output matrix or narrative form
□ N/A □ Enclosed Or Alt. Location _____

5 Equipment technical data sheets
□ N/A □ Enclosed Or Alt. Location _____

6 Manufacturers published instructions, including operation and maintenance instruction
□ N/A □ Enclosed Or Alt. Location _____

7 Battery calculations (where batteries are provided)
□ N/A □ Enclosed Or Alt. Location _____

8 Voltage drop calculations for notification appliance circuits
□ N/A □ Enclosed Or Alt. Location _____

9 Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2
□ N/A □ Enclosed Or Alt. Location _____

10 Completed record of completion in accordance with 7.5.6 and 7.8.2
□ N/A □ Enclosed Or Alt. Location _____

11 Copy of site specific software, where applicable
□ N/A □ Enclosed Or Alt. Location _____

12 Record (as-built) drawings
□ N/A □ Enclosed Or Alt. Location _____

13 Periodic inspection, testing, and maintenance documentation in accordance with Section 7.6
□ N/A □ Enclosed Or Alt. Location _____

14 Records, record retention, and record maintenance in accordance with 7.7
□ N/A □ Enclosed Or Alt. Location _____

Signed: _____ Date: ___/___/___

Space Age Electronics, Inc. 58 Chocksett Road Sterling, MA 01564 800-486-1723 www.1sae.com LT10644 Rev. 1

Legend sheet for storing system information including contacts, sign-off , maintenance & test information, and alternate locations of additional records.

# Ordering Information:

| Part # | Description |
|---|---|
| **SSU00685** | **Fire Alarm Storage Cabinet RED** |
| **SSU00686** | **Custom screening with your Logo** |

Check out our Infinity line eFAD single gang 2 Gig digital storage solutions (IAMEFAD)

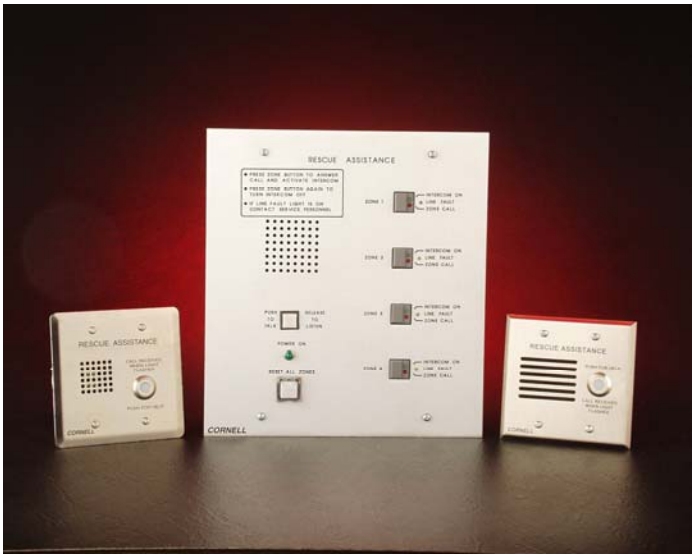

AceBOX
Space Age Electronics, Inc.
www.1sae.com
**800.486.1723** Toll Free
508.485.0966 Local
508.485.4740 Fax


*No Excuses, Just Solutions!*

# INSERT 3

# AREA OF REFUGE SYSTEM EQUIPMENT & ACCESSORIES

CORNELL
Emergency Response Systems




# *Rescue Assistance Systems*

**Now Available Larger Sizes & New Clear Coat Finish**

**Series 4200**
Audio/Visual
(Shown Left to Right)

4201B/V Vandal Proof Call Station

4204 Annunciator Panel

4201B Call Station

## *A Communication Need*

The Americans with Disabilities Act (ADA) now being enforced, requires a Rescue Assistance System in all newly constructed multi-story commercial buildings and public accommodations to provide a means to request evacuation assistance in emergencies. The ADA also applies to significant renovations of existing multi-story facilities.

## *A Reassuring Solution*

The 4200 Series Audio Rescue Assistance System is an extension of the time proven CORNELL 4100 Rescue Assistance System that has received wide industry acceptance. The 4200 includes voice communication, which is initiated by simply depressing the call station button transmitting the signal to a central annunciator panel and optional access to a public telephone line. A single pulse tone and a flashing light signals the caller that the alarm has been received. The control station can then talk to the caller. The caller need not take any other action to communicate with the control station, an important feature when a caller is under stress in an emergency situation.

## *Improved Surface Finish*

Our new self cleaning ceramic polymer coating preserves and protects the annunciator surface finish.

## *Larger Sizes Available*

Now available in standard sizes to 44 zones. Call factory for larger applications.

## *Versatile, Dependable*

The control station operator on receiving a call station signal activates a zone button that illuminates both a flashing red LED and a green “voice” LED. By depressing and releasing the “talk” button, voice communication is established for as long as required. Upon completion the appropriate zone button is depressed again; however, the flashing red light continues. If more than one zone is signaling, the control station accepts the calls in the same manner.

When the emergency is resolved, the control station operator pushes a reset button that restores the entire system to stand-by status. In the event of a wiring fault, each annunciator button is equipped with a yellow LED that will illuminate and an alarm that will sound identifying the area requiring service.

## *Vandal Proof*

CORNELL offers the optional 4201B/V Vandal Proof call stations. This design offers heavy duty switches and speakers along with stainless steel plates and tamper-proof screws. The switches and speakers are water-resistant for exterior applications.

## *Signage*

CORNELL offers a complete line of Rescue Assistance Signage. This includes a series of battery powered lighted room identification signs as well as direction and location signs. These signs meet ADA specifications for use with Areas of Rescue Assistance.

## *Customer Service*

An experienced and technically qualified staff is available to assist you in analyzing your application. For immediate service call CORNELL at:

**1-800-558-8957**

12/07 D4200CM

CORNELL COMMUNICATIONS, INC.
Milwaukee, Wisconsin USA • 800-558-8957 • 414-351-4660 • Fax 414-351-4657
www.cornell.com • sales@cornell.com

CORNELL
Emergency Response Systems

## Dimensions/Descriptions

| COMPONENT | MODEL | ZONES | ANNUNCIATOR PANEL | BACK BOX | BACK BOX |
|---|---|---|---|---|---|
| Annunciator Options | A-4204 | 4 | 11" H x 10" W | BB-40 | 10" H x 9" W x 3 ½" D |
| | ➡ A-4208 | 8 | 11" H x 14" W | ➡ BB-41 | 10" H x 13" W x 3 ½" D |
| | A-4212 | 12 | 11" H x 18" W | BB-42 | 10" H x 17" W x 3 ½" D |
| | A-4216/20 | 16/20 | 20" H x 14" W | BB-43 | 19" H x 13" W x 3 ½" D |
| | A-4224/28 | 24/28 | 20" H x 18" W | BB-44 | 19" H x 17" W x 3 ½" D |
| | A-4232/36 | 32/36 | 20" H x 22" W | BB-45 | 19" H x 21" W x 3 ½" D |
| | A-4240/44 | 42/44 | 20" H x 26" W | BB-46 | 19" H x 25" W x 3 ½" D |
| Call Station | ➡ 4201B & 4201B/V | Unlimited | Two Gang Plate | Two Gang Box | |

| COMPONENT | MODEL | DESCRIPTION | SIZE |
|---|---|---|---|
| Power Supply | ➡ B-5243A | Battery Back-up / Power Supply 24VDC 3 AMP Battery "standby" power with CORNELL supplied batteries | 15½ " H x 12" W x 4 ½ " D |
| Telephone Access Kit | TAK-4200 | A fully programmable auto dialer and digital announcer | 7 3/8" W x 5"H x 1 ¾"D |

## Specifications

The CORNELL Annunciator Panel shall include one alternate action switch with two internal LED indicators for each zone. An audible alarm on the Annunciator Panel will emit a minimum sound level of 90db at 30cm. A yellow LED light for each zone will illuminate and the alarm will emit a repeating sound if any of the supervised lines are faulted.
The panel shall be constructed of anodized aluminum with permanently silk-screened zone designations on the panel as well as a designation strip. The CORNELL Call Station, Model 4201B, shall consist of one momentary switch with LED and one audible alarm device with a sound level minimum of 70db at 30cm. The station will be wall mounted on a stainless steel plate.

### Wiring Requirements

Wiring shall consist of 22-gauge (minimum) wire. Three conductors plus one shielded pair are required between each Call Station and the Annunciator Panel not to exceed 3000 feet. Power wire shall be 18-gauge (minimum). Two conductors are required between the Power Supply and the Annunciator Panel not to exceed 500 feet.
The TAK-4200 requires a 120V AC outlet and an external telephone line.

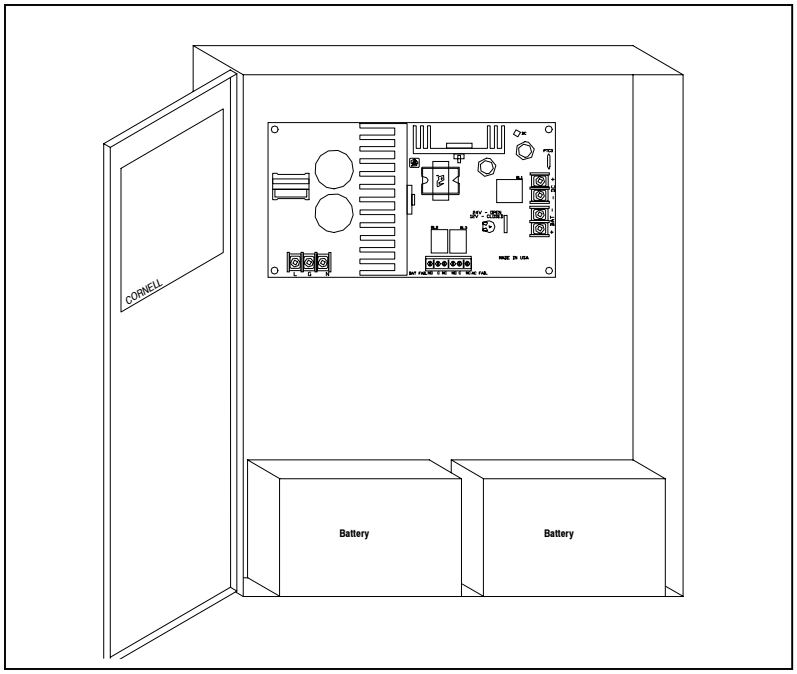
## Principle of Operation

| ACTIVITY | CONTROL PANEL | CALL STATION |
|---|---|---|
| Stand by Mode | No Light/Tone | No Light/Tone |
| Alarm Sent | Steady LED/Intermittent Tone | Steady LED, Tone/One Time |
| Alarm Acknowledged/Activated | Flashing Red LED/Steady Green | Flashing Button/One Time Tone |
| Intercom On | Push to Talk/Release to Listen | Hands Free Communication |
| Intercom Off | Flashing Red LED/Access Zone Button | Flashing Button |
| Wiring Fault | Yellow LED at Zone/Intermittent Tone | Button will not light |

CORNELL COMMUNICATIONS, INC.
Milwaukee, Wisconsin USA ▪ 800-558-8957 ▪ 414-351-4660 ▪ Fax 414-351-4657
www.cornell.com ▪ sales@cornell.com

CORNELL
Emergency Response Systems

# B-5243A - 12 or 24 Volt, Power Supply Battery Backup-up




B-5243A

***The Cornell B-5243A is UL listed for fire alarm, burglar alarm, access control applications and hospital signaling - nurse call equipment.***

**Rated Output:** 4 amps continuous supply current at 12 VDC and 3 amps continuous supply current at 24 VDC.

**Power:** 115VAC/60Hz, 1.45 amp. 4 amps continuous supply current at 12VDC(switch closed), 3 amps continuous supply current at 24 VDC (switch open).

**Circuit Protection:** Short circuit and thermal overload protection.

**Termination:** Screw terminals.

**Exterior:** Grey, baked enamel finish.

**Dimensions:**

16" H x 12" W x 5" D

**Indicator LED Diagnostics:**

| Red-DC | Green-AC | Status |
|---|---|---|
| On | On | Normal Operating condition |
| On | Off | Loss of AC |
| Off | On | No DC output |
| Off | Off | Loss of AC Discharged. No DC output |

**Mounting:** Slotted keyholes make it suitable for vertical wall or rack mounting.

Unit comes complete with power supply, enclosure, cam locks, battery leads and (2) 12 Volt batteries.

## ENGINEERING SPECIFICATIONS

The contractor shall furnish and install the *CORNELL* Power Supply/Battery Back-up providing 12 VDC 4 amps or 24 VDC 3 amps continuous supply current for use with 12 or 24 VDC products and other general purpose applications. Set the B-5243A to the desired DC output voltage by setting SW1 to the appropriate position. The power supply shall operate at 115 Volts AC 60 Hz.

**1-800-558-8957**

8-02

CORNELL COMMUNICATIONS, INC.
Milwaukee, Wisconsin USA ➨ 800-558-8957 ➨ 414-351-4660 ➨ Fax 414-351-4657
www.cornell.com ➨ sales@cornell.com

# INSERT 4

# FIRE ALARM INITIATING/ADDRESSABLE DEVICES, & ACCESSORIES

# Multi-Application Peripherals

*UL, ULC, CSFM Listed; FM Approved;*
*MEA (NYC) Acceptance**

IDNet or MAPNET II Communicating Devices
Addressable Manual Stations

## Features

**Individually addressable manual fire alarm stations with:**

- Power and data supplied via IDNet or MAPNET II addressable communications using a single wire pair
- Operation that complies with ADA requirements
- The NO GRIP Single Action Station and Retrofit Kit are available with a more easily operated pull lever for applications where anticipated users may find the standard station lever difficult to activate
- Pull lever that protrudes when alarmed
- Break-rod supplied (use is optional)
- Models are available with single or double action (breakglass or push) operation
- UL listed to Standard 38

**Compatible with the following Simplex® control panels:**

- Model Series 4100ES, 4010ES, 4008, 4010, 4100U, 4020, 4100, and 4120 fire alarm control panels equipped with either IDNet or MAPNET II communications
- Model Series 2120 Communicating Device Transponders (CDTs) equipped with MAPNET II communications

**Compact construction:**

- Electronics module enclosure minimizes dust infiltration
- Allows mounting in standard electrical boxes
- Screw terminals for wiring connections

**Tamper resistant reset key lock** (keyed same as Simplex fire alarm cabinets)

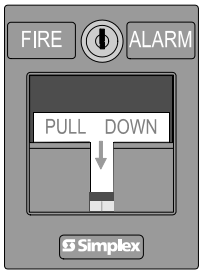
**Multiple mounting options:**

- Surface or semi-flush with standard boxes or matching Simplex boxes
- Flush mount adapter kit
- Adapters are available for retrofitting to commonly available existing boxes

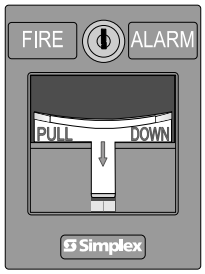
## Description

The Simplex addressable manual station combines the familiar Simplex manual station housing with a compact communication module that is easily installed to satisfy demanding applications. Its integral individual addressable module (IAM) constantly monitors status and communicates changes to the connected control panel via IDNet or MAPNET II communications wiring.

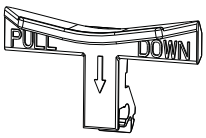
* Refer to page 2 for specific model listings. This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7150-0026:224 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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.



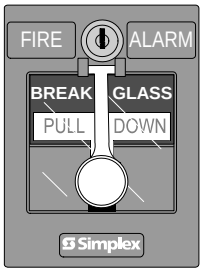

4099-9001
Single action



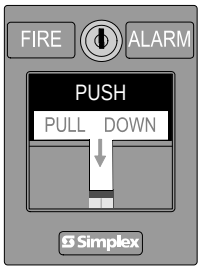

4099-9020
NO GRIP
Single action




4099-9805
NO GRIP
Retrofit kit




4099-9002
Breakglass




4099-9003
Push


With 2099-9828
Institutional
Cover kit

## Operation

**Activation** of the 4099-9001 single action manual station requires a firm downward pull to activate the alarm switch. Completing the action breaks an internal plastic break-rod (visible below the pull lever, use is optional). The use of a break-rod can be a deterrent to vandalism without interfering with the minimum pull requirements needed for easy activation. The pull lever latches into the alarm position and remains extended out of the housing to provide a visible indication.

**Single Action NO GRIP Station 4099-9020.** For applications such as California Building Code, Title 24, which requires "Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist" the model 4099-9020 station provides a more easily operated pull lever compared to standard stations. Retrofit of existing stations is available using the 4099-9805 Retrofit kit.

**Double Action Stations (Breakglass)** require the operator to strike the front mounted hammer to break the glass and expose the recessed pull lever. The pull lever then operates as a single action station.

**Double Action Stations (Push Type)** require that a spring loaded interference plate (marked PUSH) be pushed back to access the pull lever of the single action station.

**Station reset** requires the use of a key to reset the manual station lever and deactivate the alarm switch. (If the break-rod is used, it must be replaced.)

**Station testing** is performed by physical activation of the pull lever. Electrical testing can be also performed by unlocking the station housing to activate the alarm switch.

## Addressable Manual Station Product Selection

### Addressable Manual Stations, Red Housing with White Letters and White Pull Lever

| Model | Description | Housing | Pull Lever | Listings |
|---|---|---|---|---|
| 4099-9001 | Single action, English | FIRE ALARM | PULL DOWN | UL, ULC, FM, CSFM, MEA |
| 4099-9001CB | Single action, Bilingual English and French | FEU FIRE | TIREZ PULL | ULC, FM |
| 4099-9001CF | Single action, French | ALARME FEU | ABAISSEZ | |
| 4099-9002 | Double action, Breakglass operation, English | FIRE ALARM | PULL DOWN | UL, ULC, FM, CSFM, MEA |
| 4099-9003 | Double action, Push operation, English | | | |
| 4099-9020 | Single action NO GRIP operation, English | FIRE ALARM | PULL DOWN | UL, ULC, FM, CSFM |

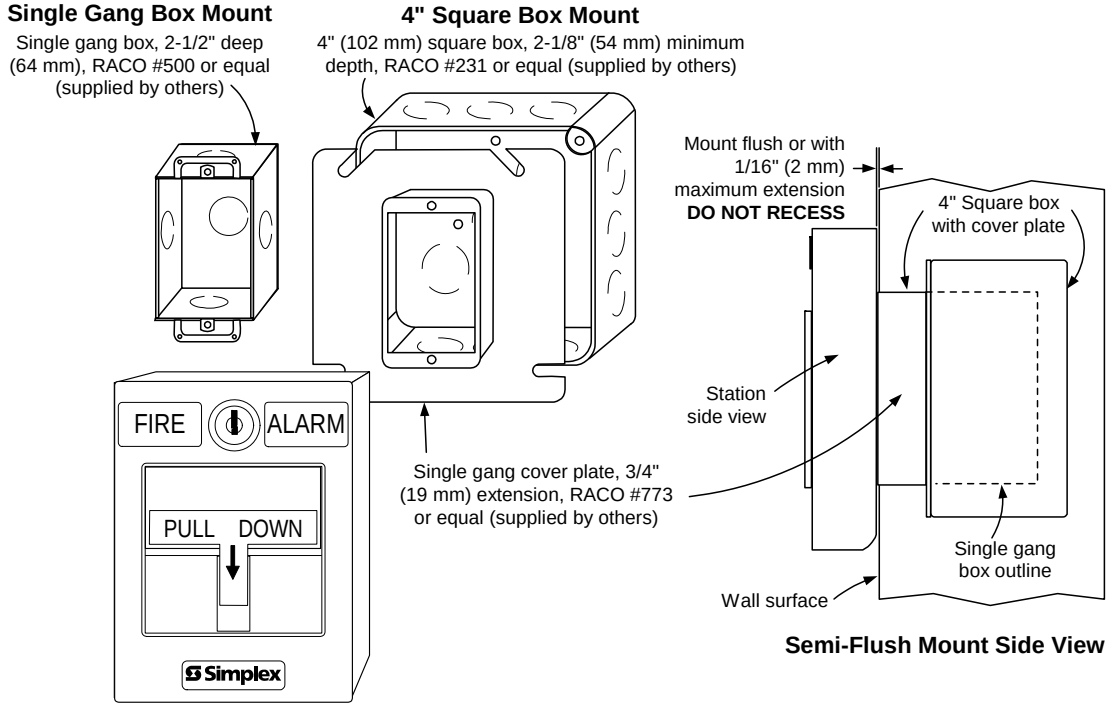
### Accessories

| Model | Description | |
|---|---|---|
| 2975-9178 | Surface mount steel box, red | Refer to page 3 for dimensions |
| 2975-9022 | Cast aluminum surface mount box, red | |
| 2099-9813 | Semi-flush trim plate for double gang switch box, red | Typically for retrofit, refer to page 4 |
| 2099-9814 | Surface trim plate for Wiremold box V5744-2, red | |
| 2099-9819 | Flush mount adapter kit, black | Refer to page 4 for details |
| 2099-9820 | Flush mount adapter kit, beige | |
| 2099-9803 | Replacement breakglass | |
| 2099-9804 | Replacement break-rod | |
| 2099-9828 | Institutional cover kit for field installation on 4099-9001 | |
| 4099-9805 | Retrofit Kit for field conversion of a single action station to a NO GRIP station; refer to Installation Instructions 579-1007 for details | |

## Specifications (refer to Installation Instructions 574-332 for additional information)

| | |
|---|---|
| Power and Communications | IDNet or MAPNET II communications, 1 address per station |
| Address Means | DIP switch, 8 position |
| Wire Connections | Screw terminal for in/out wiring, for 18 to 14 AWG wire |
| UL Listed Temperature Range | 32° to 120° F (0° to 49° C) intended for indoor operation |
| Humidity Range | Up to 93% RH at 100° F (38° F) |
| Housing Color | Red with white raised lettering |
| Material | Housing and pull lever are Lexan polycarbonate or equal |
| Pull Lever Color | White with red raised lettering |
| Housing Dimensions | 5” H x 3-3/4” W x 1” D (127 mm x 95 mm x 25 mm) |

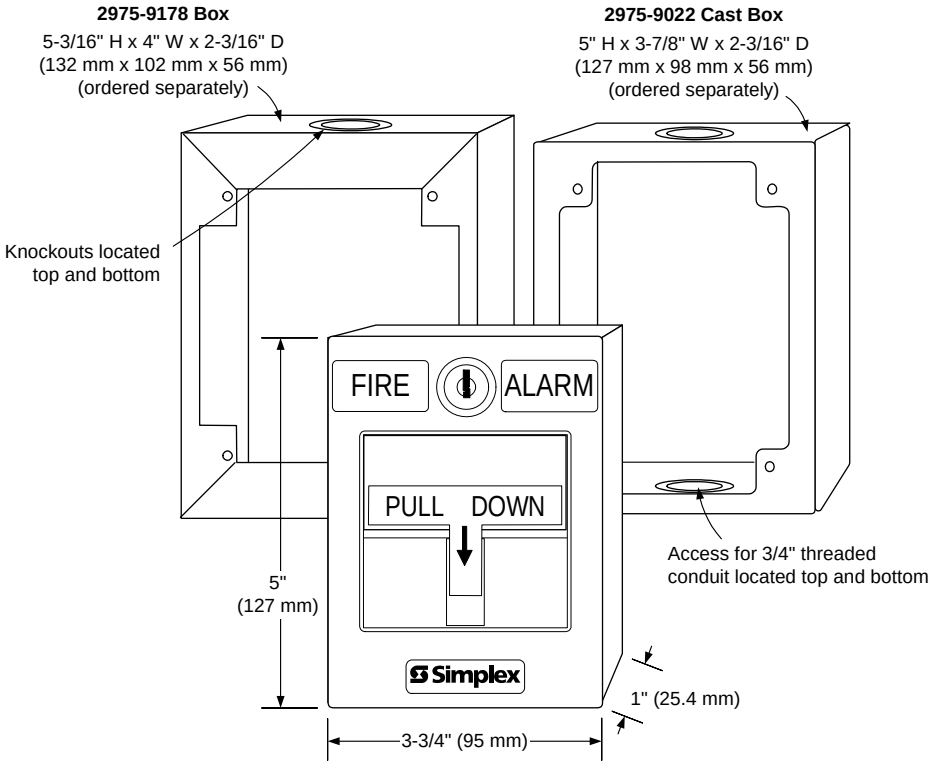
## Addressable Manual Station Semi-Flush Mounting



## Addressable Manual Stations Surface Mounting

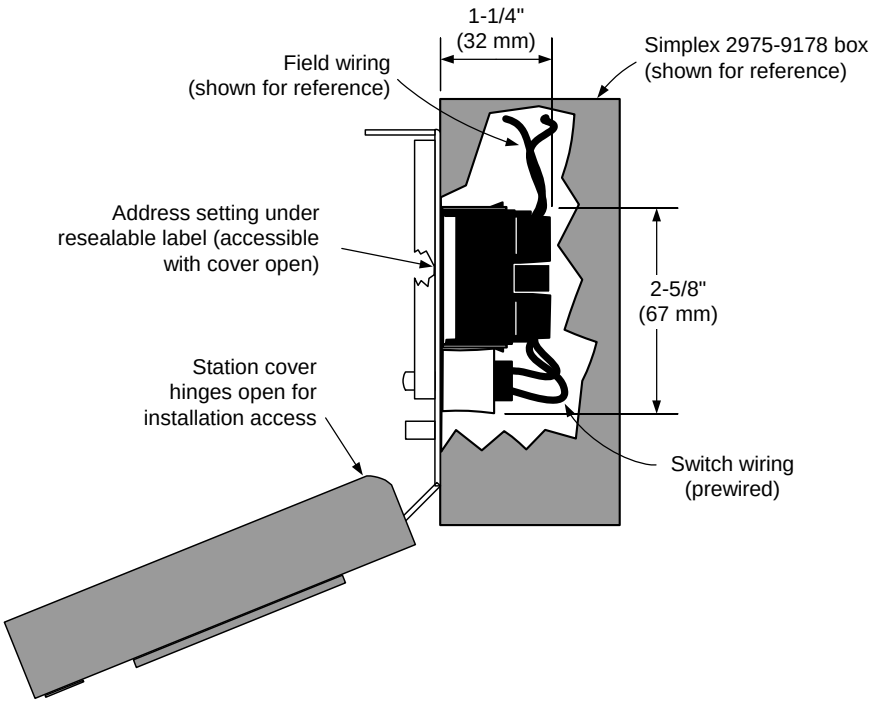
**Preferred Mounting.** For surface mounting of these addressable manual stations, the preferred electrical boxes are shown in the illustration to the right.

**Additional Mounting Reference.** Refer to page 4 for Wiremold box mounting compatibility.




4099 Series Addressable Manual Station

## Surface Mount Side View with Internal Detail



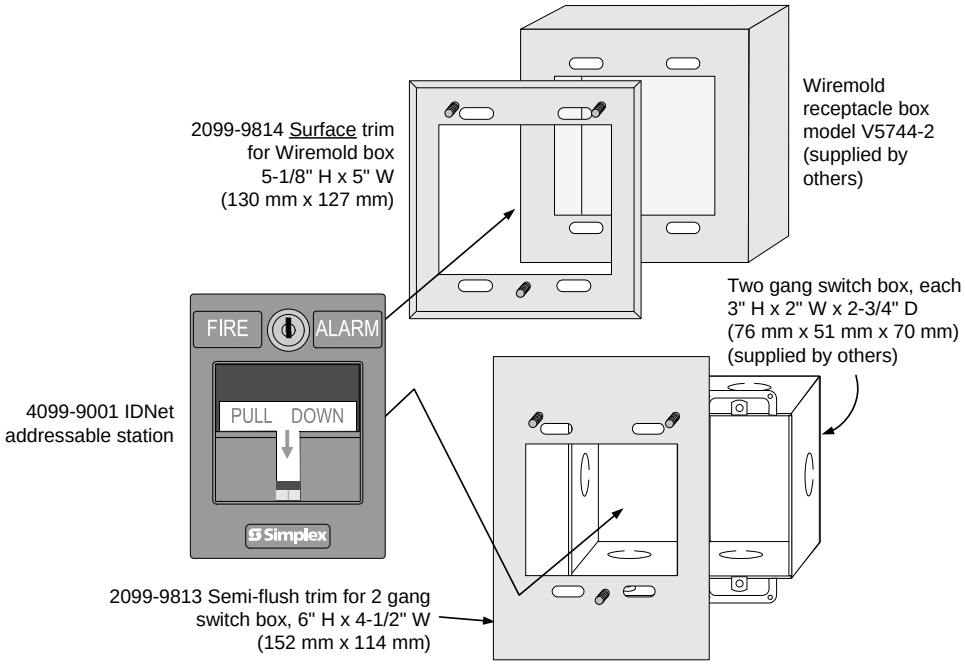

## Application Reference

Refer to NFPA 72, the *National Fire Alarm and Signaling Code*, and all applicable local codes for complete requirements for manual stations. The following summarizes the basic requirements.

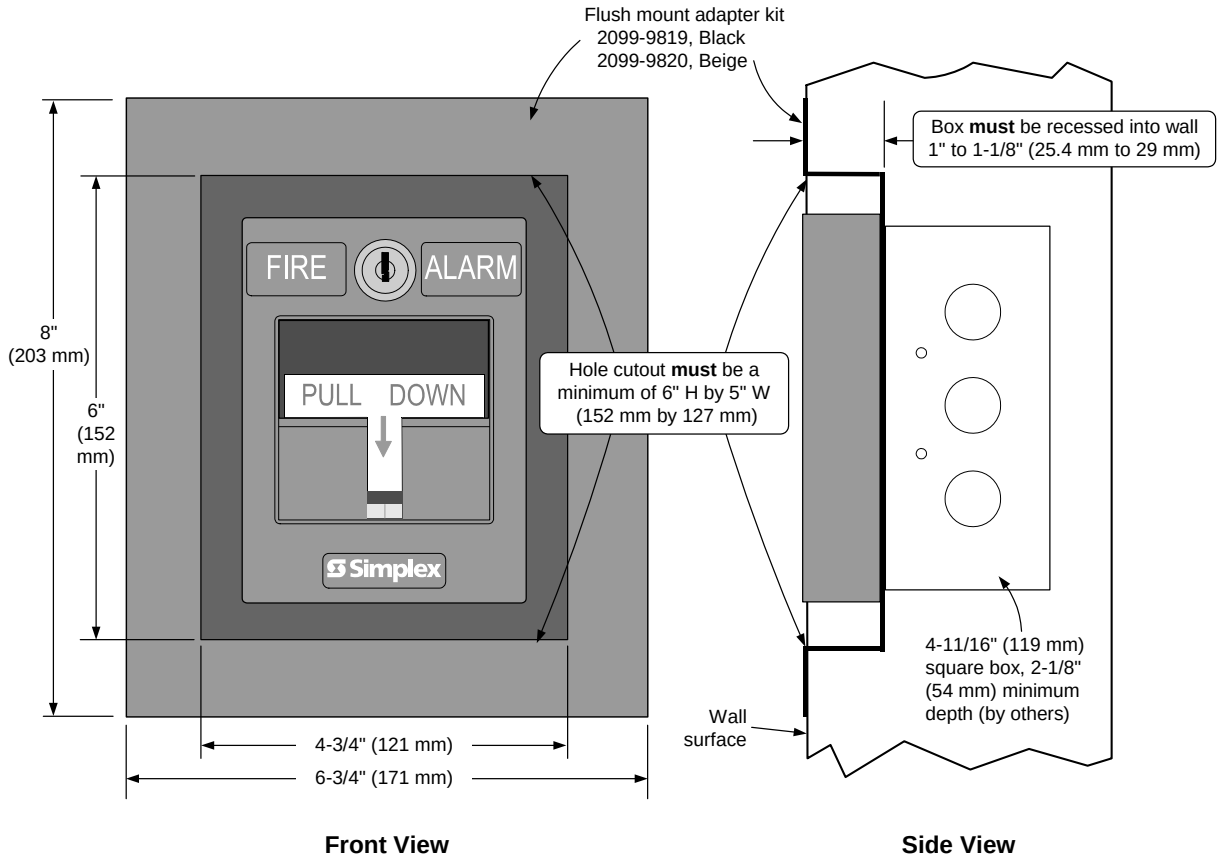
1. Stations shall be located in the normal path of exit and distributed in the protected area such that they are unobstructed and readily accessible.
2. Mounting shall be with the operable part not less than 42 in (1.07 m) and not more than 48 in (1.22 m) above floor level.
3. At least one station shall be provided on each floor. Additional stations shall be provided to obtain a travel distance not more than 200 ft (61 m) to the nearest station from any point in the building.
4. When manual station coverage appears limited in any way, additional stations should be installed.

## Addressable Manual Station, Additional Mounting Information

For retrofit and new installations, additional compatible mounting boxes and the required adapter plates are shown in the illustration to the right.




## Addressable Manual Station, Flush Mounting Information



Simplex®

# True*Alarm* Analog Sensing

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

TrueAlarm Analog Sensors – Photoelectric and Heat; Standard Bases and Accessories

## Features

**TrueAlarm analog sensing provides:**

- Digital transmission of analog sensor values via IDNet or MAPNET II two-wire communications

**For use with the following Simplex® products:**

- 4100ES, 4100U, 4010ES, and 4010 Series control panels; and 4008 Series control panels with reduced feature set (refer to data sheet S4008-0001 for details)
- 4020, 4100, and 4120 Series control panels, Universal Transponders, and 2120 TrueAlarm CDTs equipped for MAPNET II operation

**Fire alarm control panel provides:**

- Peak value logging allowing accurate analysis of each sensor for individual sensitivity selection
- Sensitivity monitoring satisfying NFPA 72 sensitivity testing requirements; automatic individual sensor calibration check verifies sensor integrity
- Automatic environmental compensation, multi-stage alarm operation, and display of sensitivity directly in percent per foot
- Ability to display and print detailed sensor information in plain English language

**Photoelectric smoke sensors provide:**

- Seven levels of sensitivity from 0.2% to 3.7% (refer to additional information on page 3)

**Heat sensors provide:**

- Fixed temperature sensing
- Rate-of-rise temperature sensing
- Utility temperature sensing
- Listed to UL 521 and ULC-S530

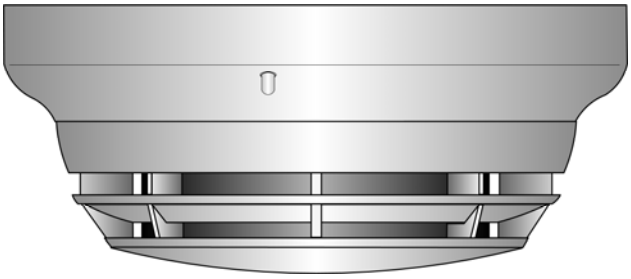
**General features:**

- Listed to UL 268 and ULC-S529
- Louvered smoke sensor design enhances smoke capture by directing flow to chamber; entrance areas are minimally visible when ceiling mounted
- Designed for EMI compatibility
- Magnetic test feature is provided
- Optional accessories include remote LED alarm indicator and output relays

**Additional base reference:**

- For isolator bases, refer to data sheet S4098-0025
- For sounder bases, refer to data sheet S4098-0028
- For photo/heat sensors, refer to data sheet S4098-0024 (single address) and S4098-0033 (dual address)

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listings 7272-0026:218, 7271-0026:231, 7270-0026:216, and 7300-0026:217 for allowable values and/or conditions concerning material presented in this document. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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.



4098-9714 TrueAlarm Photoelectric Sensor Mounted in Base

## Description

**Digital Communication of Analog Sensing.** TrueAlarm analog sensors provide an analog measurement digitally communicated to the host control panel using Simplex addressable communications. At the control panel, the data is analyzed and an average value is determined and stored. An alarm or other abnormal condition is determined by comparing the sensor's present value against its average value and time.

**Intelligent Data Evaluation.** Monitoring each sensor's average value provides a continuously shifting reference point. This software filtering process compensates for environmental factors (dust, dirt, etc.) and component aging, providing an accurate reference for evaluating new activity. With this filtering, there is a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

**Control Panel Selection.** Peak activity per sensor is stored to assist in evaluating specific locations. The alarm set point for each TrueAlarm sensor is determined at the host control panel, selectable as more or less sensitive as the individual application requires.

**Timed/Multi-Stage Selection.** Sensor alarm set points can be programmed for timed automatic sensitivity selection (such as more sensitive at night, less sensitive during day). Control panel programming can also provide multi-stage operation per sensor. For example, a 0.2% level may cause a warning to prompt investigation while a 2.5% level may initiate an alarm.

**Sensor Alarm and Trouble LED Indication.** Each sensor base's LED pulses to indicate communications with the panel. If the control panel determines a sensor is in alarm, or is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor base's LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify the alarmed sensors.

# True*Alarm* Sensor Bases and Accessories

## Sensor Base Features

**Base mounted address selection:**

- Address remains with its programmed location
- Accessible from front (DIP switch under sensor)

**General features:**

- Automatic identification provides default sensitivity when substituting sensor types
- Integral red LED for power-on (pulsing), or alarm or trouble (steady on)
- Locking anti-tamper design mounts on standard outlet box
- Magnetically operated functional test

## Sensor Bases

**4098-9792, Standard sensor base**

**4098-9789, Sensor base with wired connections for:**

- 2098-9808 Remote LED alarm indicator **or** 4098-9822 relay (unsupervised)

**4098-9791, Sensor base with supervised relay driver output** (not compatible with 2120 CDT)**:**

- Relay operation is programmable and can be manually operated from control panel
- Use with remote mount 2098-9737 relay
- Also includes wired connections for remote LED alarm indicator **or** 4098-9822 relay

## Sensor Base Options

**2098-9737, Remote or local mount supervised relay:**

- DPDT contacts for resistive/suppressed loads, power limited rating of 3 A @ 28 VDC; non-power limited rating of 3 A @ 120 VAC (requires external 24 VDC coil power)

**4098-9822, LED Annunciation Relay:**

- Activates when base LED is on steady, indicating local alarm or trouble
- DPDT contacts for resistive/suppressed loads, power limited rating of 2 A @ 28 VDC; non-power limited rating of 1/2 A @ 120 VAC, (requires external 24 VDC coil power)

**4098-9832, Adapter plate:**

- Required for surface or semi-flush mounting to 4” square electrical box and for surface mounting to 4” octagonal box
- Can be used for cosmetic retrofitting to existing 6-3/8” diameter base product

**2098-9808, Remote red LED Alarm Indicator:**

- Mounts on single gang box (shown in illustration to right)


## Description

TrueAlarm sensor bases contain integral addressable electronics that constantly monitor the status of the detachable photoelectric or heat sensors. Each sensor’s output is digitized and transmitted to the system fire alarm control panel every four seconds.

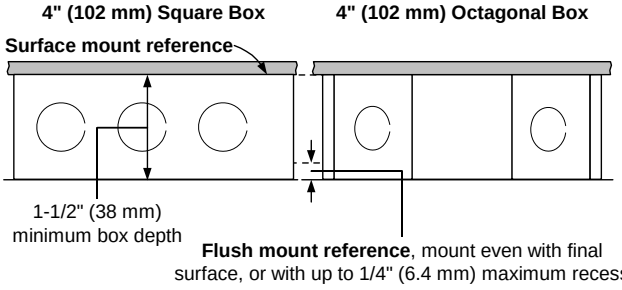
Since TrueAlarm sensors use the same base, different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing them to be disabled), heat sensors may be installed without reprogramming the control panel. Although the control panel will indicate an incorrect sensor type, the heat sensor will operate at a default sensitivity providing heat detection for building protection at that location.

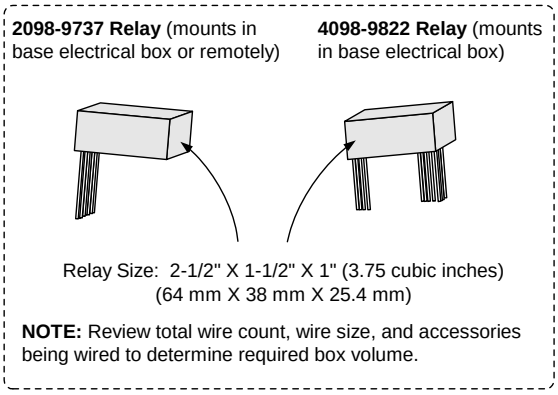
## Mounting Reference

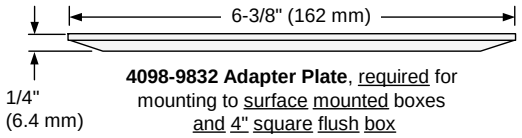
**Electrical Box Requirements:** (boxes are by others)

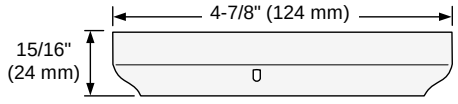
**Without relay:** 4" octagonal or 4" square, 1-1/2" deep; single gang, 2" deep

**With relay :** 4" octagonal or 4" square, 1-1/2" deep, with 1-1/2" extension ring




**TrueAlarm Bases**
4098-9789, -9791, & -9792

# True*Alarm* Sensors

## Features

**Sealed against rear air flow entry**

**Interchangeable mounting**

**EMI/RFI shielded electronics**

**Heat sensors:**

- Selectable rate compensated, fixed temperature sensing with or without rate-of-rise operation
- Rated spacing distance between sensors:

| Fixed Temp. Setting | UL & ULC Spacing | FM Spacing, Either Fixed Temperature Setting |
|---|---|---|
| 135° F (57.2° C) | 60 ft x 60 ft (18.3 m) | 20 ft x 20 ft (6.1 m) for fixed temperature only; **RTI = Quick** |
| 155° F (68° C) | 40 ft x 40 ft (12.2 m) | 50 ft x 50 ft (15.2 m) for fixed temperature with either rate-of-rise selection; **RTI = Ultra Fast** |

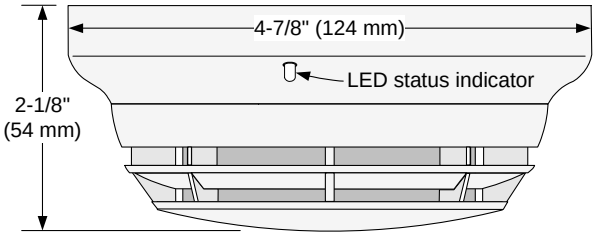
**Smoke Sensors:**

- Photoelectric technology sensing
- 360° smoke entry for optimum response
- Built-in insect screens

## 4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing. Seven levels of sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivities of 0.2%, 0.5%, and 1% are for special applications in clean areas. Standard sensitivities are 1.5%, 2.0%, 2.5%, and 3.7%. Sensitivity is selected and monitored at the fire alarm control panel.*

The sensor head design provides 360° smoke entry for optimum response to smoke from any direction. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.



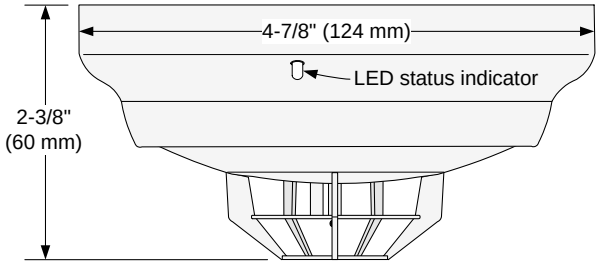

4098-9714 Photoelectric Sensor with Base

## 4098-9733 Heat Sensor

TrueAlarm heat sensors are self-restoring and provide rate compensated, fixed temperature sensing, selectable with or without rate-of-rise temperature sensing. Due to its small thermal mass, the sensor accurately and quickly measures the local temperature for analysis at the fire alarm control panel.

Rate-of-rise temperature detection is selectable at the control panel for either 15° F (8.3° C) or 20° F (11.1° C) per minute. Fixed temperature sensing is independent of rate-of-rise sensing and programmable to operate at 135° F (57.2° C) or 155° F (68° C). In a slow developing fire, the temperature may not increase rapidly enough to operate the rate-of-rise feature. However, an alarm will be initiated when the temperature reaches its rated fixed temperature setting.

TrueAlarm heat sensors can be programmed as a utility device to monitor for temperature extremes in the range from 32° F to 155° F (0° C to 68° C). This feature can provide freeze warnings or alert to HVAC system problems. *Refer to specific panels for availability.*




4098-9733 Heat Sensor with Base

**<u>WARNING</u>: In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.**

## Application Reference

Sensor locations should be determined only after careful consideration of the physical layout and contents of the area to be protected. Refer to NFPA 72, the *National Fire Alarm and Signaling Code*. On smooth ceilings, smoke sensor spacing of 30 ft (9.1 m) may be used as a guide.*

***** For detailed application information including sensitivity selection, refer to Installation Instructions 574-709.

## TrueAlarm Analog Sensing Product Selection Chart

### TrueAlarm Sensor Bases

(Refer to Application Manual 574-709 and Installation Instructions 574-707 for additional information)

| Model | Description | Compatibility | Mounting Requirements |
|---|---|---|---|
| 4098-9792 | Standard Sensor Base, no options | Sensors 4098-9714 and 4098-9733 | 4" octagonal or 4" square box, 1-1/2" min. depth; or single gang box, 2" min. depth |
| 4098-9789 | Sensor Base with connections for Remote LED Alarm Indicator **or** Unsupervised Relay | Sensors 4098-9714 and 4098-9733<br>2098-9808 remote LED alarm indicator **or** 4098-9822 relay | 4" octagonal or 4" square box<br>**Note:** Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference. |
| 4098-9791** | Sensor Base with connections for **Supervised** Remote Relay **and** connections for Remote Alarm Indicator **or** Unsupervised Relay | Sensors 4098-9714 and 4098-9733<br>2098-9737 remote relay (supervised)<br>2098-9808 remote alarm indicator **or** 4098-9822 relay (unsupervised) | ** **NOTE:** 4098-9791 is NOT compatible with the 2120 CDT |

### TrueAlarm Sensors

| Model | Description | Compatibility | Mounting Requirements |
|---|---|---|---|
| 4098-9714 | Photoelectric Smoke Sensor | Bases 4098-9792, 4098-9789, and 4098-9791 | Refer to base requirements |
| 4098-9733 | Heat Sensor | | |

### TrueAlarm Sensor/Base Accessories

| Model | Description | Compatibility | Mounting Requirements |
|---|---|---|---|
| 2098-9737 | Supervised Relay, mounts remote or in base electrical box | For use with 4098-9791 base | **Remote Mounting** requires 4" octagonal or 4" square box, 1-1/2" minimum depth<br>**Base Mounting** requires 4" octagonal box, 2-1/8" deep with 1-1/2" extension ring |
| 2098-9808 | Remote Red LED Alarm Indicator on single gang stainless steel plate | Bases 4098-9789 and 4098-9791 | Single gang box, 1-1/2" minimum depth |
| 4098-9822 | Relay, tracks base LED status (unsupervised, mounts only in base electrical box) | | 4" octagonal box, 2-1/8" deep with 1-1/2" extension ring |
| 4098-9832 | Adapter Plate | Bases 4098-9792, -9789, & -9791 | **Required** for surface or semi-flush mounted 4" square box and for surface mounted 4" octagonal box |

## Specifications

| | | |
|---|---|---|
| **General Operating Specifications** | | |
| Communications and Sensor Supervisory Power | | MAPNET II or IDNet, auto-select, 24-40 VDC w/data, 400 μA typical, 1 address per base |
| Communications Connections | | Screw terminals for in/out wiring, 18 to 14 AWG (0.82 $mm^2$ to 2.08 $mm^2$) |
| Remote LED Alarm Indicator Current | | 1 mA typical, no impact to alarm current |
| Remote LED Alarm Indicator and Relay Connections | | Color coded wire leads, 18 AWG (0.82 $mm^2$ ) |
| UL Listed Temperature Range | | 32° to 100° F (0° to 38° C) |
| Operating Temperature Range | with 4098 -9733 | 32° to 122° F (0° to 50° C) |
| | with 4098-9714 | 15° to 122° F (-9° to 50° C) |
| Humidity Range | | 10 to 95% RH |
| Smoke Sensor Ambient Ratings | 4098-9714, Photoelectric Sensor | Air velocity = 0-4000 ft/min (0-1220 m/min) |
| Housing Color | | Frost White |
| **4098-9791 Base With Supervised Remote Relay 2098-9737** (see page 2 for contact ratings) | | |
| Externally Supplied Relay Coil Voltage | | 18-32 VDC (nominal 24 VDC) |
| Supervisory Current | | 270 μA, from 24 VDC supply |
| Alarm Current with 2098-9737 Relay | | 28 mA, from 24 VDC supply |
| **4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789 and 4098-9791** (see page 2 for contact ratings) | | |
| Externally Supplied Relay Coil Voltage | | 18-32 VDC (nominal 24 VDC) |
| Supervisory Current | | Supplied from communications |
| Alarm Current | | 13 mA from separate 24 VDC supply |

Simplex®

# True*Alarm* Analog Sensing

*UL, ULC, CSFM Listed; FM Approved;*
*MEA (NYC) Acceptance**

Sounder Base 4098-9794 for use with
TrueAlarm Photoelectric and Heat Sensors

## Features

**Modular TrueAlarm sensor base with built-in electronic alarm sounder:**

- Piezoelectric sounder provides high output (88 dBA) with low current requirements (20 mA)
- For use with interchangeable TrueAlarm photoelectric or heat sensors (ordered separately)

**Sounder operation details:**

- Powered from 24 VDC or from a compatible Notification Appliance Circuit (NAC)
- Synchronized via communications or by the NAC, if NAC powered**
- Sounder can be manually activated from the control panel
- Sensor and sounder operation is listed to UL Standard 268
- Sounder operation is also listed to UL Standard 464 as an audible notification appliance

**TrueAlarm analog sensing operation:**

- Analog sensor information is digitally communicated to the control panel via IDNet or MAPNET II two-wire communications
- Sensor information is processed by the control panel to determine sensor status

**For use with the following Simplex® products:**

- 4100ES, 4010ES, 4010, and 4100U Series control panels; and 4008 Series control panels with reduced feature set (refer to data sheet S4008-0001 for details)
- 4020, 4100, and 4120 Series control panels, and Universal Transponders equipped for MAPNET II operation

**General features:**

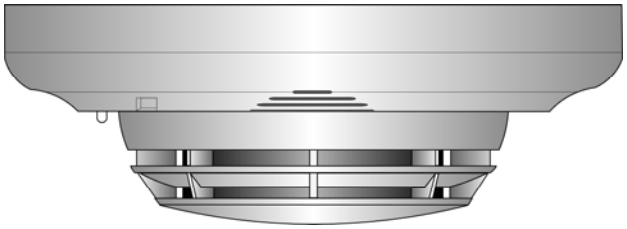
- Louvered smoke sensor design enhances smoke capture by directing flow to chamber; entrance areas are minimally visible when ceiling mounted
- Designed for EMI compatibility
- Magnetic test feature is provided
- Optional accessories include remote LED alarm indicator and output relays

**Additional base reference:**

- For standard bases, refer to data sheet S4098-0019
- For isolator bases, refer to data sheet S4098-0025
- For photo/heat sensors, refer to data sheet S4098-0024 (single address) and S4098-0033 (dual address)

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listings 7300-0026:217 and 7271-0026:231 for allowable values and/or conditions concerning material presented in this document. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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.

** Total quantity of sounder bases available for coding on the same communications channel may vary with panel application and availability of NAC power. Refer to specific control panel requirements.



TrueAlarm Photoelectric Sensor Mounted in Sounder Base 4098-9794

## TrueAlarm Analog Sensing Description

Sounder bases combine an audible notification appliance and a TrueAlarm analog sensor to provide:

**Digital Communication of Analog Sensing.** Sensors provide an analog measurement that is digitally communicated to the control panel where it is analyzed and an average value is determined and stored. An alarm or other abnormal condition is determined by comparing the sensor's present value against its average value.

**Intelligent Data Evaluation.** Monitoring each sensor's average value provides a software filtering averaging process that compensates for environmental factors (dust, dirt, etc.) and component aging, providing an accurate reference for evaluating new activity. The result is a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

**Control Panel Selection.** Peak activity per sensor is stored to assist in evaluating specific locations. The alarm set point for each TrueAlarm sensor is determined at the control panel, selectable as more or less sensitive as the individual application requires.

**Timed/Multi-Stage Selection.** Alarm set points can be programmed for timed automatic sensitivity selection (such as more sensitive at night, less sensitive during day). Control panel programming can also provide multi-stage operation per sensor. For example, a 0.2% level may cause a warning to prompt investigation while a 2.5% level may initiate an alarm.

**Sensor Alarm and Trouble LED Indication.** Each sensor base's LED pulses to indicate communications with the panel. If the control panel determines that a sensor is in alarm, or that it is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor base's LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify the alarmed sensors.

## Additional Sounder Base Features

**Base mounted address selection** allows the address to remain with its programmed location when the sensor is removed for service or type change. Access is from the front under the removable sensor.

**Automatic sensor type identification** provides default sensitivity when substituting sensor types. Different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing them to be disabled), heat sensors may be installed without reprogramming the control panel.

**Integral red LED** indicates power-on by pulsing, or alarm or trouble when steady on. The exact status is annunciated at the fire alarm control panel.

### Fire alarm control panel provides:

- Peak value logging allowing accurate analysis of each sensor for individual sensitivity selection
- Sensitivity monitoring satisfying NFPA 72 sensitivity testing requirements; automatic individual sensor calibration check verifies sensor integrity
- Automatic environmental compensation, multi-stage alarm operation, and display of sensitivity directly in percent per foot
- Ability to display and print detailed sensor information in plain English language

## Accessories

**4098-9822, LED Annunciation Relay** activates when base LED is on steady, indicating a local alarm or trouble. Contacts are DPDT, rated 2 A @ 30 VDC; 1/2 A @ 120 VAC for transient suppressed loads (requires external 24 VDC coil power).

**2098-9808, Remote red LED Alarm Indicator** mounts on a single gang box to provide status indications where the sensor location may not be readily visible.

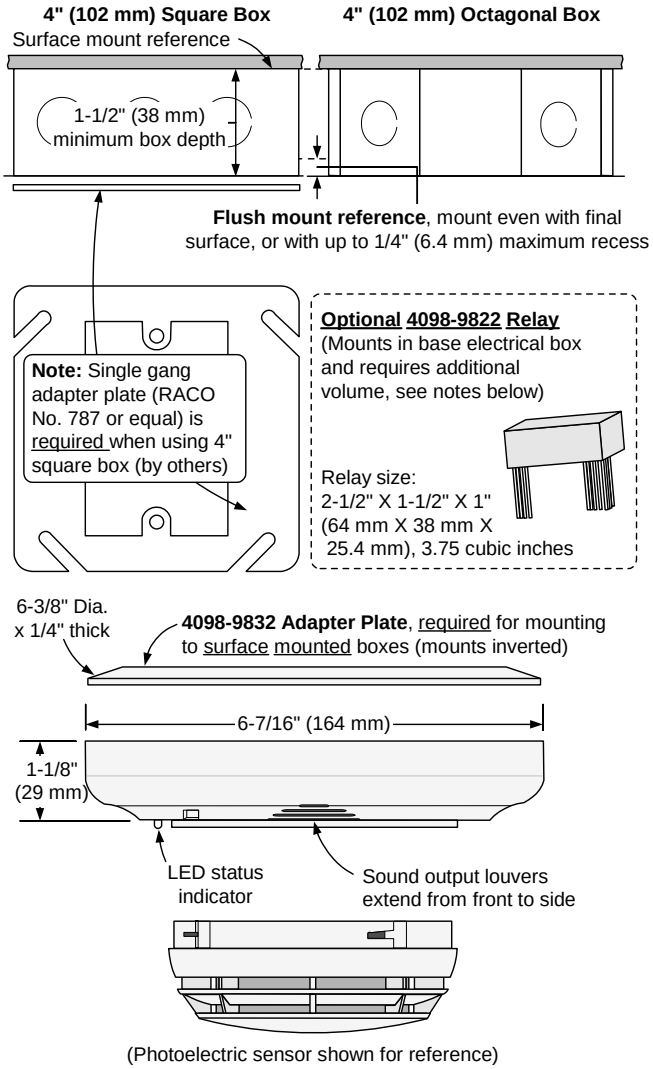

2098-9808 Remote LED Alarm Indicator

## Mounting Reference

**Electrical Box Requirements:** (boxes are by others)

**Without relay:** 4" octagonal or 4" square, 1-1/2" deep; single gang, 2" deep

**With relay :** 4" octagonal or 4" square, 1-1/2" deep, with 1-1/2" extension ring




(Photoelectric sensor shown for reference)

**NOTES:**

1. Review actual wire size, wire count, box type, and whether 4098-9822 relay is used before determining box size.
2. Mounting to flush mounted box also fits single gang handy box, 2-1/8" (51 mm) deep if wiring allows. (Not applicable if 4098-9822 relay is used.)
3. For surface mounted boxes, use 4" square box with single gang adapter plate (RACO No. 787 or equal, by others) or 4" octagonal box, both require 4098-9832 Adapter Plate.
4. When 4098-9822 relay is used, mount relay in electrical box and use 1-1/2" extension ring (by others) on 4" square or octagonal box of 1-1/2" or 2-1/8" depth as required.
5. Refer to Installation Instructions 574-707 for additional information.

## TrueAlarm Analog Sensor Features

**Sealed against rear air flow entry**

**Electronics are EMI/RFI shielded**

**Heat sensors:**

- Selectable rate compensated, fixed temperature sensing with or without rate-of-rise operation
- Rated spacing distance between sensors:

| Fixed Temp. Setting | UL & ULC Spacing | FM Spacing, Either Fixed Temperature Setting |
|---|---|---|
| 135° F (57.2° C) | 60 ft x 60 ft (18.3 m) | 20 ft x 20 ft (6.1 m) for fixed temperature only; **RTI = Quick** |
| 155° F (68° C) | 40 ft x 40 ft (12.2 m) | 50 ft x 50 ft (15.2 m) for fixed temperature with either rate-of-rise selection; **RTI = Ultra Fast** |

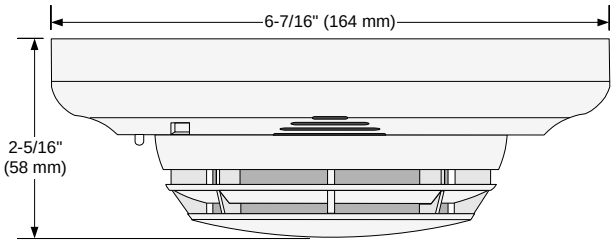
**Smoke Sensors:**

- Photoelectric technology sensing
- 360° smoke entry for optimum response
- Built-in insect screens

## 4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing. Seven levels of sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivities of 0.2%, 0.5%, and 1% are for special applications in clean areas. Standard sensitivities are 1.5%, 2.0%, 2.5%, and 3.7%. Sensitivity is selected and monitored at the fire alarm control panel.*

The sensor head design provides 360° smoke entry for optimum smoke response. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.



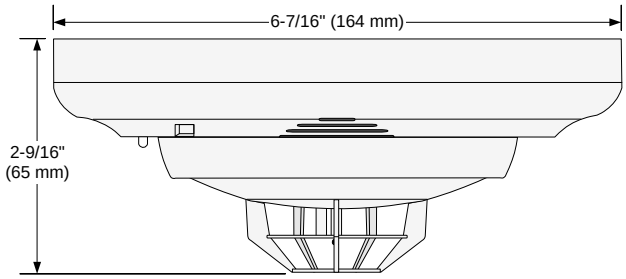

4098-9714 Photoelectric Sensor with Sounder Base

## 4098-9733 Heat Sensor

TrueAlarm heat sensors are self-restoring and provide rate compensated, fixed temperature sensing, selectable with or without rate-of-rise temperature sensing. Due to its small thermal mass, the sensor accurately and quickly measures the local temperature for analysis at the fire alarm control panel.

Rate-of-rise temperature detection is selectable at the control panel for either 15° F (8.3° C) or 20° F (11.1° C) per minute. Fixed temperature sensing is independent of rate-of-rise sensing and programmable to operate at 135° F (57.2° C) or 155° F (68° C). In a slow developing fire, the temperature may not increase rapidly enough to operate the rate-of-rise feature. However, an alarm will be initiated when the temperature reaches its rated fixed temperature setting.

TrueAlarm heat sensors can be programmed as a utility device to monitor for temperature extremes in the range from 32° F to 155° F (0° C to 68° C). This feature can provide freeze warnings or alert to HVAC system problems. *Refer to specific panels for availability*.




4098-9733 Heat Sensor with 4098-9794 Sounder Base

**WARNING: In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.**

## Application Reference

Sensor locations should be determined after careful consideration of the physical layout and contents of the area to be protected. Refer to NFPA 72, the *National Fire Alarm and Signaling Code*. On smooth ceilings, smoke sensor spacing of 30 ft (9.1 m) may be used as a guide. For detailed application information, refer to *4098 Detectors, Sensors, and Bases Application Manual*, Part Number 574-709.*

***** For detailed application information including sensitivity selection, refer to Installation Instructions 574-709.

## TrueAlarm Analog Sensing Product Selection Chart

### TrueAlarm Sounder Base*

| Model | Description | Compatibility | Mounting Requirements |
|---|---|---|---|
| 4098-9794 | Sounder Base with connections for Remote LED Alarm Indicator **or** Unsupervised Relay | **Sensors:** 4098-9714 and 4098-9733 | Refer to page 2, mounting reference |
| | | **Options:** 2098-9808 remote LED alarm indicator **or** 4098-9822 relay | |

### TrueAlarm Sensors (ordered separately)

| Model | Description | Mounting Requirements |
|---|---|---|
| 4098-9714 | Photoelectric Smoke Sensor | Refer to page 2, mounting reference |
| 4098-9733 | Heat Sensor | |

### Sounder Base Accessories (ordered separately if required)

| Model | Description | | Mounting Requirements |
|---|---|---|---|
| 4098-9832 | Adapter Plate, **required** for surface mounted 4" electrical boxes | | Refer to page 2, mounting reference |
| 2098-9808 | Choose **one** if required | Remote red LED Alarm Indicator on single gang stainless steel plate | Single gang box, 1-1/2" minimum depth |
| 4098-9822 | | Relay, tracks base LED status (unsupervised, to be mounted only in base electrical box) | Mounts in base electrical box (requires 1-1/2" extension on 4" square or octagonal box) |

* Refer to data sheet S4098-0019 for other compatible bases. Refer to Installation Instructions 574-707 and Application Manual 574-709 for additional information.

## Specifications

| | | |
|---|---|---|
| **General Operating Specifications** | | |
| Communications and Sensor Supervisory Power | | MAPNET II or IDNet, auto-select, 24-40 VDC w/data, 400 μA typical, 1 address per base, supplied by control panel |
| Communications and Sounder Power Connections | | Screw terminals for in/out wiring, 18 to 14 AWG (0.82 $mm^2$ to 2.08 $mm^2$) |
| Remote LED Alarm Indicator | Current | 1 mA typical supplied from communications, no impact to alarm current |
| | LED Connections | Color coded wire leads, 18 AWG (0.82 $mm^2$ ) |
| UL Listed Temperature Range | | 32° F to 100° F (0° C to 38° C) |
| Operating Temperature Range | With 4098-9733 | 32° F to 122° F (0° C to 50° C) |
| | With 4098-9714 | 15° F to 122° F (-9° C to 50° C) |
| Humidity Range | | 10 to 95% RH |
| Smoke Sensor Ambient Ratings | 4098-9714, Photoelectric Sensor | Air velocity is 0-4000 ft/min (0-1220 m/min) |
| Housing Color | | Frost White |
| **Sounder Operation** | | |
| Sounder Voltage | | 18 to 32 VDC from steady external source or from NAC |
| Alarm Current (Sounder On) | | 20 mA @ 24 VDC, 24 mA maximum @ 32 VDC |
| Sounder Output | | 88 dBA minimum @ 10 ft (3 m) per UL Standard 464, *Audible Signaling Appliances* and UL Standard 268, *Smoke Detectors for Fire Protective Signaling Systems* |
| Sounder Power Supervision (Selectable) | Supervised | Select for continuous 24 VDC power, loss of power is communicated to panel |
| | Unsupervised | Select when connected to NAC for sounder power, NAC provides supervision |
| NAC Powered Operation | | When in alarm, will sound when NAC is in alarm, allowing synchronized pattern (Temporal or March Time, etc.) controlled by the NAC |
| **4098-9822 Unsupervised Relay Option** | | |
| Externally Supplied Relay Voltage | | 18-32 VDC, steady source recommended (wires to remote LED leads) |
| Alarm Current | | 13 mA from separate 24 VDC supply |
| Contact Ratings, DPDT contacts for resistive/suppressed loads | | Power limited rating: 2 A @ 30 VDC |
| | | Non-power limited rating: 1/2 A @ 120 VAC |
| Relay Operation | | Tracks base LED status, relay is on with trouble or alarm at the base |

Simplex®

# Multi-Point Peripherals

*UL, ULC, CSFM Listed;*
*FM Approved**

## TrueAlarm CO Sensor Bases for Smoke, Heat, and Photo/Heat Sensors using IDNet Communications

## Features

**TrueAlarm addressable CO sensor bases contain a carbon monoxide (CO) sensing module providing both CO toxic gas monitoring *and* enhanced fire detection:**

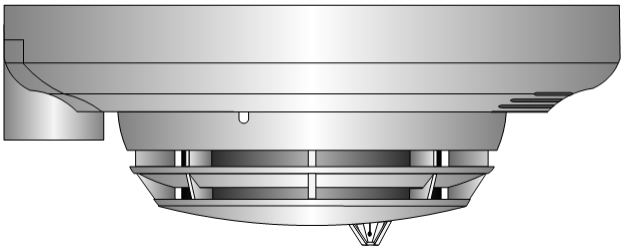
- For use with 4100ES, 4010ES, or 4100U fire alarm control panels (4100U requires software revision 12.05 or higher)
- CO sensor bases support (and require) a TrueAlarm photoelectric, photo/heat or heat sensor (ordered separately)
- Model 4098-9797 provides standard features, model 4098-9798 also provides a piezoelectric sounder
- CO sensor bases are multi-point devices, consume only one IDNet address, and receive both communications and sensor power from the IDNet channel (the sounder base requires separate 24 VDC system power or NAC connection)
- Listed to UL 268, *Smoke Detectors for Fire Alarm Signaling Systems* and UL 2075, *Gas and Vapor Detectors and Sensors*; allowing systems to be listed to Standard 2034, *Single and Multiple Station Carbon Monoxide Alarms*
- Listed by ULC to CSA 6.19-01 *Residential Carbon Monoxide Alarming Devices*
- Three types of CO influenced operation are available; UL 2034 CO alarm detection; UL 2075 CO (OSHA) level monitoring for ventilation control; and multi-criteria fire sensor analysis with algorithms that combines optical and CO gas monitoring information

**Operation of a CO sensor base with a photoelectric or a photo/heat sensor allows:**

- Independent sensor operation ***or*** selectable multi-sensor modes of *False Alarm Reduction* ***or*** *Faster Detection*
- **False Alarm Reduction** analyzes CO and photoelectric sensor information together to provide a sophisticated rejection of non-fire conditions normally troublesome as false alarms (steam, dust, aerosols, etc.)
- **Faster Detection** (increased sensitivity) algorithm analyzes CO and photoelectric sensor information to allow the presence of CO to implement an increased photoelectric sensitivity for high value locations (museums, electrical equipment rooms, etc.)

**Sounder base operation details:**

- When connected to a panel NAC through the 4905-9835 Temporal Code Module, the sounder base can provide temporal code 3 (TC3) for fire, or temporal code 4 (TC4) for toxic carbon monoxide alarms
- 4905-9835 module may also be used to code other (non-fire) dedicated carbon monoxide notification appliances (refer to data sheet S4905-0006)
- Sounder can be manually activated from the panel
- Sounder operation is also listed to UL 464 as an audible notification appliance



TrueAlarm CO Sensor Base with Sounder
(shown with 4098-9754 Photo/Heat Sensor)

## Features *(Continued)*

**4100ES/4100U/4010ES Control Panel operation summary:**

- CO sensor data is stored and analyzed at the panel; a new CO Service Report provides easy information access (see sample on page 3)
- Five (5) year end of life status indication with CO sensor expiration notices occurring within 12 months and within 6 months, allowing service replacement planning
- Analog sensor information is digitally transmitted to the host control panel via IDNet communications for processing to evaluate and track status
- Carbon monoxide concentration in ppm (parts per million) is available for viewing from the panel user interface
- For OSHA compliant CO gas sensing, CO condition level may be programmed by concentration (must be above 30 ppm)
- 4100ES Audio Control Panels can provide a CO Relocation Message with Temporal Code 4 tone and Voice Evacuation (reference UCSET1393, see S4100-0034)

**General features:**

- Operation of a CO sensor base with heat sensor provides dual independent sensor operation
- New CO test mode allows functional testing of each sensor technology including the CO sensor
- Optional accessories include remote alarm LED, alarm relay, and mounting adapter plate
- Designed for EMI compatibility
- Provides magnetic test

**CO sensor element is easily replaced when end of service life is reached:**

- Access to CO sensor replacement cartridge (CORC, 4098-9746) requires removal of interchangeable sensor head providing tamper monitoring (sensor removal causes a trouble condition)

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:330 for allowable values and/or conditions concerning material presented in this document. Listings and approvals under Simplex Time Recorder Co. are the property of SimplexGrinnell LP, Westminster.

## CO Sensor Base Description

**Carbon monoxide (CO)** is an odorless, colorless, tasteless gas produced by the incomplete combustion of heating fuels such as wood, coal, heating oil, and natural gas. CO is also a byproduct of many materials experiencing unintentional fire or even incipient fire conditions. Monitoring of CO levels can warn of physically harmful concentrations, however, sensing of CO levels below the harmful level can also provide improved understanding of incipient fire conditions when evaluated in combination with photoelectric fire sensor information from the same location.

**Simplex® CO sensor bases** combine an electrolytic CO sensing module with a TrueAlarm analog sensor to provide a single multiple sensing assembly using one system address. The CO sensor can be enabled/disabled, used in LED/Switch modes and custom control, and can be made public for communication across a fire alarm Network.

**CO sensor operation** is similar to other TrueAlarm sensors (photoelectric or heat). It provides current analog values, average analog value, "No Answer" troubles, "Wrong Device" troubles, over threshold, concentration in ppm, and monitors for the presence of the CO sensor. Base mounted address selection allows the address to remain with its location when the sensor is removed for service or type change. Address access is from the front, under the removable sensor. An integral red LED indicates power-on by pulsing, or alarm or trouble when steady on, and also provides test mode status (see page 3). Detailed status is available at the fire alarm control panel.

## CO Sensing, Detailed Operation

**Toxic Gas Sensing, UL 2034/UL 2075.** For CO toxic gas detection, the bases provide toxic gas sensing to the UL 2034 and UL 2075 standards. Toxic gas sensing may be selected at the same time as any of the combined CO photo fire detection modes are selected.

**Toxic Gas Sensing, OSHA Compliant.** For OSHA compliant gas sensing, the desired threshold level (above 30 ppm) is selected at the control panel as required for the application, typically for ventilation control. Refer to page 3 for additional OSHA CO monitoring information.

**Enhanced Fire Sensing.** Each sensor provides an analog measurement digitally communicated to the control panel for analysis. At the panel, these analog values are used separately, or combined, to evaluate for conditions indicative of fire, incipient fire, excessive heat, and freeze warning. For fire, the addition of a CO sensor provides two new selectable modes of operation: *Nuisance Alarm Reduction Mode* and *Faster Fire Detection*. These two modes were developed using the results of extensive testing of actual fires performed under a wide variety of conditions. (Refer to page 4 for additional operation mode options.)

**Nuisance Alarm Reduction Mode** allows the host control panel to combine photoelectric sensor input and CO sensor level input to reduce false alarms caused by non-fire conditions. Non-fire conditions can be steam from bathroom showers, particles from dusty environments, aerosols from personal care products, tobacco smoke, cooking smoke, or other similar conditions.

## CO Sensing, Detailed Operation *(Continued)*

**Nuisance Alarm Reduction Details.** For applications of anticipated nuisance alarm conditions, photoelectric sensitivity is normally selected for 3.7%/ft smoke obscuration. However, the addition of CO sensing allows the host control panel to apply software verification similar to the timed alarm verification feature often used with conventional smoke detection.

**Faster Fire Detection.** For applications where faster response to incipient or slow building fires is desired and environment appropriate, the Faster Fire Detection mode correlates the outputs of the CO sensor and the photoelectric sensor to provide increased sensitivity. This mode provides earlier detection compared to a standard sensitive photoelectric sensor setting, and also provides more false alarm reduction compared to using a sensitive setting in an area not normally considered appropriate.

**Faster Fire Detection Details.** TrueAlarm photoelectric sensors can be selected to be as sensitive as 0.2%/ft obscuration for applications evaluated as appropriate to that level. However, if the environment is not suitable for that sensitivity level, the Faster Fire Detection mode allows the photoelectric sensor to be selected as a "standard" 2.5%/ft obscuration, but with the presence of a significant level of CO, the combination of CO and photo sensing input can allow an equivalent sensitivity approaching 0.5%/ft obscuration. The host control panel tracks two photoelectric sensitivities, the one selected for photoelectric operation only (typically 2.5%), and the CO correlation sensitivity that it adjusts depending on the amount of CO present.

## Control Panel Operations

**Smoke sensor features include:** sensitivity monitoring satisfying NFPA 72 sensitivity testing requirements, automatic individual sensor calibration checking to verify sensor integrity, automatic environmental compensation, available multi-stage alarm operation, display of sensitivity directly in percent per foot, monitoring of peak activity per sensor, alarm set point, and time of day or multi-stage alarm selection.

**Sensor Alarm and Trouble LED Indications.** The sensor base LED pulses to indicate communications with the panel. If a sensor is in alarm, or has a trouble condition, the status is annunciated at the control panel and that base LED will turn on steady. During a system alarm, the panel will control LEDs such that a trouble indication will return to pulsing to help identify the sensors in alarm.

**Reported CO Sensor troubles** are: Disabled, Almost Expired 12 Months, Almost Expired 6 Months, Expired (End of Life), Short, and Sensor Missing/Failed.

**Trouble Details.** "Almost Expired" is similar to the "Almost Dirty" trouble for a photoelectric sensor. "Expired" trouble is similar to the "Dirty" trouble for a TrueAlarm photoelectric sensor. CO sensor technology does not support automatic sensitivity testing and drift compensation as is available with a photoelectric sensor. End of useful CO sensor life is based upon a set 5 year operational lifetime, tracked by date code built into the CO sensor module electronics. Although the CO sensor will continue to function after the 5 year expired trouble is indicated, replacement is required to ensure proper detection accuracy.

## Control Panel Operations *(Continued)*

**Panel Test Mode.** To facilitate functional testing of the CO sensor, a new test mode is available in the host control panel. In this mode, the CO sensor, and installed heat or smoke sensor can be easily ***functionally*** tested.

**Panel Test Mode Details.** When in the CO test mode, the internal multiple sensor analysis algorithms are disabled allowing each sensor to be quickly tested either individually or simultaneously, depending on the test equipment used. CO testing can be performed using a Solo Model 332 aerosol dispenser (or equal). (Testing is available through your local authorized Simplex product supplier.) The base LED will display steady ON when individual sensors are activated during test. Refer to the Application Reference section for more information.

**OSHA CO monitoring.** For OSHA compliant gas sensing, control panel software supports custom programming based upon CO concentration levels. For example, turn on ventilation if the CO level is above X ppm and then turn off ventilation when the level drops below Y ppm (or select either value as a range if desired). This is separate from alarm set points.

**Multi-Point Allocation.** 4100ES and 4010ES control panels require only one (1) point at the host panel per CO sensor base. For 4100U control panels, the requirement is three (3) points at the host panel per CO sensor base with the 4098-9754 multi-sensor, and two (2) points for the other sensors. Depending on CO sensor base and sensor choice, up to seven (7) points can be made public to a connected Simplex Fire Alarm Network. Each CO sensor base uses a single address with "sub-points" layered underneath (such as 1-1-0, 1-1-1, 1-1-2, ….1-1-6). (Additional multi-point allocation detail is described in reference data sheet S4090-0011.)

**CO Sensor Base Power Requirements.** Power for the standard CO sensor base is provided by IDNet communications. *No additional wiring is required for upgrading of existing installed TrueAlarm sensor bases.* CO sensor sounder bases do require system supplied separate 24 VDC (or NAC) wiring, the same as the standard sounder base.

## Accessories

**2098-9808, Remote red LED Alarm Indicator** mounts on a single gang box to provide status indications where the sensor location may not be readily visible. (See illustration to right.)


**4098-9822, LED Annunciation Relay** activates when base LED is on steady, indicating a local alarm or trouble. Contacts are DPDT, rated 2 A @ 30 VDC; 1/2 A @ 120 VAC for transient suppressed loads (requires external 24 VDC coil power).

## Application Reference

Determine sensor locations after careful consideration of the physical layout and contents of the area to be protected.

**For fire alarm applications:**

- Refer to NFPA 72, the *National Fire Alarm and Signaling Code*
- On smooth ceilings, smoke sensor spacing of 30 ft (9.1 m) may be used as a guide.

**For detailed application information:**

- Refer to *4098 Detectors, Sensors, and Bases Application Manual*, Part Number 574-709.

**For toxic gas sensor placement and mounting:**

- Refer to NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Warning Equipment in Dwelling Units*
- Sensors may be either wall or ceiling mounted
- Per NFPA 720, Section 5.1 (2005 edition):
  5.1.1 A carbon monoxide alarm or detector shall be centrally located outside of each separate sleeping area in the immediate vicinity of the bedrooms.
  5.1.2 Each alarm or detector shall be located on the wall, ceiling, or other location as specified in the installation instructions that accompany the unit.

## TrueAlarm CO Service Reports

**TrueAlarm CO Service Reports** (sample below) contain information on the CO sensors programmed in the panel displaying pertinent data such as current concentration value in ppm, End of Life date, and current state. This report allows determination of which sensors will require attention.

```
Service Port                                                        Page 1

REPORT 6 : TrueAlarm CO Report                  12:34:56am    FRI    31-MAY-13

Channel 1 (M1)

Zone                                              Current    End of
Name       CUSTOM LABEL                           Value    Life Date  State
M1-1-2     Conference Room 17 CO Toxic Gas        457PPM   01-APR-18  PRI
M1-2-2     Boiler Room CO Toxic Gas                0PPM    01-APR-18  NOR
TRUE ALARM CO REPORT COMPLETED
         Press RETURN for next Screen OR CTRL-X to abort
```

## TrueAlarm Analog Sensing Product Selection Chart

### TrueAlarm CO Sensor Base

| Model | Description | |
|---|---|---|
| 4098-9797 | CO Base, Standard operation | Select TrueAlarm sensor from list below |
| 4098-9798 | CO Base with Sounder | |

### TrueAlarm Sensors, select one per CO Sensor Base

| Model | Description | |
|---|---|---|
| 4098-9714 | Photoelectric Smoke Sensor | Refer to selection table below for available operation modes |
| 4098-9754 | Multi-Sensor Photoelectric and Heat Sensing | |
| 4098-9733 | Heat Sensor | |

### CO Base Replacement CO Cartridge and Accessories (ordered separately as required)

| Model | Description | | Mounting Requirements |
|---|---|---|---|
| 4098-9746 | CO Replacement Cartridge (CORC) | | |
| Solo 332 | Aerosol Dispenser, suitable for larger diameter detectors; can be used for CO or smoke testing | | |
| Solo C3 | CO Aerosol Canister (case of 12) | | |
| 4098-9832 | Adapter Plate, **required** for surface mounted 4" electrical boxes | | Refer to page 6, mounting reference |
| 2098-9808 | Choose **one** if required | Remote red LED Alarm Indicator on single gang stainless steel plate | Single gang box, 1-1/2" minimum depth |
| 4098-9822 | | Relay, tracks base LED status (unsupervised, to be mounted only in base electrical box) | Mounts in base electrical box (requires 1-1/2" extension on 4" square or octagonal box) |

## CO Sensor Base Operation Options with Sensor Choice

| Sensor Choice | Mode | Operational Mode Choices* (✓ = operation selected) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | False Alarm Reduction | Faster Detection | TrueSense Photo/Heat | Photo Fire | Heat Fire** | Utility Temp. | Ion Fire | CO Toxic Gas† | CO Fire†† |
| **Photoelectric Smoke Sensor 4098-9714** | 1 | ✓ | — | — | — | — | — | — | option | option |
| | 2 | — | ✓ | — | option | — | — | — | option | option |
| **Photo/Heat Multi-Sensor 4098-9754** | 3 | ✓ | — | — | — | option | option | — | option | option |
| | 4 | — | ✓ | — | option | option | option | — | option | option |
| | 5 | | — | ✓ | option | option | option | | option | option |
| **Heat Sensor 4098-9733** | 6 | — | — | — | — | ✓ | option | — | option | — |
| | 7 | — | — | — | — | option | ✓ | — | option | — |

* **NOTE:** Duct detection modes are not applicable and are not available. Refer to the Multi-Point Allocation discussion on page 3 for panel point requirement information.

** Heat Fire Mode is 135° F or 155° F, fixed or rate-of-rise.

† CO Toxic Gas operation is selectable as: Supervisory (which is NOT recommended if communicated off-site), Priority 2 (preferred if communicated off-site), or Utility.

†† CO fire detection mode can be selected only when used with a photoelectric smoke detection sensor set for fire detection mode.

## TrueAlarm Analog Sensor Features

**Sealed against rear air flow entry**

**Electronics are EMI/RFI shielded**

**Heat sensing:**

- Selectable rate compensated, fixed temperature sensing with or without rate-of-rise operation
- Rated spacing distance between sensors:

| Fixed Temp. Setting | UL& ULC Spacing | FM Spacing, Either Fixed Temperature Setting |
|---|---|---|
| 135° F (57.2° C) | 60 ft x 60 ft (18.3 m) | 20 ft x 20 ft (6.1 m) for fixed temperature only; **RTI = Quick** |
| 155° F (68° C) | 40 ft x 40 ft (12.2 m) | 50 ft x 50 ft (15.2 m) for fixed temperature with either rate-of-rise selection; **RTI = Ultra Fast** |

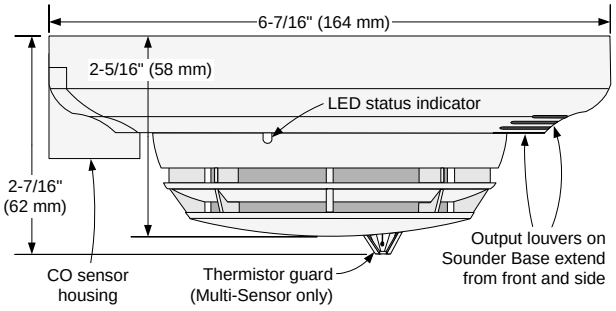
**Smoke Sensors:**

- Photoelectric technology sensing
- 360° smoke entry for optimum response
- Built-in insect screens

## 4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing. Seven levels of sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivities of 0.2%, 0.5%, and 1% are for special applications in clean areas. Standard sensitivities are 1.5%, 2.0%, 2.5%, and 3.7%. Sensitivity is selected and monitored at the fire alarm control panel. (For detailed application information about sensitivity selection, refer to Installation Instructions 574-709.)

The sensor head design provides 360° smoke entry for optimum smoke response. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.




Dimension and Feature Reference, Photoelectric or Multi-Sensor on CO Sensor Base

## 4098-9754 Multi-Sensor

TrueAlarm multi-sensors combines the performances of TrueAlarm photoelectric smoke sensing with TrueAlarm thermal sensing to provide both features in a single assembly. Each sensing element provides data for evaluation at the fire alarm control panel where the following four independent detection modes are evaluated:

- Fixed temperature heat detection
- Rate-of-rise heat detection
- TrueAlarm photoelectric smoke detection
- And TrueSense correlation detection

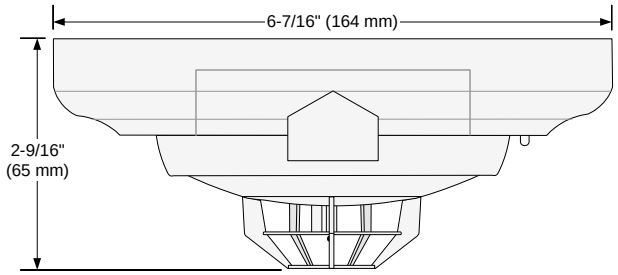
**TrueSense analysis correlates both thermal activity *and* smoke activity** at a single multi-sensor location using an extensively tested covariance relationship. As a result, TrueSense detection improves response to conditions indicative of faster acting, hot flaming fires when compared to the response of either photoelectric smoke activity or thermal activity alone.

## 4098-9733 Heat Sensor

TrueAlarm heat sensors are self-restoring and provide rate compensated, fixed temperature sensing, selectable with or without rate-of-rise temperature sensing. Due to its small thermal mass, the sensor accurately and quickly measures the local temperature for analysis at the fire alarm control panel.

Rate-of-rise temperature detection is selectable at the control panel for either 15° F (8.3° C) or 20° F (11.1° C) per minute. Fixed temperature sensing is independent of rate-of-rise sensing and programmable to operate at 135° F (57.2° C) or 155° F (68° C). In a slow developing fire, the temperature may not increase rapidly enough to operate the rate-of-rise feature. However, an alarm will be initiated when the temperature reaches its rated fixed temperature setting.

TrueAlarm heat sensors can be programmed as a utility device to monitor for temperature extremes in the range from 32° F to 155° F (0° C to 68° C). This feature can provide freeze warnings or alert to HVAC system problems.




4098-9733 Heat Sensor with CO Sensor Base (with CO Sensor Housing facing forward)

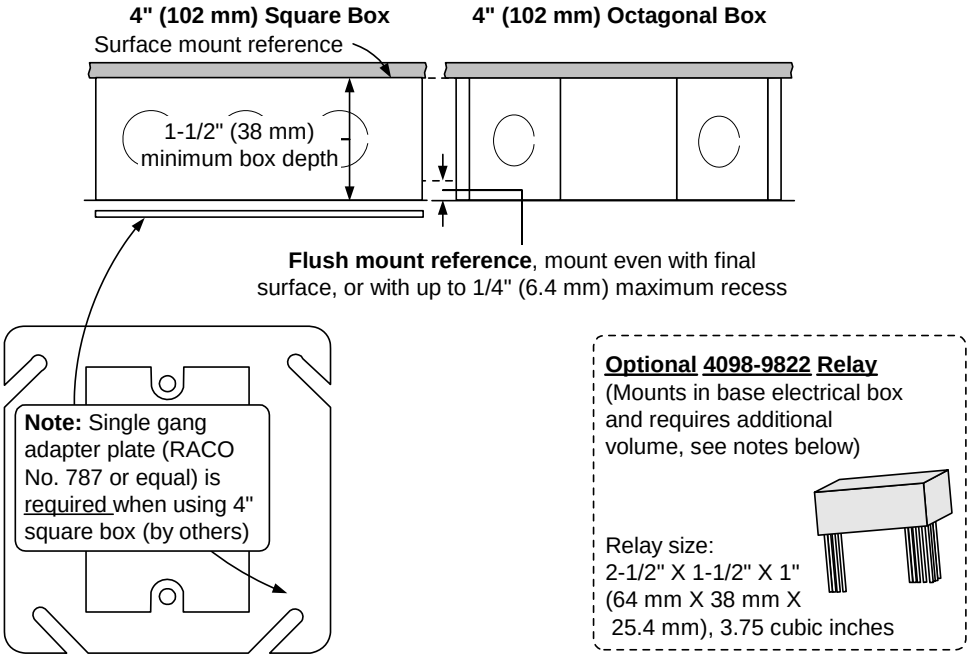
**WARNING: In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.**

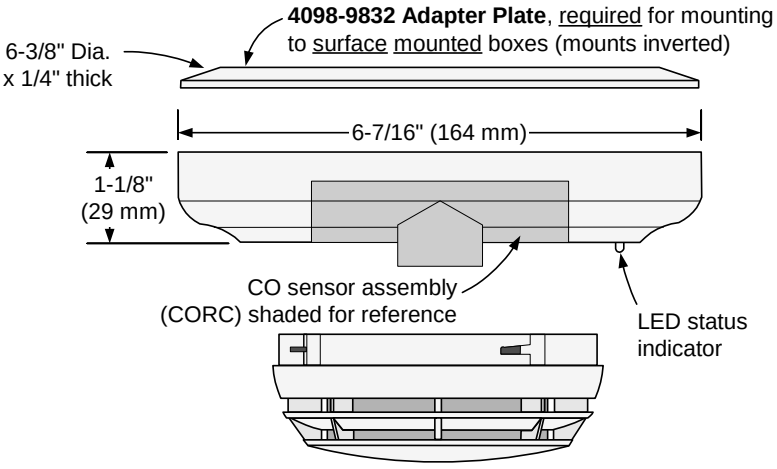
## Installation Reference

**Electrical Box Requirements:** (boxes are by others)

**Without relay:** 4" octagonal or 4" square, 1-1/2" deep; single gang, 2" deep

**With relay :** 4" octagonal or 4" square, 1-1/2" deep, with 1-1/2" extension ring




(Photoelectric sensor shown for reference)

**NOTES:**

1. Review actual wire size, wire count, box type, and whether 4098-9822 relay is used before determining box size.
2. Mounting to flush mounted box also fits single gang handy box, 2-1/8" (51 mm) deep if wiring allows. (Not applicable if 4098-9822 relay is used.)
3. For surface mounted boxes, use 4" square box with single gang adapter plate (RACO No. 787 or equal, by others) or 4" octagonal box, both require 4098-9832 Adapter Plate.
4. When 4098-9822 relay is used, mount relay in electrical box and use 1-1/2" extension ring (by others) on 4" square or octagonal box of 1-1/2" or 2-1/8" depth as required.
5. Refer to sensor base Installation Instructions 574-707 for additional information.
6. Refer to CORC Replacement Instructions 579-791 for CO cartridge installation and replacement.

## Specifications

### General Operating Specifications

| | | |
|---|---|---|
| IDNet Communications and Sensor Supervisory Power | | 24-40 VDC w/data, 400 μA typical, 1 address per base, supplied by control panel |
| Communications and Sounder Power Connections | | Screw terminals for in/out wiring, 18 to 14 AWG (0.82 $mm^2$ to 2.08 $mm^2$) |
| Remote LED Alarm Indicator | Current | 1 mA typical supplied from communications, no impact to alarm current |
| | LED Connections | Color coded wire leads, 18 AWG (0.82 $mm^2$ ) |
| UL Listed Temperature Range | | 32° F to 100° F (0° C to 38° C) |
| Operating Temperature Range | with 4098-9733 | 32° F to 122° F (0° C to 50° C) |
| | with 4098-9714 or 4098-9754 | 15° F to 122° F (-9° C to 50° C) |
| Humidity Range | | 15 to 95% RH |
| CO Sensor Base Air Velocity Ratings per Sensor | Photoelectric Sensor 4098-9714 and Multi-Sensor 4098-9754 | Air velocity = 0-1000 ft/min (0-305 m/min) |
| Housing Color | | Frost White |

### Sounder Operation

| | | |
|---|---|---|
| Sounder Voltage | | 18 to 32 VDC from steady external source or from NAC |
| Alarm Current (Sounder On) | | 17 mA @ 24 VDC, 24 mA maximum @ 32 VDC |
| Sounder Output | | 88 dBA minimum @ 10 ft (3 m) per UL Standard 464, *Audible Signaling Appliance*; UL Standard 268, *Smoke Detectors for Fire Protective Signaling Systems* and CSA 6.19-01 |
| Sounder Power Supervision (Selectable) | Supervised | Select for continuous 24 VDC power, loss of power is communicated to panel |
| | Unsupervised | Select when connected to NAC for sounder power, NAC provides supervision |
| NAC Powered Operation | | When in alarm, will sound when NAC is in alarm, allowing synchronized pattern (Temporal or March Time, etc.) controlled by the NAC control |

### Reference for CO Monitoring

| | | Concentration | Alarm Window |
|---|---|---|---|
| Requirements Reference for UL 2034 and CSA 6.19-01 | Response Time | 70 ±5 ppm | 60 to 240 minutes |
| | | 150 ±5 ppm | 10 to 50 minutes |
| | | 400 ±10 ppm | 4 to 15 minutes |
| | False Alarm Resistance | 30 ±3 ppm | No Alarm for 30 days |
| | | 70 ±5 ppm | No Alarm for 60 minutes |
| Additional UL 2034 CO Sensor Toxic Gas Monitoring Details | | 1. For CO levels above 40 ppm, the CO alarm level per sensor is determined by calculations performed at the panel based on the time integrated CO levels measured at the sensor. (Levels below 40 ppm are not tracked.)<br>2. While tracking levels above 40 ppm, if the concentration dips below 40 ppm for periods of time, the time to alarm is extended accordingly. | |
| UL 2075 Reference, Commercial OSHA Type Operation; Utility Point Mode | | With custom control at the fire alarm control panel, Utility Point operations can be performed at lower CO concentration levels than those of UL 2034<br>**Example:** Start ventilation after 5 minutes at 25 to 35 ppm and also alarm at a reading higher than that range, but lower than UL 2034 allows | |

### 4098-9822 Unsupervised Relay Option

| | |
|---|---|
| Externally Supplied Relay Voltage | 18-32 VDC, steady source recommended (wires to remote LED leads) |
| Alarm Current | 13 mA from separate 24 VDC supply |
| Contact Ratings, DPDT contacts for resistive/suppressed loads | Power limited rating: 2 A @ 30 VDC |
| | Non-power limited rating: 1/2 A @ 120 VAC |
| Relay Operation | Tracks base LED status, relay is on with trouble or alarm at the base |

## Additional Information Reference

| Product | Data Sheet | Product | Data Sheet |
|---|---|---|---|
| Temporal Code 4 Module | S4905-0006 | 4100ES Control Panels with EPS Power Supplies | S4100-0100 |
| Standard Bases | S4098-0019 | | |
| Isolator Bases | S4098-0025 | 4100ES Audio Control Reference | S4100-0034 |
| Standard Sounder Base | S4098-0028 | 4100ES Standard Control Panels | S4100-0031 |
| TrueSense Multi-Sensor | S4098-0024 | 4010ES Control Panels | S4010-0004 |

# Simplex®

# True*Alarm* Analog Sensing

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

Addressable Duct Sensor Housings with TrueAlarm Photoelectric Sensor; Available with Multiple Relay Control

## Features

**Compact air duct sensor housing with clear cover to monitor for the presence of smoke****

**Includes factory installed TrueAlarm photoelectric smoke sensor and features:**

- Individual sensor information processed by the host control panel to determine sensor status
- Digital transmission of analog sensor values via IDNet or MAPNET II, 2-wire communications
- Programmable sensitivity, consistent accuracy, environmental compensation, status testing, and monitoring of sensor dirt accumulation

**Model 4098-9755:**

- Basic duct sensor housing (no relay output) powered by IDNet/MAPNET II communications

**Model 4098-9756:**

- Duct sensor housing with supervised output for multiple remote relays; requires separate 24 VDC; includes one relay
- Relay output is under panel control
- At the panel, relay output can be activated manually or in response to a separate alarm or other input

**General features:**

- UL listed to Standard 268A
- Clear cover allows visual inspection
- Test ports provide functional smoke testing access with cover in place
- Mounts to rectangular ducts or round ducts; minimum size is 8" (203 mm) square or 18" (457 mm) diameter
- Magnetic test feature for alarm initiation at housing
- Optional weatherproof enclosure is available separately (refer to data sheet S4098-0032)

**Diagnostic LEDs (on interface board):**

- Red Alarm/Trouble LED for sensor status and communications polling display
- Yellow LED for open or shorted trouble indication of supervised relay control (4098-9756 only)

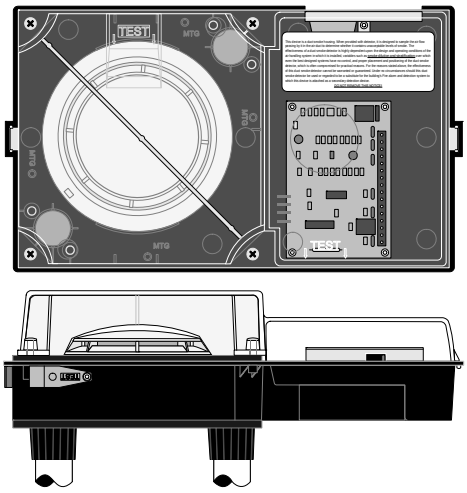
**Sampling tubes (ordered separately):**

- Available in multiple lengths to match duct size
- Installed and serviced with housing in place

**Remote module options (ordered separately):**

- Remote red status/alarm LED (2098-9808)
- Remote test station with LED (2098-9806)
- 4098-9843 remote relays (refer to page 2 for details)

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 3240-0026.241 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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.




Duct Sensor Housing, Front and Bottom View


2098-9808 2098-9806

Remote Status/Alarm Indicator and Test Station

## Introduction

**Operation.** Simplex® compact air duct smoke sensor housings provide TrueAlarm operation for the detection of smoke in air conditioning or ventilating ducts. Sampling tubes are installed into the duct allowing air to be directed to the smoke sensor mounted in the housing.

## TrueAlarm Sensor Operation

**Digital Communication of Analog Sensing.** Analog information from the sensor is digitally communicated to the control panel where it is analyzed. Sensor input is stored and tracked as an average value with an alarm or abnormal condition being determined by comparing the sensor's present value against its average.

**Intelligent Data Evaluation.** Monitoring each photoelectric sensor's average value provides a software filtering process that compensates for environmental factors (dust, dirt, etc.) and component aging, providing an accurate reference for evaluating new activity. The result is a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

** Please note that smoke detection in air ducts is intended to provide notification of the presence of smoke *in the duct*. It is not intended to, and will not, replace smoke detection requirements for open areas or other non-duct applications.

## TrueAlarm Sensor Operation *(Continued)*

**Control Panel Selection.** Peak activity per sensor is stored to assist in evaluating specific locations. The alarm set point for each sensor is determined at the control panel, selectable as the individual application requires.

**Sensor Status LED.** Each sensor housing's red status LED (located on the electrical interface board) pulses to indicate communications with the panel. If the control panel determines that a sensor is in alarm, or that it is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor housing's status LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify any alarmed sensors. (Remote Status/Alarm LEDs track the operation of the sensor housing LED.)

## Photoelectric Sensing

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing.

## Photoelectric Sensing *(Continued)*

Typically duct sensor applications require less sensitive settings (such as 2.5% per foot obscuration) due to the ducts being a relative dirty environment. However, the standard seven levels of TrueAlarm sensor sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivity is selected and monitored at the fire alarm control panel.

## Fire Alarm Control Panel Features

- Individual smoke sensitivity selection
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allows accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check verifies sensor integrity
- Automatic environmental compensation
- Smoke sensitivity is displayed in percent per foot
- Ability to display and print detailed sensor information in plain English language
- Relays of model 4098-9756 are under panel control for ON, OFF, or override

## Duct Sensor Selection Chart

### Duct Smoke Sensor Housing with Photoelectric Sensor*

| Model | Description | Compatibility |
|---|---|---|
| 4098-9755 | Basic Duct Sensor Housing; operating power is supplied by either IDNet or MAPNET II communications (no relay output) | Simplex fire alarm control panel models: 4100ES, 4010ES, 4008, 4010, 4100U, and legacy products 4020, 4100/4100+, and 4120. Also 2120 CDT if configured for MAPNET II, TrueAlarm operation |
| 4098-9756 | Duct Sensor Housing with supervised multiple relay output, requires separate 24 VDC fire alarm power and 4081-9008 end-of-line resistor harness; includes one 4098-9843 relay | Same as above except relay operation is not compatible with 2120 CDT;<br>Relay output is for up to 15 total 4098-9843 Relays (additional relays are ordered separately) |

### Remote LED Indicator and Test Station, Select One if Required

| Model | Description | Compatibility | Mounting |
|---|---|---|---|
| 2098-9808 | Red LED status indicator on single-gang stainless steel plate | 4098-9755<br>4098-9756 | Use single gang box,<br>3" H x 2" W x 2" D<br>(76 mm x 51 mm x 51 mm) |
| 2098-9806 | Test Station with keyswitch and red LED status indicator, on single-gang stainless steel plate; (turning switch to "TEST" initiates alarm for system testing) | | |

### Epoxy Encapsulated Remote Relay and End-of-Line Resistor

| Model | Description | Compatibility | Location |
|---|---|---|---|
| 4098-9843 | Relay; single Form C (7 A @ 120 VAC); refer to pages 3 and 4 for additional relay information; one included with 4098-9756; wiring is 18 AWG (0.82 $mm^2$) color coded wire leads | 4098-9756 only; connect up to 15 | Locate relays within 3 ft (1 m) of device being controlled per NFPA 72 |
| 4081-9008 | End-of-Line Resistor Harness; 10 kΩ, 1/2 W; (ref. 733-894); required to supervise remote relay coil connection | 4098-9756 | At last relay location |

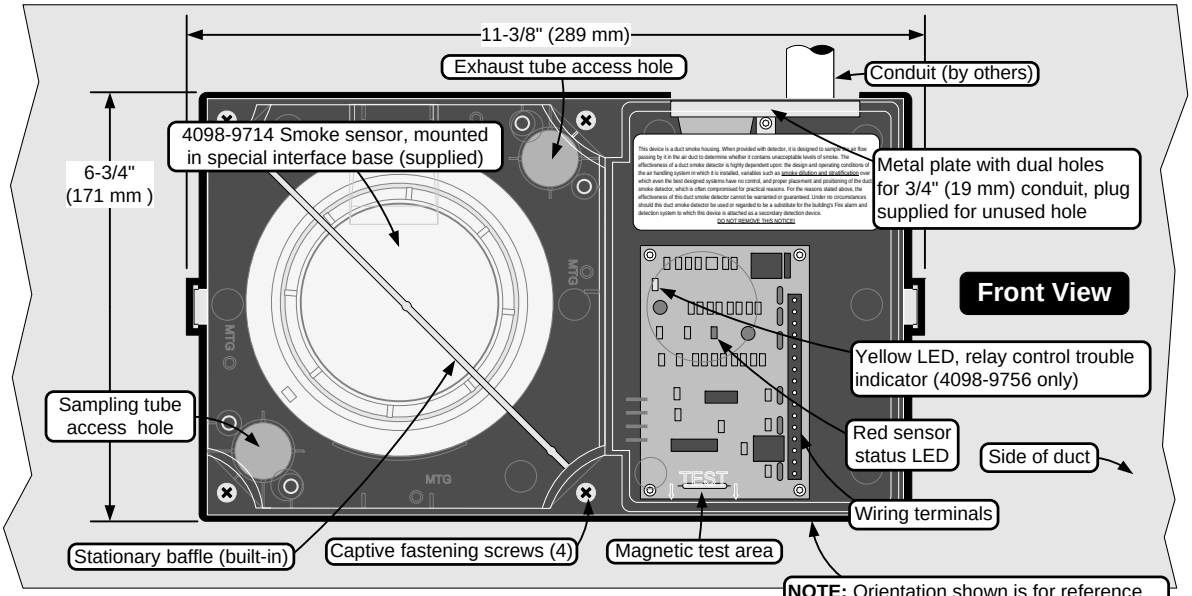
* Each duct housing includes an internally mounted model 4098-9714 TrueAlarm photoelectric sensor and an exhaust tube. A correctly sized sampling tube (ordered per application) is required, refer to chart below.

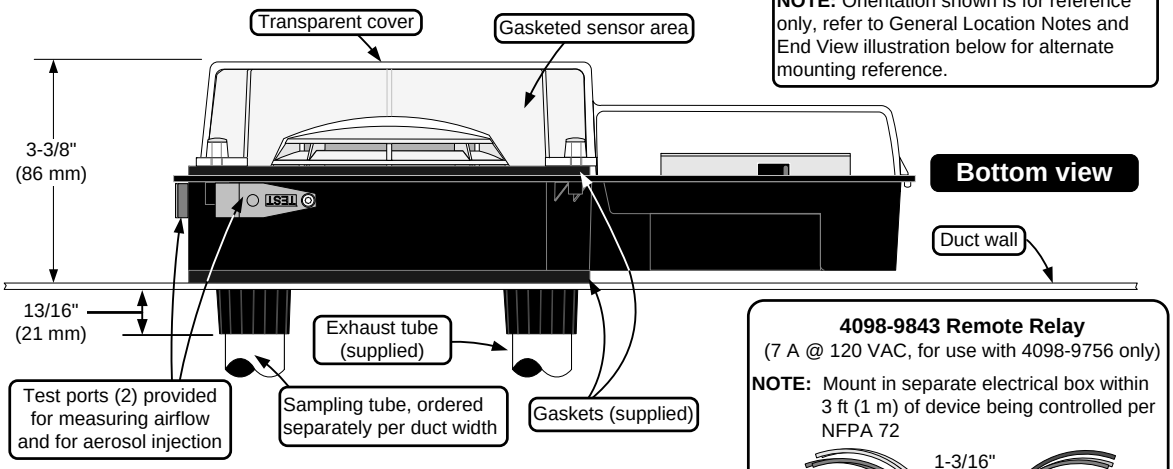
## Sampling Tube Selection Chart, Ordered Separately Per Duct Width, Select One

| Overall Duct Width | Tube Required | Suggested Cut Length |
|---|---|---|
| 12" (305 mm) | **4098-9854** | 1/2" (12.7 mm) longer than duct width |
| 13" to 23" (330 mm to 584 mm) | **4098-9855** | 1/2" (12.7 mm) longer than duct width |
| 24" to 46" (610 mm to 1168 mm) | **4098-9856** | 3 in" (76 mm) longer than duct width |
| 46" to 71" (1168 mm to 1803 mm) | **4098-9857** | 3 in" (76 mm) longer than duct width |
| 71" to 95" (1803 mm to 2413 mm) | **4098-9858** | 3 in" (76 mm) longer than duct width |

## Duct Sensor Housing Detail Reference

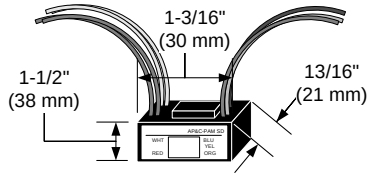
**NOTE:** Refer to Installation Instructions 574-776 for additional installation detail and maintenance information.

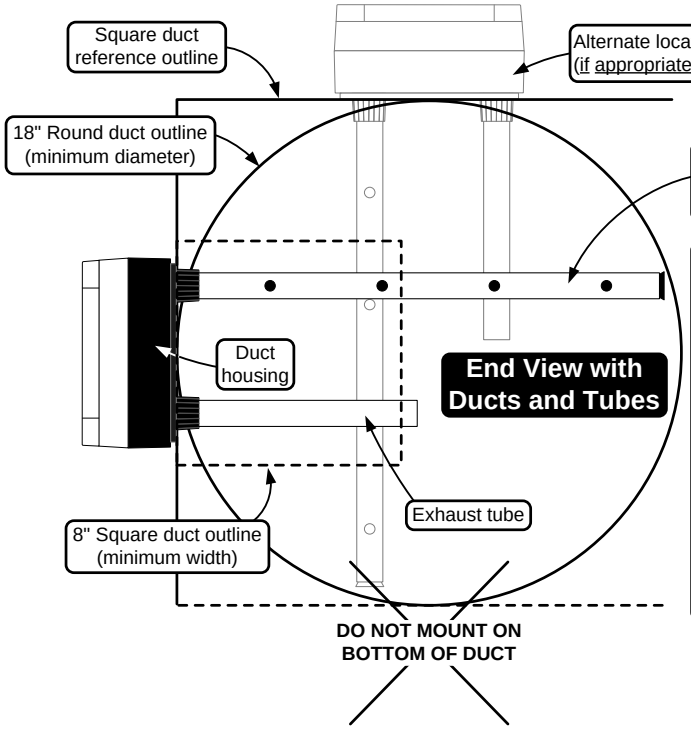



**4098-9843 Remote Relay**
(7 A @ 120 VAC, for use with 4098-9756 only)

**NOTE:** Mount in separate electrical box within 3 ft (1 m) of device being controlled per NFPA 72

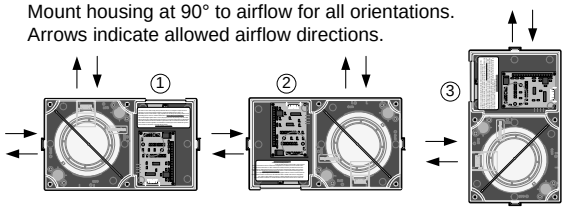


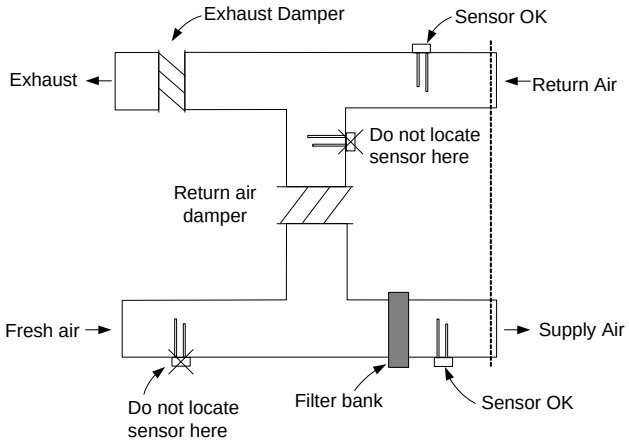

Sampling tube, keyed for proper hole alignment **with holes facing into airflow** (template is provided for proper tube installation). (Housing is shown as position 2 per note 2 below.)

**General Location Notes:**

1. Testing performed under the auspices of the Fire Detection Institute (FDI) recommended when sampling tubes are not located vertically, that they be positioned horizontally in the upper half of the duct to account for possible stratification.
2. Three duct side mounting options are available as shown below. Mount housing at 90° to airflow for all orientations. Arrows indicate allowed airflow directions.



## Duct Sensor Location Reference




**Additional Information**. Refer to NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*; NFPA 72, the *National Fire Alarm and Signaling Code*; and the *NEMA Guide for Proper Use of Smoke Detectors in Duct Applications*, and Installation Instructions 574-776.

### Duct Sensor Location Considerations:

1. Proper duct smoke detection location must ensure adequate airflow within the duct housing.
2. Duct air velocity rating is 300 to 4000 ft/min (91 to 1220 m/min). Pressure differential between intake and exhaust tubes is required to be between 0.015 to 1.55 inches of water (0.381 to 39.37 mm).
3. Ensure accessibility for test and service.
4. Proper Locations: downstream side of filters to detect fires in the filters; in return ducts, ahead of mixing areas; upstream of air humidifier and cooling coil.
5. Other locations and orientations may be required for proper duct smoke detection depending on duct access, system design, and duct airflow testing. Contact your local Simplex product supplier for assistance.

### Locations to Avoid:

1. Where dampers closed for comfort control would interfere with airflow.
2. Next to outside air inlets (unless the intent is to monitor smoke entry from that area).
3. In return air damper branch ducts and mixing areas where airflow may be restricted.

## Specifications

| | |
|---|---|
| **General Mechanical and Environmental** | |
| Air Velocity Range (linear ft/min) | 300 to 4000 ft/min (91 to 1220 m/min) |
| Sensor Sensitivity Range | 0.2% to 3.7% per foot of obscuration, selectable at host control panel |
| UL Listed Temperature Range | 32° F to 100° F (0° C to 38° C) |
| Operating Temperature Range | 32° F to 122° F (0° C to 50° C) |
| Storage Temperature Range | 0° F to 140° F (-18° C to 60° C) |
| Humidity Range | 10% to 95% RH, non-condensing |
| Wiring Connections | Terminal blocks, 18 to 12 AWG (0.82 $mm^2$ to 3.31 $mm^2$ ) |
| Housing Color | Black base with clear cover |
| **Remote Status/Alarm LED and Test Station with Remote Status/Alarm LED** | |
| Remote Alarm LED Current | 1.2 mA, no impact to 24 VDC alarm current (2098-9808 or 2098-9806) |
| Test Station Keyswitch Current | 3.3 mA, no impact to 24 VDC alarm current (2098-9806) |
| Remote Alarm LED and Test Station Distance | 250 ft (76 m) maximum |
| **Addressable Operation** | |
| Data Communications | IDNet or MAPNET II communications, auto-select, one address per housing; provides operating power to model 4098-9755 |
| **Model 4098-9756 with Supervised Multiple Relay Control, Requires Separate Fused 24 VDC from Fire Alarm Power Supply** | |
| Input Voltage | 18-32 VDC (24 VDC nominal) |
| Standby Current | 3 mA @ 24 VDC |
| Alarm Current | 15 mA @ 24 VDC; add 15 mA for each 4098-9843 relay |
| Supervised Remote Relay Control Output | For use with 4098-9843 relay only, quantity of 15 maximum; distance of 500 ft (152 m) maximum; requires 4081-9008 (ref. 733-894) 10 kΩ, 1/2 W end-of-line resistor |
| **4098-9843 Relay Output Ratings, Single Form C, use with Model 4098-9756 Only** | |
| Coil Current | 15 mA @ 24 VDC, up to 15 maximum per relay control output |
| Relay Contacts | 7 A at 0.35 PF @ 28 VDC & 120 VAC; 250 μA @ 5 VDC |
| Location Distance | 500 ft (152 m) maximum to relay coils; locate relays within 3 ft (1 m) of device being controlled per NFPA 72 |

Simplex®

# Multi-Application Peripherals

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

IDNet™ and MAPNET II® Communicating Devices, Individual Addressable Modules (IAMs)

## Features

**IDNet or MAPNET II addressable communications supply both data and power over a single wire pair to provide**:**

- Supervised Class B monitoring of normally open, dry contacts
- Total wiring distance from IAM to supervision resistor(s) of up to 500 ft (152 m)
- Monitored connection is compatible with Simplex® 2081-9044 Overvoltage Protectors for outdoor wiring or electrically noisy applications
- For use in indoor locations up to 158° F (70° C) such as attic spaces or similar applications

**For use with following Simplex control panels:**

- Model Series 4008, 4010, 4010ES, 4100U and 4100ES fire alarm control panels for IDNet communications
- Model Series 4100/4100U/4100ES, 4120, 4020, and 2120 Communicating Device Transponders (CDTs) equipped with MAPNET II communications

**Model 4090-9001:**

- Enclosed design minimizes dust infiltration
- Mounts in standard single gang electrical box
- Screw terminals for wiring connections
- Visible LED flashes to indicate communications
- Optional covers are available to allow LED to be viewed after installation (requires mounting bracket, ordered separately)

**Model 4090-9051:**

- Encapsulated design for extended exposure to high humidity (LED is not present on this model)
- Color coded 18 AWG leads for wiring

**IDNet communications provides current limited monitoring:**

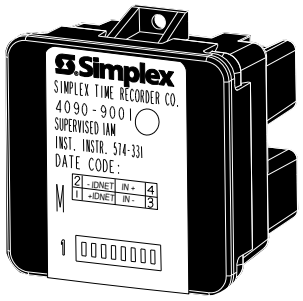
- Provides monitoring of tamper switch (supervisory) and waterflow switch (alarm) on same circuit using one point
- Available with IDNet communications only

**Multiple operation modes are available and are selectable at the control panel:**

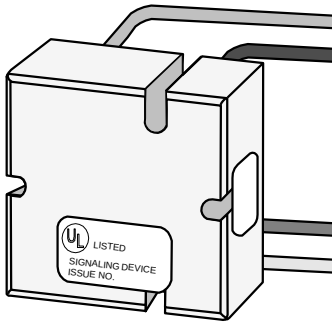
- Contact closure status can be tracked
- Momentary contact closure conditions can be selected at the panel to be latched or tracked (not available with the 2120 CDT)

**UL listed to Standard 864**

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:223 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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 Safety Products Westminster.




4090-9001 Supervised IAM
(shown approximately 3/4 size)




4090-9051 Supervised IAM
(shown approximately 3/4 size)

## Description

**Individual addressable modules (IAMs)** receive both power and communications from a two-wire MAPNET II or IDNet circuit. They provide location specific addressability to a single initiating device (such as single station smoke detector alarm contacts or heat detector contacts) or multiple devices at the same location by monitoring normally open dry contacts and the wiring to an end-of-line resistor.

**Model 4090-9001** is packaged in a thermoplastic housing and provides screw terminal connections and a status indicating LED.

**Model 4090-9051** is an encapsulated package with wire leads. It does not provide a status indicating LED.

## Operation

**Contact Closure.** Closure of the monitored contact(s) initiates an alarm or other response as programmed at the fire alarm control panel. An open in the monitored circuit wiring will cause a trouble to be reported.

**Panel Selections.** Selections can be made at the control panel to maintain the alarm condition if the initiating device contacts are momentary, such as from a rate-of-rise heat detector, or to track the device contact status (not available with the 2120 CDT).

## Current Limited Operation Applications

**For use with IDNet communications only**, these IAMs can provide quad-state sensing of normal, open circuit, short circuit, and current limited conditions. (Program type is "T-sense.") With the proper end-of-line and current limiting resistors, dual functions such as tamper switch and waterflow switch monitoring can be determined and communicated by a single addressable point.

## IAM Product Selection

| Model | Description |
|---|---|
| 4090-9001 | Supervised IAM, mounted in thermoplastic housing with screw terminals; see applicable options below |
| 4090-9051 | Supervised IAM, encapsulated with wire leads |

**Optional Trim Plates and Mounting Bracket for Model 4090-9001**

| Model | Description |
|---|---|
| 4090-9806 | For semi-flush mounted box — Trim plate with LED viewing window, requires 4090-9810 mounting bracket, includes mounting screws; galvanized steel |
| 4090-9807 | For surface mounted box |
| 4090-9810 | Mounting bracket, mounts IAM to electrical box and provides screw holes for trim plate, **required for optional trim plates** |

**End-of-Line Resistor Harnesses** (ordered separately as required)

| Model | Reference No. | Description |
|---|---|---|
| 4081-9004 | 733-886 | 6.8 kΩ, 1/2 W; Standard end-of-line resistor harness for N.O. contact supervision |
| 4081-9003 | 733-896 | 4.7 kΩ, 1/2 W — Use for current limited monitoring applications |
| 4081-9005 | 733-984 | 1.8 kΩ, 1/2 W |

## Specifications

**Electrical**

| | | |
|---|---|---|
| Power and Communications | | MAPNET II or IDNet, auto selected, 1 address per IAM |
| Input Requirements | | Normally open, dry contacts |
| Wire Connections | 4090-9001 | Screw terminals for in/out wiring, 18 to 14 AWG wire (0.82 $mm^2$ to 2.08 $mm^2$) |
| | 4090-9051 | Color coded wire leads, 18 AWG (0.82 $mm^2$), 8" long (203 mm) |
| Reference Documents | Installation Instructions | 574-331 for 4090-9001; 579-572 for 4090-9151 |
| | Field Wiring Diagrams | 842-073 for IDNet operation; 841-804 for MAPNET II operation |

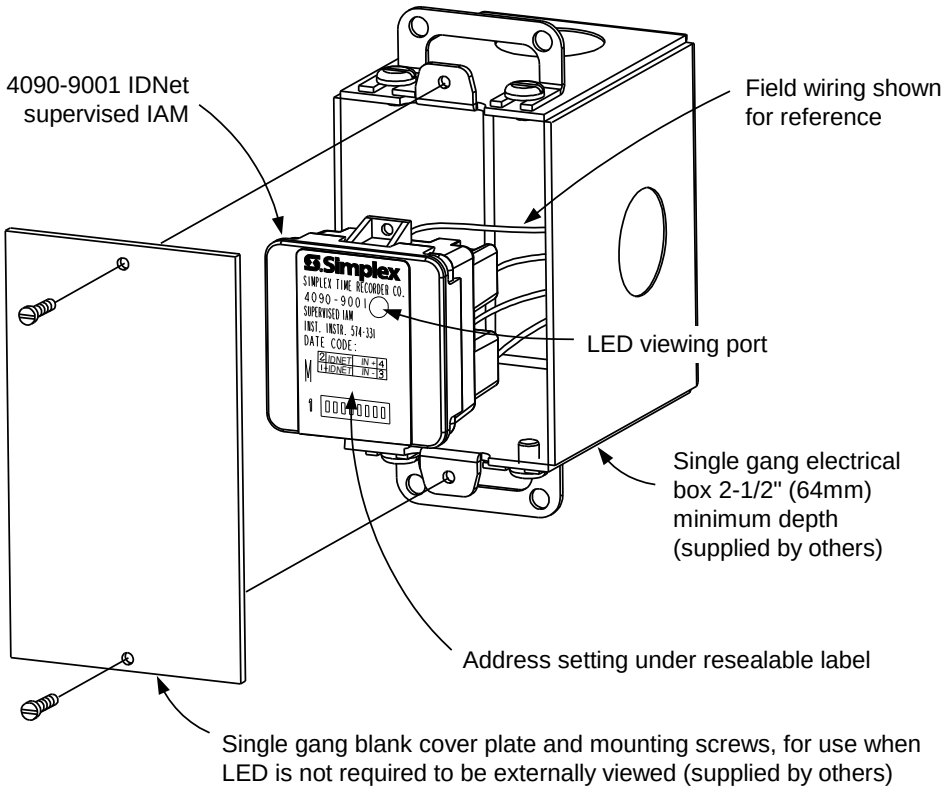
**Wiring Distances**

| | |
|---|---|
| Distance from IAM to Contacts | 500 ft (152 m) maximum without protectors |
| | 400 ft (122 m) maximum with 2081-9044 Overvoltage Protectors |
| Wiring Distance Reference per channel, MAPNET II or IDNet Communications | 2500 ft (762 m) maximum from fire alarm control panel |
| | 10,000 ft (3048 m) maximum total wiring distance (including T-Taps) |

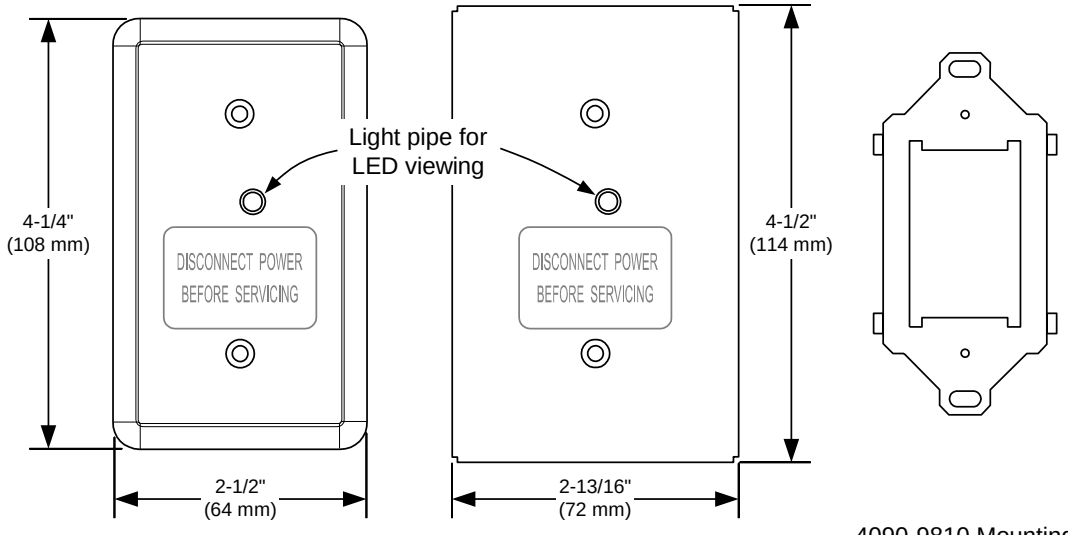
**Mechanical**

| | | |
|---|---|---|
| Dimensions | 4090-9001 | 1-9/16" W x 1-3/4" H x 1-1/4" D (40 mm x 44 mm x 32 mm) |
| | 4090-9051 | 1-9/16" W x 1-9/16" H x 9/16" D (40 mm x 40 mm x 14 mm) |
| Housing Material, 4090-9001 | | Black thermoplastic |
| Encapsulation Material, 4090-9051 | | Epoxy, beige |
| Temperature Range | | 32° to 158° F (0° to 70° C); intended for indoor operation |
| Humidity Range | | Up to 93% RH at 100° F (38° C) |

## Mounting Information




**Mounting Reference, Single Gang Blank Cover Plate**




4090-9806, Trim plate for semi-flush mounted box

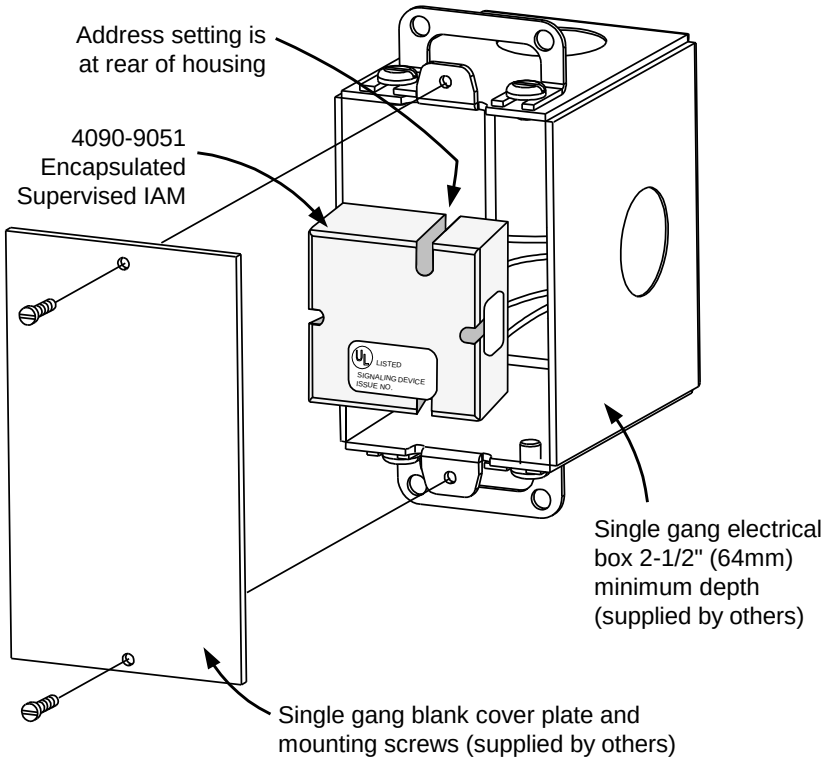
4090-9807, Trim plate for surface mounted box

4090-9810 Mounting bracket, ordered separately

**NOTE:** These mounting plates require mounting bracket 4090-9810.

**Optional Trim Plates and Mounting Bracket for Visible LED**

## 4090-9051 Mounting Information



# Simplex®

## Multi-Application Peripherals

*UL, ULC Listed; FM, CSFM, and MEA (NYC) Approved**

IDNet Communicating Devices
Model 4090-9002 Relay IAM

## Features

**Individual Addressable Relay Module (Relay IAM):**

- IDNet addressable control for use with Simplex® fire alarm control panel models 4100ES/4100U, 4010ES, 4008, and 4010
- A single addressable point provides control and status tracking of a Form "C" contact
- Low power latching relay design allows IDNet communications to supply both data and module power

**Compact, sealed construction:**

- Enclosed design minimizes dust infiltration
- Mounts in standard 4" (102 mm) square electrical box
- Screw terminals for wiring connections
- Visible LED flashes to indicate communications
- Optional covers are available to allow LED to be viewed after installation

**UL listed to Standard 864**

## Description

**IDNet Relay IAMs** allow fire alarm control panels to control a remotely located Form "C" contact using IDNet addressable communications for both data and module power. Typical applications would be for switching local power for control functions such as elevator capture, or control of HVAC components, pressurization fans, dampers, etc. Relay status is also communicated requiring only one device address.

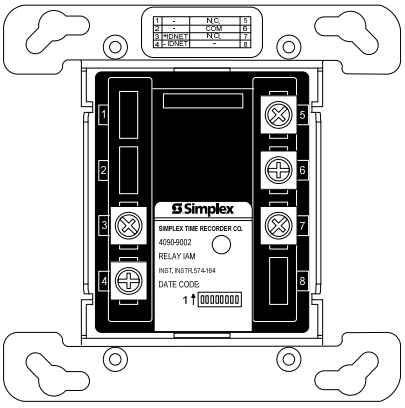
## Product Selection

| Model | Description |
|---|---|
| 4090-9002 | Relay IAM |

### Optional Trim Plates

| Model | Description | |
|---|---|---|
| 4090-9801 | For semi-flush mounted box | Trim plate, galvanized steel, with LED viewing window; includes mounting screws |
| 4090-9802 | For surface mounted box | |

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:223 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. 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 Safety Products Westminster.




4090-9002 IDNet Relay IAM Package
(shown approximately 1/2 size)

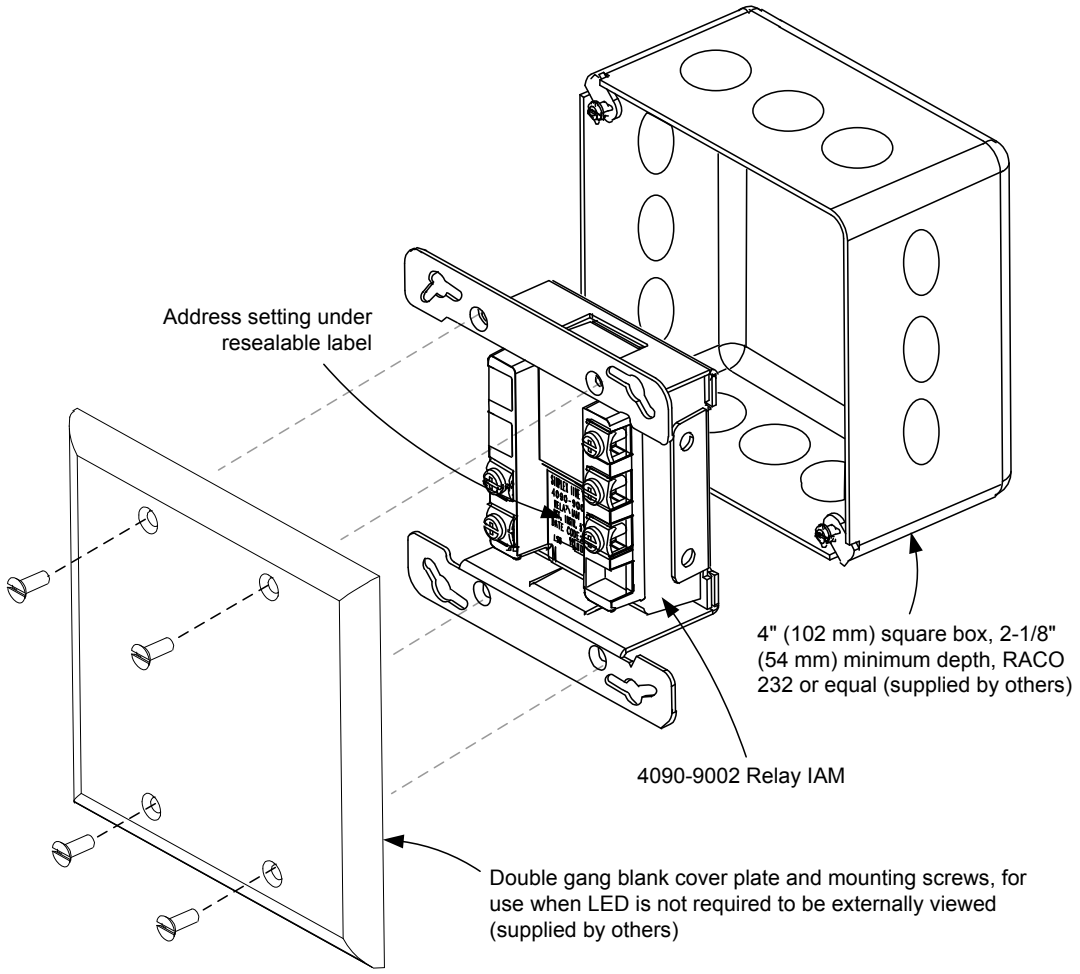
## Specifications

| | | |
|---|---|---|
| Communications | IDNet communications, 1 address per device | |
| Relay IAM Power | Supplied by IDNet communications | |
| **Contact Ratings*** (not rated for incandescent switching) | | |
| Type | Form C, SPDT | |
| Power-Limited | 2 A @ 24 VDC, resistive | from listed fire alarm supply |
| | 1 A @ 24 VDC, inductive | |
| Nonpower-Limited | 0.5 A @ 120 VAC, resistive | |

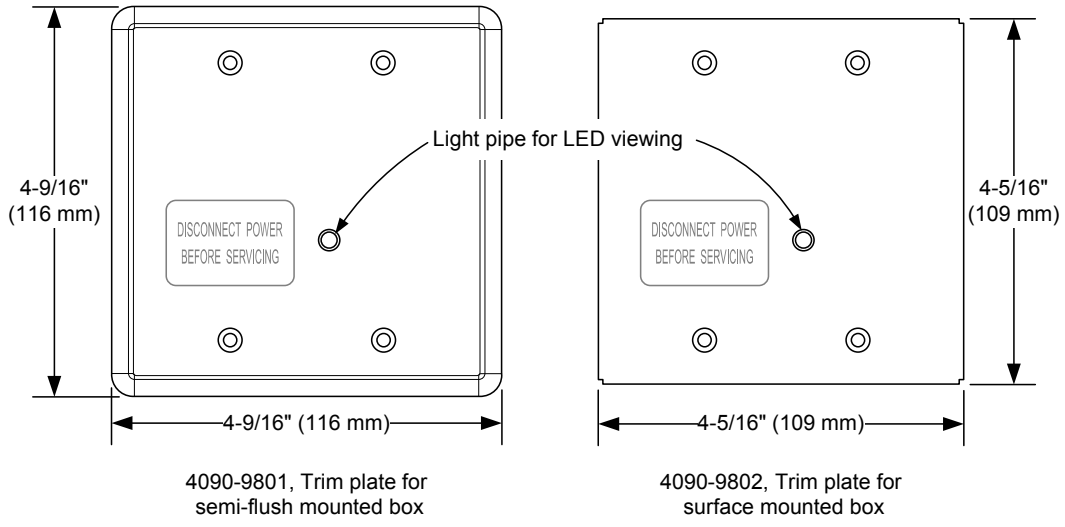
* Provide circuit fusing and transient suppression as required per application. DC inductive loads can typically be diode suppressed; 120 VAC loads may require RC networks or varistors, depending on device type. Refer to Installation Instructions 574-184 for additional information.

| | |
|---|---|
| Wire Connections | Screw terminals for in/out wiring, 18 to 14 AWG wire (0.82 to 2.08 $mm^2$) |
| IDNet Communications Wiring Reference | Up to 2500 ft (762 m) from control panel |
| | Up to 10,000 ft (3048 m) total wiring distance (including T-Taps) |
| | Compatible with Simplex 2081-9044 Overvoltage Protectors |
| Dimensions | 4 ⅛" H x 4 ⅛" W x 1 ⅜" D (105 mm x 105 mm x 35 mm) |
| Housing Material | Black thermoplastic |
| Mounting Plate | Sheet metal, galvanized |
| Temperature Range | 32° to 120° F (0° to 49° C), intended for indoor operation |
| Humidity Range | Up to 93% RH at 100° F (38° C) |

## Relay IAM Mounting Information




**Mounting Reference, Double Gang Blank Cover Plate**




**Optional Trim Plates for Visible LED**

AIR PRODUCTS AND CONTROLS

You in Control

# PAM SERIES

## MULTI-VOLTAGE RELAY MODULES

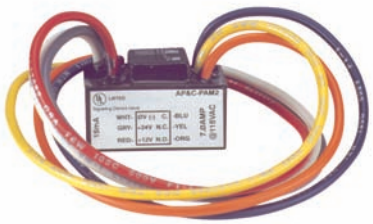
The PAM Series Relays are encapsulated multi-voltage devices with "flying" leads that offer versatile, reliable performance in a convenient package. Several of the versions contain a red LED which indicates when the relay coil is energized. The PAM Series Relays are packaged with a self-tapping screw and a piece of double sided tape for easy installation almost anywhere. The relays are also packaged with wire-nuts to aid installation.

PAM Relays are ideal for applications where remote relays are required for control or status feedback. They are suitable for use with HVAC, Temperature Control, Fire Alarm, Security, Energy Management, Lighting Control Systems and Building Automation Systems.

## PRODUCT DESCRIPTION

### *PAM-1*

The PAM-1 Relay provides 10.0 A form "C" contacts. The relay may be energized by one of three input voltages: 24VDC, 24VAC, or 120VAC. The input voltages are polarity-sensitive and diode-protected. PAM-1 Relays contain a red LED which indicates when the relay coil is energized.

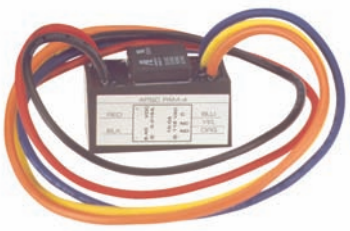


### *PAM-2*

The PAM-2 Relay provides 7.0 A form "C" contacts. The relay may be energized by one of two input voltages: 12VDC or 24VDC. The input voltages are polarity-sensitive and diode-protected. PAM-2 Relays contain a red LED which indicates when the relay coil is energized.

### *PAM-4*

The PAM-4 Relay provides 10.0 A form "C" contacts. The relay may be energized across a wide voltage range from 9VDC to 40VDC, making it ideal for 12VDC and 24VDC EOL circuits. The 15mA operating current is constant across the operating range. The input voltages are polarity-sensitive and diode-protected.



### *PAM-SD*

The PAM-SD Relay provides 7.0 A form "C" contacts. The relay may be energized by an input voltage between 20VDC to 32VDC, making it ideal for 24VDC NAC circuits. The input voltages are polarity-sensitive and diode-protected. The PAM-SD provides an additional set of wires for redundant input voltage (circuit supervision pass through).

c UL us LISTED

CSFM LISTED

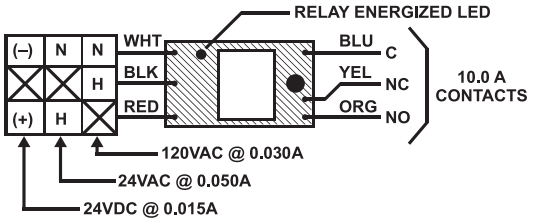
MEA ACCEPTED

*Air Products and Controls Inc.*
*1749 E. Highwood*
*Pontiac, MI 48340*
*(248) 332-3900 Phone*
*(888) 332-2241 Toll free*
*(248) 332-8807 Fax*
*www.ap-c.com*

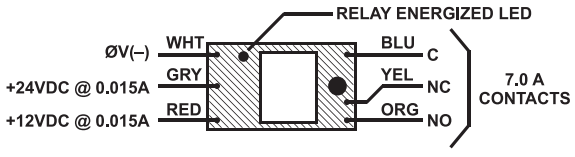
A HALMA GROUP COMPANY

*Distributed By:*

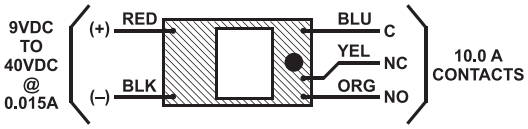
## WIRING



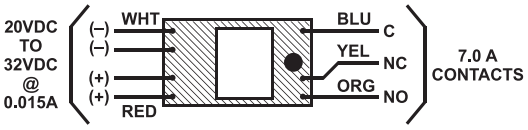

**PAM-1**




**PAM-2**




**PAM-4**




**PAM-SD**

## PRODUCT SPECIFICATIONS

| MODEL NUMBER: | PAM-1 | PAM-2 | PAM-4 | PAM-SD |
|---|---|---|---|---|
| COIL VOLTAGE: | 24VAC/24VDC/120VAC | 12VDC/24VDC | 9 to 40VDC | 20 to 32VDC |
| POLARIZED: | Yes | Yes | Yes | Yes |
| ENERGIZED LED INDICATOR: | Yes | Yes | No | No |
| CURRENT REQUIREMENT: | | | | |
| @12VDC | | 15mA | 15mA | |
| @24VDC | 15mA | 15mA | 15mA | 15mA |
| @24VAC | 50mA | | | |
| @120VAC | 30mA | | | |
| CONTACT CONFIGURATION: | (1) SPDT dry form “C” | (1) SPDT dry form “C” | (1) SPDT dry form “C” | (1) SPDT dry form “C” |
| CONTACT RATINGS: (contact rating/ power factor) | | | | |
| @5VDC | 250µA / .35 PF | 250µA / .35 PF | 250µA | 250µA / .35 PF |
| @24VDC | 7A / .35 PF | 7A / .35 PF | 7A | 7A / .35 PF |
| @120VAC | 10A | 7A / .35 PF | 10A | 7A / .35 PF |
| WIRE LEADS: | 6 “flying” leads 12” / 18 AWG Wire-nuts provided | 6 “flying” leads 12” / 18 AWG Wire-nuts provided | 5 “flying” leads 12” / 18 AWG Wire-nuts provided | 7 “flying” leads 12” / 18 AWG Wire-nuts provided |
| AMBIENT TEMPERATURE: (@ 100% RH, condensing) | 32°F to 120°F (0°C to 49°C) | 32°F to 120°F (0°C to 49°C) | 32°F to 120°F (0°C to 49°C) | 32°F to 120°F (0°C to 49°C) |
| CONSTRUCTION: | 100% potted (sealed) with “flying” leads | | | |
| MOUNTING: | Pre-drilled mounting screw hole and self tapping screw provided. Double sided tape provided. | | | |
| DIMENSIONS: | | | | |
| H | 1.50” (38mm) | 1.50” (38mm) | 1.50” (38mm) | 1.50” (38mm) |
| W | 1.20” (25mm) | 1.00” (25mm) | 1.00” (25mm) | 1.00” (25mm) |
| D | 0.90” (20mm) | 0.90” (23mm) | 0.90” (23mm) | 0.80” (20mm) |
| LISTINGS AND APPROVALS: | | | | |
| UL*: | U0XX/7.S3403 | U0XX/7.S3403 | U0XX/7.S3403 | U0XX/7.S3403 |
| MEA: | 73-92-E Vol. 21 | 73-92-E Vol. 21 | 73-92-E Vol. 21 | 73-92-E Vol. 21 |
| CSFM: | 7300-1004:101 | 7300-1004:101 | 7300-1004:101 | 7300-1004:101 |

*UOXX=Control Unit Accessories, System; /7=also Certified for Canada

GENTEX CORPORATION

# Photoelectric Smoke Alarm with Visual Signaling Appliance

## 710/713CS/LS 7109/7139CS/LS SERIES

### Applications

The 710/713CS/LS and 7109/7139CS/LS photoelectric single/multiple station smoke alarms are designed to give reliable early warning of the presence of smoke where both audible and visual alarms are required. The Series features a 90dBA solid state piezo signal and a 177 candela strobe with "FIRE" lettering. The strobe is listed per ANSI/UL 1971.

The smoke alarm operates on the light scattering principle, a superior method of detection in smoldering fires, utilizing a pulsing LED light source and a photodiode sensor in a fully screened sensing chamber.

Every 4 to 5 seconds the pulsing LED emits an infrared beam that by passes the photodiode under normal conditions. However, when smoke enters the sensing chamber, the infrared beam is deflected onto the sensor by the smoke particles. The LED pulse rate increases to 8 times the normal rate, after the photodiode confirms that smoke is present for 2 consecutive pulses, it will produce the signal necessary to trip an alarm.

Upon activation, the smoke alarm will emit a 90dBA local audible signal and activate the high intensity strobe. During the alarm period the strobe will flash at a brightness of 177 candela 60 times per minute. After the smoke has cleared from the smoke alarm, the unit will revert to the normal stand-by condition.


Easy Wash® - On Site Maintenance Program

### Standard Features

- Available in 120VAC
- 9VDC battery back-up (7109/7139CS/LS) w/ audible low battery chirp
- 9 foot line cord (LS models)
- 177 candela rating (ANSI/UL 1971 listed)
- Horn frequency 3100Hz (nominal)
- Patented three position test switch
- Nominal 2.5% sensitivity
- Quick-disconnect wiring harness (CS models)
- Form C relay contacts for remote annunciation (CS models)
- 9VDC battery back-up models, visual does not operate on battery back-up
- Relay contacts do operate on battery back-up
- Relay contacts will activate from the tandem wire
- 90dBA continuous piezo horn (710CS/LS & 7109CS/LS Series)
- 90dBA temporal 3 evacuation piezo horn (713CS/LS & 7139CS/LS Series)
- 5-to-1 signal-to-noise ratio
- Fully insect screened
- Tandem interconnect capabilities
- Tandem interconnect up to 6 alarms (CS Models)
- Easy Wash® on-site maintenance washing program
- Mounting hardware adapts to standard junction boxes
- Warranty is 12 months from date of purchase

### Product Listings

SIGNALING UL LISTED

- ANSI/UL 217 and ANSI/UL 1971 Listed
- CSFM: 7257-0569:104 (710/713 CS/LS)
  7257-0569:118 (7109/7139 CS/LS)
- MEA #285-91-E
- BFP (City of Chicago)
- MSFM Listing #1929

### Product Compliance

- NFPA 72
- Americans with Disabilities Act (ADA)
- IBC/IFC/IRC
- Quality Management System is certified to: ISO 9001:2008

NEMA MEMBER

ASSEMBLED IN THE USA

## 710CS/LS and 7109CS/LS Series - Continuous Piezo Sounder

| Model Number | Part Number | Voltage | Wall Mount | Ceiling Mount | 9 Foot Line Cord | Interconnect Up To 6 Units | Form C Contacts | 9VDC Battery Back-Up |
|---|---|---|---|---|---|---|---|---|
| 710CS-W | 907-0231-002 | 120VAC | ● | | | ● | ● | |
| 710CS-C | 907-0232-002 | 120VAC | | ● | | ● | ● | |
| 710CSX-W | 907-0235-002 | 120VAC | ● | | | ● | ● | |
| 710CSX-C | 907-0236-002 | 120VAC | | ● | | ● | ● | |
| 710LS | 907-0239-002 | 120VAC | ● | | ● | | | |
| 7109CS-W | 917-0007-002 | 120VAC | ● | | | ● | ● | ● |
| 7109CS-C | 917-0008-002 | 120VAC | | ● | | ● | ● | ● |
| 7109CSX-W | 917-0010-002 | 120VAC | ● | | | ● | ● | ● |
| 7109CSX-C | 917-0011-002 | 120VAC | | ● | | ● | ● | ● |
| 7109LS | 917-0006-002 | 120VAC | ● | | ● | | | ● |

## 713CS/LS and 7139CS/LS Series - Temporal 3 Piezo Sounder

| Model Number | Part Number | Voltage | Wall Mount | Ceiling Mount | 9 Foot Line Cord | Interconnect Up To 6 Units | Form C Contacts | 9VDC Battery Back-Up |
|---|---|---|---|---|---|---|---|---|
| 713CS-W | 907-0248-002 | 120VAC | ● | | | ● | ● | |
| 713CS-C | 907-0249-002 | 120VAC | | ● | | ● | ● | |
| 713CSX-W | 907-0252-002 | 120VAC | ● | | | ● | ● | |
| 713CSX-C | 907-0253-002 | 120VAC | | ● | | ● | ● | |
| 713LS | 907-0256-002 | 120VAC | ● | | ● | | | |
| 7139CS-W | 917-0019-002 | 120VAC | ● | | | ● | ● | ● |
| 7139CS-C | 917-0020-002 | 120VAC | | ● | | ● | ● | ● |
| 7139CSX-W | 917-0021-002 | 120VAC | ● | | | ● | ● | ● |
| 7139CSX-C | 917-0022-002 | 120VAC | | ● | | ● | ● | ● |
| 7139LS | 917-0018-002 | 120VAC | ● | | ● | | | ● |

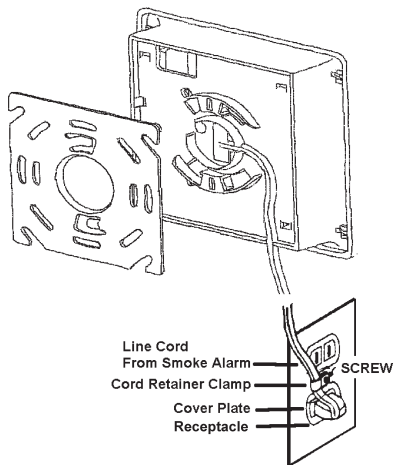
## NOTES

- Available in square configuration only.
- Line cord models not available for ceiling mount applications, wall mount only
- The CSX models have the ability to turn its strobe on from a field mounted relay
- When testing 713/7139 units, it may take up to 16 seconds longer for smoke alarm to go in or out of alarm mode.
- It is recommended that 710/713/7109/7139 Series smoke alarm be tested weekly
- Refer to Technical Bulletin 002 for Easy Wash® on site washing instructions
- 710/7109 units produce a non-temporal audible alarm and are therefore not intended for locations where the desired action of the occupant(s) is evacuation
- 713/7139 units produce a temporal 3 audible alarm. Per NFPA 72, the American National Standard Audible Emergency Evacuation Signal as defined in ANSI S3.41, is required whenever the intended response is to evacuate the building
- Candela rating is a 177 candela strobe light listed to ANSI/UL 1971 listed strobe light
- Flash rate per minute: 60 minimum

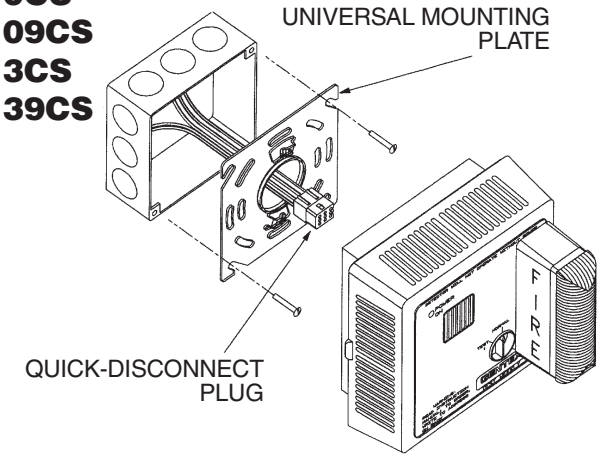
“W” = Wall Mount
“C” = Ceiling Mount

## Installation

**710LS**
**713LS**
**7109LS**
**7139LS**



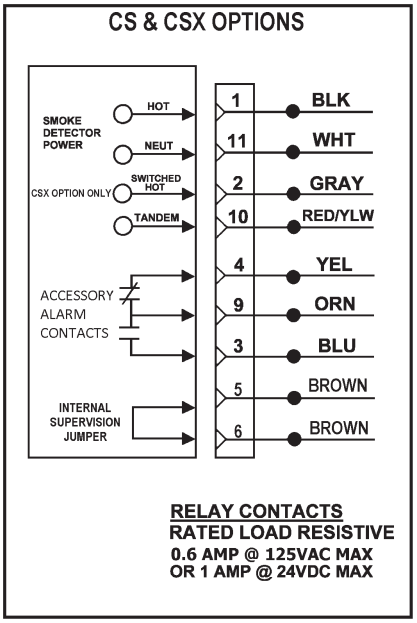

**710CS**
**7109CS**
**713CS**
**7139CS**



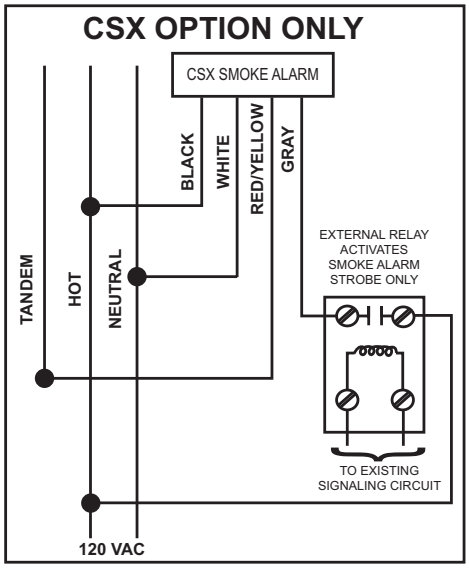

## Wiring Diagram

**710CS / 713CS**
**710CSX / 713CSX**
**7109CS / 7139CS**
**7109CSX / 7139CSX**

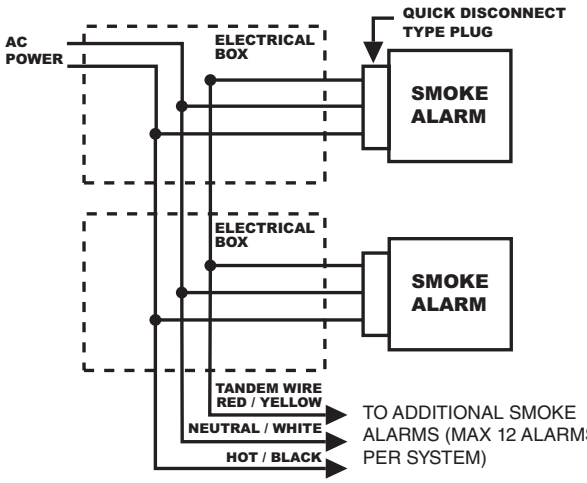
**The CSX models are used for remote annunciation of the strobe.**




## Remote Strobe Activation




*NOTICE:* Each CSX model strobe to be activated must be connected to the external relay using the GRAY wire.




### LIMITATIONS

Maximum of 12 smoke alarms may be connected together. Do not exceed 125 feet between each smoke alarm. Do not exceed 1125 feet between the first and last smoke alarm.

## Electrical Specifications

Operating Voltage. . . . . .120VAC, 60Hz
Operating Current. . . . . .0.400 amps (Peak)
Operating Ambient Temp Range. . . . . 40° - 100°F (4.4° - 38°C)
Alarm Horn Rating. . . . . .90 Decibels at 10 Ft.
Nominal Sensitivity. . . . . .2.5% Obscuration
Auxiliary Relay (Standard). . . . . .1 Form C (0.6 amp)
(710/713CS and 7109/7139CS)
Size . . . . . 5.5” (13.97 cm) Square x
4.75” (12.065 cm) Overall Depth
Secondary Power Source. . . . . .Alkaline 9VDC battery
. . . . . .Duracell® MN 1604
(7109CS/LS and 7139CS/LS)

# 710/713CS/LS
# 7109/7139CS/LS
# SERIES

## Architect & Engineering Specifications for 710/713LS & 7109/7139LS Models

The photoelectric smoke alarm shall be a Gentex Model 710LS, 713LS, 7109LS, 7139LS or approved equal which shall provide at least the following features and functions.

1. Nominal sensitivity shall be 2.5%.
2. The smoke alarm shall utilize an infrared LED sensing circuit which pulses in 4 to 5 second intervals; when subjected to smoke the pulse rate shall increase 8 times. After 2 consecutive pulses in smoke, the smoke alarm will alarm.
3. The smoke alarm shall provide minimum 5-to-1 signal-to-noise ratio in the optics frame to assure stability of operation in environments of high RF and transient conditions.
4. The sensing chamber shall be fully screened to prevent entrance of small insects, thus reducing the probability of false alarms.
5. A continuous piezo horn rated at 90dBA at 10 ft. (710CS/LS & 7109CS/LS units) and a temporal 3 piezo horn rated at 90dBA at 10 ft. (713CS/LS & 7139CS/LS units).
6. A visual LED monitor (condition indicator) will pulse in normal operation and steady on in alarm.
7. The visual signal shall have a minimal light output of 177 candela.
8. An easily accessible test knob shall be provided. The test knob in the TEST position will simulate an actual smoke condition of approximately 3.5% causing the smoke alarm to alarm within 20-36 seconds. Also the alarm shall test for the most sensitive setting. An alarm during this test will be a maintenance indicator.
9. The smoke alarm shall be provided with a 9 foot line cord with a strain relief connection, if a portable unit.
10. Unit must be capable of providing a monitored battery back-up.
11. Unit must be ANSI/UL 217 and ANSI/UL 1971 listed for wall mount.
12. Unit shall also meet all requirements of the State of California Fire Marshal, Bureau of Standards and Appeals and the Americans with Disabilities Act (ADA).

## Architect & Engineering Specifications for 710/713CS & 7109/7139CS Models

The photoelectric smoke alarm shall be a Gentex Model 710CS, 713CS, 7109CS, 7139CS or approved equal which shall provide at least the following features and functions.

1. Nominal sensitivity shall be 2.5%.
2. The smoke alarm shall utilize an infrared LED sensing circuit which pulses in 4 to 5 second intervals; when subjected to smoke the pulse rate shall increase 8 times. After 2 consecutive pulses in smoke, the smoke alarm will alarm.
3. The smoke alarm shall provide minimum 5-to-1 signal-to-noise ratio in the optics frame to assure stability of operation in environments of high RF and transient conditions.
4. The sensing chamber shall be fully screened to prevent entrance of small insects, thus reducing the probability of false alarms.
5. A continuous piezo horn rated at 90dBA at 10 ft. (710CS/LS & 7109CS/LS units) and a temporal 3 piezo horn rated at 90dBA at 10ft. (713CS/LS & 7139CS/LS units).
6. A visual LED monitor (condition indicator) will pulse in normal operation and will remain solid in alarm.
7. The visual signal shall have a minimal light output of 177 candela and will flash one time per second.
8. An easily accessible test knob shall be provided. The test knob in the TEST position will simulate an actual smoke condition of approximately 3.5% causing the smoke alarm to alarm within 20-36 seconds. Also the detector shall test for the most sensitive setting. An alarm during this test will be a maintenance indicator.
9. The smoke alarm shall be provided with a Form C relay contact for remote annunciation purposes.
10. The manufacturer shall provide other compatible smoke alarm models with the following optional features: a) auxiliary Form C relay contact for initiating remote functions and annunciation; b) relay option that is capable of activation by tandem interconnect wire.
11. Unit must be capable of providing a monitored battery back-up.
12. Unit must be ANSI/UL 217 and ANSI/UL 1971 listed for wall mount or ceiling mount.
13. Unit shall also meet all requirements of the State of California Fire Marshal, Bureau of Standards and Appeals and the Americans with Disabilities Act ADA).

All equipment shall be completely factory assembled, wired and tested, and the contractor shall be prepared to submit a certified letter testifying to this condition. Smoke alarms which do not meet all of the requirements of this specification will not be considered.

12 units per carton
21 pounds per carton

GENTEX CORPORATION

Fire Protection Products Group • www.gentex.com
10985 Chicago Drive • Zeeland, Michigan 49464
616.392.7195 • 1.800.436.8391 • 616.392.4219 Fax



551-0037-03

GENTEX CORPORATION

# Photoelectric Smoke Alarm

## 120VAC and 220VAC with 9VDC Battery Back-Up Single/Multiple Station Smoke Alarm

# 9000/ 9003 SERIES

### Applications

The 9000/9003 Series of photoelectric smoke alarms is designed for residential and commercial residential applications, including homes, apartments, hospitals, hotels and motels, in compliance with UL 217, UL 1730 applicable IBC/IFC Standards and NFPA 72.

Available in many different models, the 9120/9123 Series is engineered to virtually eliminate nuisance alarms and deliver outstanding performance wherever reliable fire protection is required. The 9000/9003 Series is provided with a 9VDC alkaline battery for back-up in the event building power is lost. The battery impedance is verified and the alarm provides a low or missing battery warning.

The Gentex 9000/9003 Series provides an exclusive patented three position test feature that simulates a 0.85% and 3.5% actual smoke condition in full compliance with NFPA 72 and UL Standards.

Options include self-restoring 135°F integral or isolated heat thermals and Form A/Form C dry contacts for remote annunciation. Tandem interconnection of up to 12 units is available on several models; tandem interconnection of up to 6 units is available on "F" models, which activate the dry contacts from the tandem wire or a local alarm.



**Easy Wash™ - On Site Maintenance Program**

### Standard Features

- Available in 120VAC and 220VAC with 9VDC battery back-up
- Horn frequency 3100 Hz (nominal)
- Nominal 2.5% sensitivity
- Patented three position test switch
- Relays operate on battery back-up
- Quick-disconnect wiring harness
- 90dBA continuous piezo horn (9120/9220 Series)
- 90dBA temporal 3 evacuation piezo horn (9123/9223 Series)
- 5-to-1 signal-to-noise ratio
- Pulsing LED sensing chamber
- Fully insect screened
- Interconnect with all Gentex tandem capable smoke alarms
- Easy Wash™ on-site maintenance washing program
- Red LED pulses every 30 seconds, green LED for AC power on
- Mounting hardware adapts to standard junction boxes
- Dust cover to prevent contamination during installation
- Low or missing battery indicator
- 1 year warranty from date of purchase

### Product Listings

SIGNALING UL LISTED

- **UL 217 and UL 1730 Listed**
- **CSFM #7257-569:117**
- **BS+A/MEA #285-91-E**
- **BFP (City of Chicago)**
- **MSFM Listing #1929**
- **Hong Kong FSD Listed (9220 Series ONLY)**

### Product Compliance

- **NFPA 72**
- **IBC/IFC/IRC**

NEMA MEMBER

ASSEMBLED IN THE USA

## 9000 (9120/9220) Series - Continuous Piezo Sounder

| Model Number | Part Number | Voltage | Integral 135°F Thermal | Isolated 135°F Thermal | Tandem Up To 12 Units | Tandem Up To 6 Units | Form A/C Contacts |
|---|---|---|---|---|---|---|---|
| 9120 | 917-0001-002 | 120VAC | | | ● | | |
| 9120T | 917-0002-002 | 120VAC | ● | | ● | | |
| 9120H | 917-0003-002 | 120VAC | | ● | ● | | |
| 9120F | 917-0004-002 | 120VAC | | | | ● | ● |
| 9120TF | 917-0009-002 | 120VAC | ● | | | ● | ● |
| 9120HF | 917-0005-002 | 120VAC | | ● | | ● | ● |
| 9220 | 917-0026-002 | 220VAC | | | ● | | |
| 9220T | 917-0027-002 | 220VAC | ● | | ● | | |
| 9220H | 917-0028-002 | 220VAC | | ● | ● | | |
| 9220F | 917-0029-002 | 220VAC | | | | ● | ● |
| 9220TF | 917-0031-002 | 220VAC | ● | | | ● | ● |
| 9220HF | 917-0030-002 | 220VAC | | ● | | ● | ● |

## 9003 (9123/9223) Series - Temporal 3 Evacuation Piezo Sounder

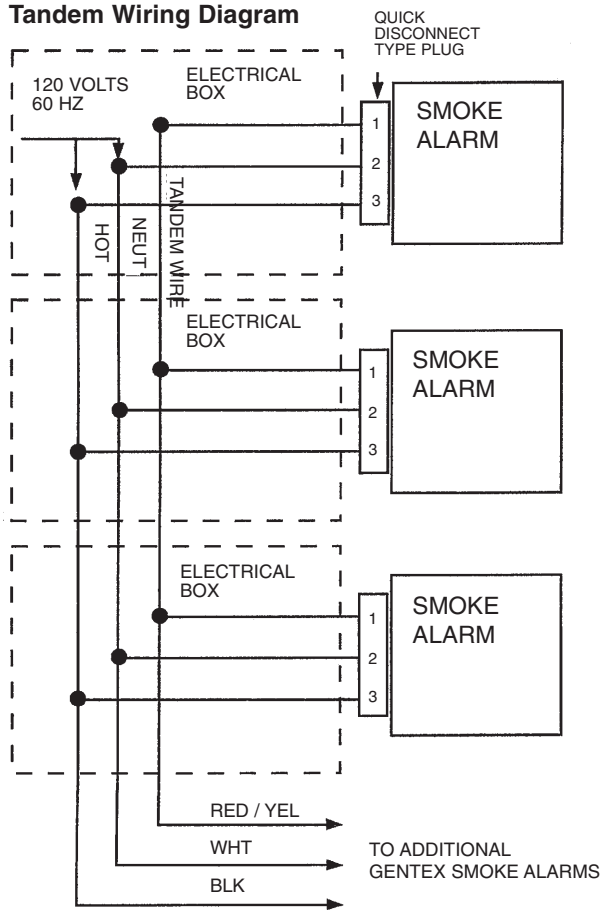
| Model Number | Part Number | Voltage | Integral 135°F Thermal | Isolated 135°F Thermal | Tandem Up To 12 Units | Tandem Up To 6 Units | Form A/C Contacts |
|---|---|---|---|---|---|---|---|
| 9123 | 917-0012-002 | 120VAC | | | ● | | |
| 9123T | 917-0013-002 | 120VAC | ● | | ● | | |
| 9123H | 917-0014-002 | 120VAC | | ● | ● | | |
| 9123F | 917-0015-002 | 120VAC | | | | ● | ● |
| 9123TF | 917-0017-002 | 120VAC | ● | | | ● | ● |
| 9123HF | 917-0016-002 | 120VAC | | ● | | ● | ● |
| 9223 | 917-0032-002 | 220VAC | | | ● | | |
| 9223T | 917-0033-002 | 220VAC | ● | | ● | | |
| 9223H | 917-0034-002 | 220VAC | | ● | ● | | |
| 9223F | 917-0035-002 | 220VAC | | | | ● | ● |
| 9223TF | 917-0037-002 | 220VAC | ● | | | ● | ● |
| 9223HF | 917-0036-002 | 220VAC | | ● | | ● | ● |

**NOTES:**

- Series available in round configuration only.
- When testing 9123 Series, it may take up to 16 seconds longer for smoke alarm to go in or out of alarm mode.
- It is recommended that 9000/9003 Series smoke alarm be tested weekly.
- Refer to Technical Bulletin 002 for *Easy Wash*™ on site washing instructions
- 9120/9220 units produce a non-temporal audible alarm and are therefore not intended for locations where the desired action of the occupant(s) is evacuation.
- 9123/9223 units produce a temporal 3 audible alarm. Per NFPA 72, the American National Standard Audible Emergency Evacuation Signal as defined in ANSI S3.41, is required whenever the intended response is to evacuate the building.

# 9000/9003 Series Wiring Diagrams

## Tandem Wiring Diagram

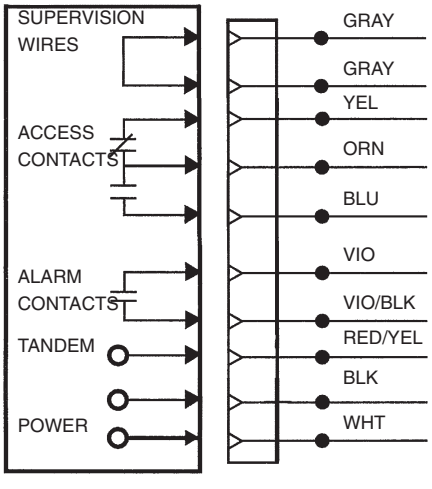



LIMITATIONS:
Maximum of 12 alarms (9120/9123, 9120/9123T, 9120/9123H, 9220/9223, 9220/9223T, 9220/9223H) may be connected together. Do not exceed 125 feet between each detector. Do not exceed 1125 feet between the first and last alarm. NOTE: Gentex smoke alarms can not be interconnected to detectors from other manufacturers.

A MAXIMUM OF SIX (6) ALARMS WITH A RELAY MAY BE TANDEM INTERCONNECTED. (9120/9123F, 9120/9123TF, 9120/9123HF, 9220/9223F, 9220/9223TF, 9220/9223HF)

## Relay Models

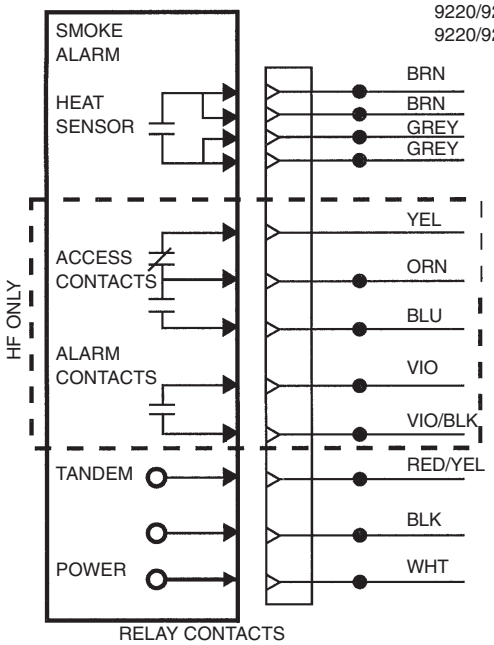
Models
9120/9123F
9120/9123TF
9230/9223F
9220/9223TF




**CAUTION:**
RED/YELLOW wire to be capped when not in use. This wire is for tandem connection only. Do not connect to any other circuit.

## Isolated Thermal with Optional Accessory Contacts

Models
9120/9123H
9120/9123HF
9220/9223H
9220/9223HF




RELAY CONTACTS
RATED LOAD RESISTIVE
1.0 AMP @ 24 VDC
0.6 AMP @ 125 VAC MAX
0.3 AMP @ 220 VAC MAX

# 9000/ 9003 SERIES

## Electrical Specifications

| | |
|---|---|
| Operating Voltage (9120/9123) | 120VAC, 60Hz |
| Operating Voltage (9220/9223) | 220VAC, 50Hz |
| Operating Current | .045 amps |
| Operating Current (Relay Options) | .070 amps |
| Operating Ambient Temp Range | 40°F to 100°F |
| Alarm Horn Rating | 90dBA at 10 feet |
| Nominal Sensitivity | 2.5% obscuration |
| "F" Auxiliary Relay | 1 Form A & 1 Form C (0.6 amp) |
| "T" Integral Thermal (Self-Restoring) | 135°F at 50 feet |
| "H" Isolated Thermal Form A (Self-Restoring) | 135°F at 50 feet |
| Size | Diameter: 6.5 in. OA (5.75 in. at Ceiling)<br>Depth: 2.625 in. |
| Secondary Power Source | Alkaline 9VDC battery |

## Architect & Engineering Specifications

The Photoelectric Smoke alarm shall be a Gentex Model 9120/9123/9220/9223 or approved equal which shall provide at least the following features and functions.

1. Nominal sensitivity shall be 2.5%.
2. The alarm shall utilize an infrared LED sensing circuit which pulses in 4 to 5 second intervals when subjected to smoke. After 2 consecutive pulses in smoke, the alarm will activate.
3. The alarm shall have a 9VDC alkaline battery as a back-up in the event building power is lost.
4. The 9VDC battery impedance shall be verified by the circuit of the smoke alarm.
5. The alarm shall provide an indicator when the battery is low in power or high impedance or is missing.
6. The alarm shall provide minimum 5-to-1 signal-to-noise ratio in the optics frame to assure stability of operation in environments of high RF and transient conditions.
7. The sensing chamber shall be fully screened to prevent entrance of small insects, thus reducing the probability of false alarms.
8. A solid state piezo alarm rated at 90dBA at 10ft.
9. A visual LED monitor (condition indicator) will slow pulse in normal operation and rapid pulse in alarm.
10. An easily accessible test knob shall be provided. The test knob in the TEST position will simulate an actual smoke condition of approximately 3.5% causing the detector to alarm within 20-36 seconds. It will also have the capability of testing to 0.85% as a required minimum. A magnetic switch closure or other switch closure, or smoke generating equipment which does not scatter the light beam or test sensitivity is not sufficient, as indicated in National Code.
11. The detector shall have interconnect capabilities of up to 12 units or 6 units with relay.
12. The alarm shall have interconnection capabilites of 12 units on 9120/9120T/9120H/9123/9123T/9123H/9220/922T/9220H/9223/9223T/9223H and shall have interconnection capabilites of 6 units on 9120F/9120TF/9120HF/9123F/9123TF/9123HF/9220F/9220TF/9220HF/9223F/9223TF/9223HF.
13. The manufacturer shall provide other compatible alarm models with the following optional features: a) 135°F isolated thermal with normally opened contact for remote connection to local alarm or annunciator; b) 135°F integral thermal; c) auxiliary Form A/Form C relay contacts for initiating remote functions and annunciation; d) relay option that is capable of activation by tandem interconnect wire. Thermal sensor shall be self-restoring.
14. Unit must be UL 217 and UL 1730 listed for both wall and ceiling mount.
15. Unit shall be listed by Underwriters Laboratories, California State Fire Marshal (CSFM) and the Bureau of Standards and Appeals (NYC).

All equipment shall be completely factory assembled, wired and tested, and the contractor shall be prepared to submit a certified letter testifying to this condition. Alarms which do not meet all of the requirements of this specification will not be considered.

24 units per carton
34 pounds per carton

GENTEX CORPORATION

Fire Protection Products Group • www.gentex.com
10985 Chicago Drive • Zeeland, Michigan 49464
616.392.7195 • 1.800.436.8391 • 616.392.4219 Fax



551-0040-02

NEW FEATURES

GENTEX CORPORATION

# Combination Photoelectric Smoke and Carbon Monoxide Alarm

## 120VAC/9VDC Single/Multiple Station Smoke and CO Alarm

GN-503 SERIES

### Applications

The GN-503 (120VAC/9VDC) Series of combination photoelectric smoke and electrochemical sensor carbon monoxide alarms are for use as evacuation devices in all dwelling units, including but not limited to homes, apartments, hospitals, hotels, motels and other commercial occupancies. The GN-503 Series is listed in compliance with ANSI/UL 217, ANSI/UL 2034, for installation per NFPA 720 and NFPA 72.

Available in three models, the GN-503 Series is engineered to virtually eliminate nuisance alarms and deliver outstanding performance wherever reliable smoke and CO protection is required. The GN-503F features one (1) set of Form A/Form C contacts that activate for smoke and/or CO events. **THE GN-503FF FEATURES TWO (2) SETS OF FORM A/ FORM C CONTACTS THAT ACTIVATE INDEPENDENTLY FOR SMOKE AND CO EVENTS.** Both the GN-503F and GN-503FF provide a connection to a protected premises alarm system to provide a supervisory/trouble signal.

The GN-503 Series is provided with a 9VDC alkaline battery for electrical back-up in the event building power is lost. The battery impedance is verified and the alarm provides a low or missing battery warning. The battery drawer provides easy replacement without removing the unit from the wall or ceiling.

The GN-503 Series is designed with a self test feature that quickly notifies if the alarm is functioning properly or needs attention (signified by a series of chirps) by simply pressing the test button. The functionality tests that the smoke/CO alarm is operating properly (signified by going into alarm). The self and functionality tests are in compliance with NFPA 72, NFPA 720 and ANSI/UL Standards.

The GN-503 Series provides a temporal 3 evacuation tone for smoke alarm annunciation and all units provide a temporal 4 tone for CO alarm annunciation. Per NFPA 720, the temporal 3 evacuation tone for smoke alarm will take precedence over the temporal 4 tone for CO alarm.

### Product Listings

SIGNALING UL LISTED

- ANSI/UL 217 and ANSI/UL 2034 Listed
- CSFM # 5276-0569:144

### Product Compliance

NEMA MEMBER

ASSEMBLED IN THE USA

- NFPA 72 and NFPA 720
- IBC/IFC/IRC
- City & State Ordinances/Laws/Regulations
- Quality Management System is certified to: ISO 9001:2008

## Standard Product Features

- GN-503 available in 120VAC with 9VDC battery back-up
- Horn frequency 3100 Hz (nominal)
- Meets sensitivity requirements of ANSI/UL 2034
- F Model: One (1) set of Form A/Form C contacts that activate for smoke and/or CO events
- **FF Model: Two (2) sets of Form A/Form C contacts that activate independently for smoke and CO events**
- Relay contacts operate on battery back-up
- Push button self test feature
- Push button functional test feature
- Quick-disconnect wiring harness
- Non-latching (self restoring) alarm
- Fully insect protected
- Red LED pulses every 30 seconds, green LED for AC power on
- Mounting hardware adapts to standard junction boxes, including but not limited to 4x4x2-1/8 octagon
- Dust cover to prevent contamination during installation
- Low or missing battery indicator
- 1 year warranty from date of purchase
- 5 year limited warranty on CO sensor

## Additional Smoke Alarm Features

- Photoelectric smoke sensing technology
- Temporal 3 evacuation sounding pattern for smoke annunciation
- Nominal 2.5% sensitivity (smoke)
- Solid state red LED to indicate smoke presence

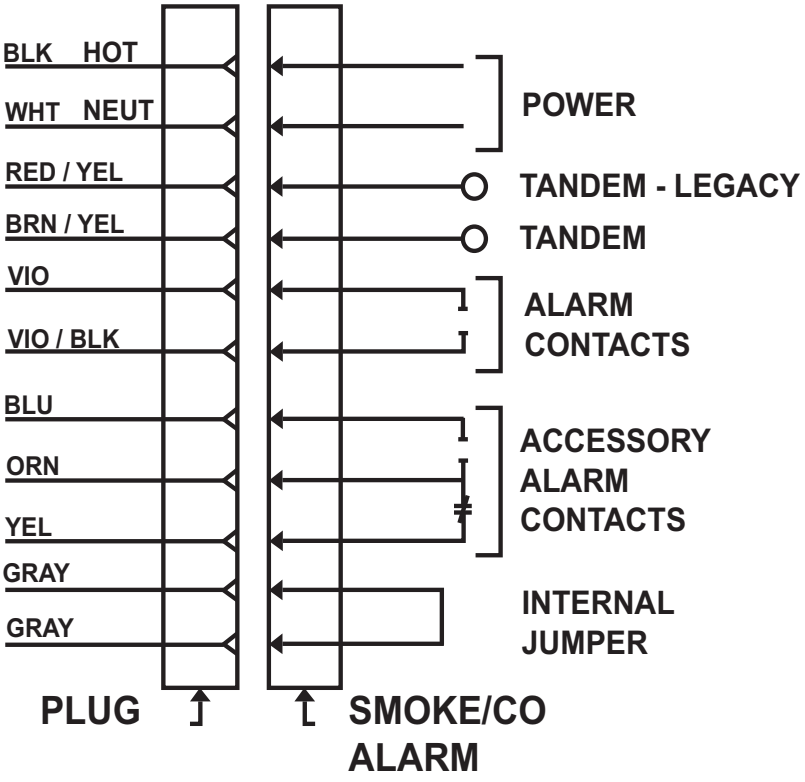
## Additional CO Alarm Features

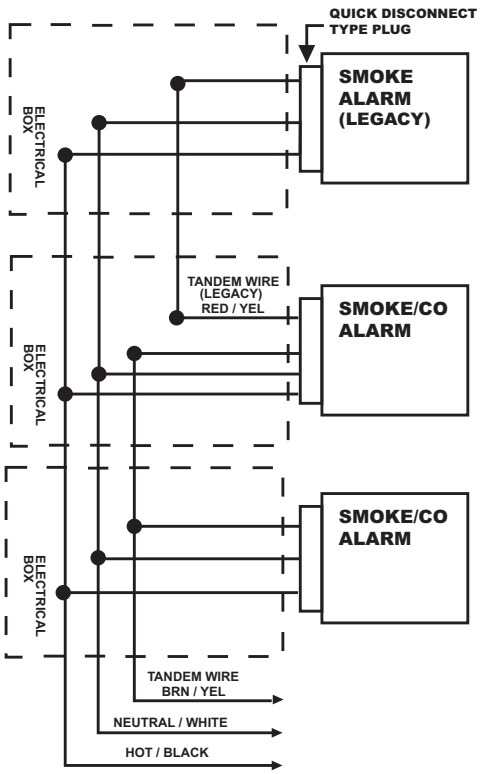
- Electrochemical sensor
- Temporal 4 sounding pattern for CO annunciation
- End of life signal indicates CO sensor has reached depletion state and unit must be replaced

## GN-503 Series Combination Smoke/CO Alarm

| Model Number | Voltage | 9VDC Battery Back-Up | One (1) Set Form A/ Form C Relay Contacts | Two (2) Sets Form A/ Form C Relay Contacts |
|---|---|---|---|---|
| GN-503 | 120VAC | ● | | |
| GN-503F | 120VAC | ● | ● | |
| GN-503FF | 120VAC | ● | | ● |

## GN-503 AND GN-503F Wiring Diagrams




### GN-503/GN-503F ADDITIONAL PRODUCT INFORMATION

THE GN-503F AND GN-503FF PRODUCT WIRING HARNESS IS NOT INTERCHANGEABLE. THE GN-503F AND GN-503FF MUST USE PROPER WIRING HARNESS. PRODUCT WILL NOT FUNCTION IF INCORRECT HARNESS IS USED.

- DO NOT connect Gentex alarms to other manufacturers' alarms.
- Per NFPA 72, a maximum of 18 compatible smoke, heat, CO and/or combination smoke/CO alarms may be interconnected. No more than 12 of the 18 can be smoke alarms.
- All units connected in tandem MUST get their power from the same circuit, that is, all smoke alarms in tandem must be controlled by the same fuse or circuit breaker.

*NOTICE*: PER NFPA 72, A MAXIMUM OF 12 SMOKE/CO ALARMS OF GN-503 WITH THE RELAY OPTION (F) MAY BE TANDEM INTERCONNECTED.

The GN-503/GN-503F may be tandem interconnected with other Gentex tandem capable smoke alarms, CO alarms or smoke/CO alarms. To interconnect with Gentex 9000 Series, 7000 Series, 710CS Series, 7109CS Series, GN-200 Series & GN-300 Series the LEGACY TANDEM WIRE must be used. Refer to installation manual for detailed information.

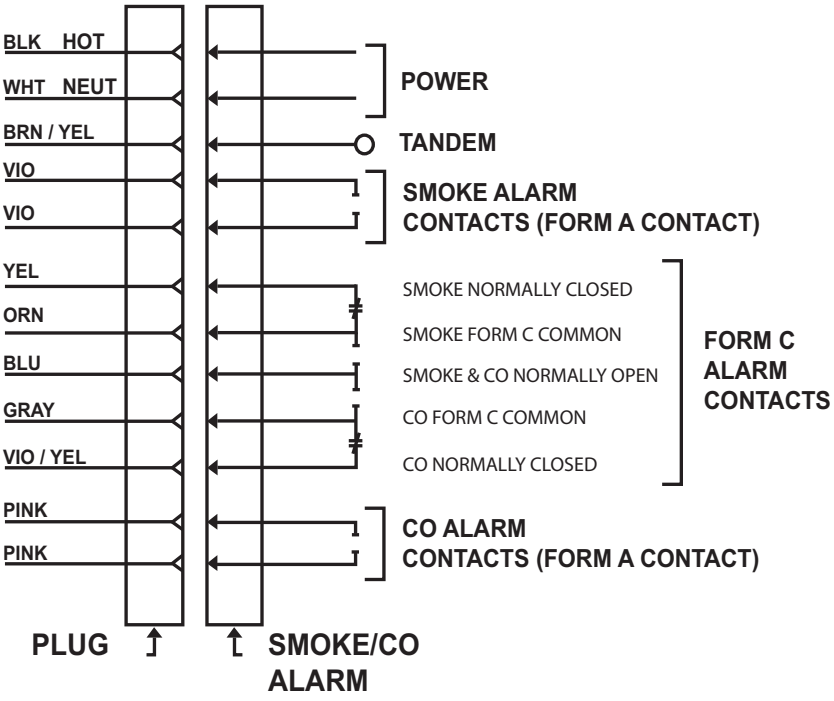
**CAUTION:** RED/YELLOW & BROWN/YELLOW wire to be capped when not in use. This wire is for tandem connection only. Do not connect to any other circuit.

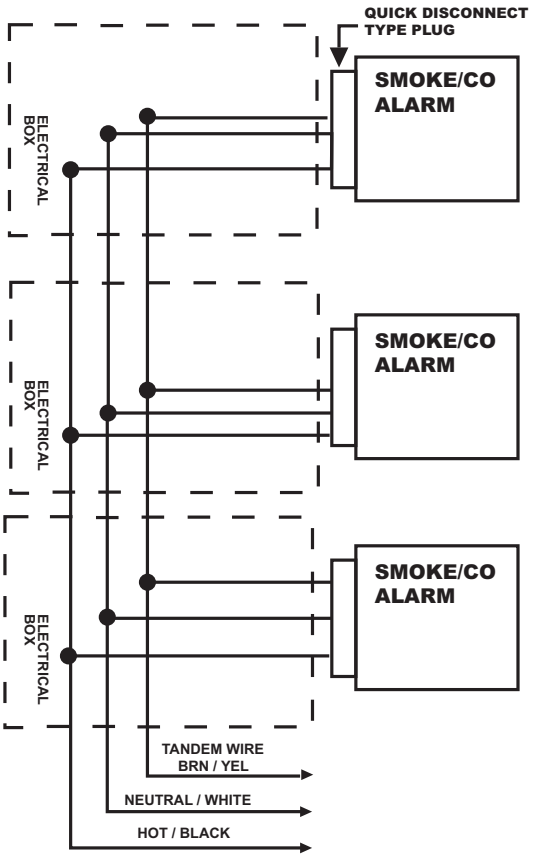
- If a GN-503 Series or CO1209 Series unit is annunciating for a CO event, legacy products that are tandem interconnected will not activate and will remain silent.
- If smoke alarm portion of device goes into alarm, all smoke alarms, CO alarms or combination smoke/CO alarms tandem wired will sound smoke alarm warning.
- When both smoke and CO conditions are present, smoke condition will have priority and alarm will sound smoke annunciation.

# USING THE GENTEX GN-503FF COMBINATION SMOKE AND CARBON MONOXIDE ALARM ALLOWS THE ABILITY TO:

## • Interface with a FACP Panel
## • Interface with NAC Circuits

### GN-503FF Wiring Diagrams




### GN-503FF ADDITIONAL PRODUCT INFORMATION

Use brown/yellow wire to tandem interconnect GN-503FF alarms to additional GN-503 Series, S1209 Series and CO1209 Series.

*NOTICE:* THE GN-503FF IS ONLY CAPABLE OF TANDEM INTERCONNECT WITH GN-503 SERIES, CO1209 SERIES AND S1209 SERIES.

THE GN-503F AND GN-503FF PRODUCT WIRING HARNESS IS NOT INTERCHANGEABLE. THE GN-503F AND GN-503FF MUST USE PROPER WIRING HARNESS. PRODUCT WILL NOT FUNCTION IF INCORRECT HARNESS IS USED.

- DO NOT connect Gentex alarms to other manufacturers' alarms.
- Per NFPA 72, a maximum of 18 compatible smoke, heat, CO and/or combination smoke/CO alarms may be interconnected. No more than 12 of the 18 can be smoke alarms.
- All units connected in tandem MUST get their power from the same circuit, that is, all smoke alarms in tandem must be controlled by the same fuse or circuit breaker.

*NOTICE*: PER NFPA 72, A MAXIMUM OF 12 SMOKE/CO ALARMS OF GN-503 WITH THE RELAY OPTION (FF) MAY BE TANDEM INTERCONNECTED.

CAUTION: BROWN/YELLOW wire to be capped when not in use. This wire is for tandem connection only. Do not connect to any other circuit.

- If smoke alarm portion of device goes into alarm, all smoke alarms, CO alarms or combination smoke/CO alarms tandem wired will sound smoke alarm warning.
- When both smoke and CO conditions are present, smoke condition will have priority and alarm will sound smoke annunciation.

# GN-503 SERIES

## Electrical Specifications

| | |
|---|---|
| Operating Voltage | 120VAC, 60Hz |
| Operating Current | .045 amps |
| Operating Current (Relay Options) | .070 amps |
| Operating Ambient Temp Range | 40°F to 100°F (4.4°C-38°C) |
| Alarm Horn Rating | 85dBA at 10 feet (3.048 m) |
| Auxiliary Relay (GN-503F) | 1 Form A & 1 Form C (0.5 amp) |
| Auxiliary Relay (GN-503FF) | 2 Form A & 2 Form C (0.3 amp) |
| Size | Diameter at base: 5.75 in. (14.605 cm) |
| | Overall diameter 6.25 in. (16.51 cm) |
| | Depth: 1.8 in. (4.572 cm) |
| Secondary Power Source | Alkaline 9VDC battery (Duracell® MN 1604) |
| CO Sensing Cell | Electrochemical Cell |

## Architect & Engineering Specifications

The combination photoelectric smoke and carbon monoxide alarm shall be a Gentex Model GN-503/GN-503F/GN-503FF or approved equal which shall provide at least the following features and functions:

1. Nominal smoke sensitivity shall be 2.5%.
2. The smoke alarm portion of device shall utilize an infrared LED sensing circuit which pulses in 4 to 5 second intervals when subjected to smoke. After 2 consecutive pulses in smoke, the alarm shall activate.
3. The CO alarm shall utilize an electrochemical sensing element with a minimum 5-year life.
4. The carbon monoxide alarm portion of device is adjusted not to detect CO levels below 30 PPM and will not alarm when exposed to constant levels of 30 PPM for 30 days. Per ANSI/UL 2034 requirements, the device will alarm at the following levels: 70 PPM CO between 1 to 4 hours, but not less than 1 hour. 150 PPM CO between 10 to 50 minutes. 400 PPM between 4 to 15 minutes.
5. The GN-503 Series device shall have a Duracelll® MN 1604 9VDC alkaline battery as a back-up in the event building power is lost.
6. The 9VDC battery impedance shall be verified by the circuit of the smoke/CO alarm.
7. The alarm shall provide an indicator when the battery is low in power, high impedance or is missing.
8. The CO alarm will provide an audible indicator of 3 quick chirps every 30 seconds at end of life of CO sensor.
9. The sensing chamber shall be fully protected to prevent entrance of small insects, thus reducing the probability of false alarms.
10. The alarm shall include a solid state red color LED that will indicate presence of CO at the unit.
11. The alarm shall include a solid state piezo alarm rated at 85dBA at 10ft.
12. A visual LED monitor (condition indicator) shall slow pulse in normal operation and rapid pulse in alarm (red color)
13. An easily accessible test button shall be provided. Push down on button for 5 seconds causing smoke/CO alarm to activate. If device does not go into alarm, the device is not working properly.
14. The device shall have tandem interconnect capability of up to 12 smoke/CO alarms.
15. The GN-503 and GN-503F alarm shall have the capability to tandem interconnect with all Gentex tandem capable smoke alarms, CO alarms or combination smoke/CO alarms, including 7000/7003 Series, 9000/9003 Series, 710CS/713CS Series, 7109CS/7139CS Series, GN-200/GN-300 Series, S1209 Series and CO1209 Series.
15. The GN-503FF alarm shall have the capability to tandem interconnect with the following Gentex alarms, CO alarms or combination smoke/CO alarms: GN-503 Series, S1209 Series and CO1209 Series.
16. The manufacturer shall provide models with the optional feature of auxiliary Form A/Form C relay contacts for initiating remote functions and annunciation and a relay option that is capable of activation by tandem interconnect wire.
17. The combination smoke/CO alarm shall be non-latching (self-restoring).
18. Unit must be ANSI/UL 217 and ANSI/UL 2034 listed for both wall and ceiling mounting.
19. Unit shall be listed by Underwriters Laboratories and California State Fire Marshal (CSFM).

All equipment shall be completely factory assembled, wired and tested, and the contractor shall be prepared to submit a certified letter testifying to this condition. Alarms which do not meet all of the requirements of this specification will not be considered.

For complete product specifications, refer to product installation manual.

24 units per carton
24 pounds per carton

GENTEX CORPORATION

Fire Protection Products Group • www.gentex.com
10985 Chicago Drive • Zeeland, Michigan 49464
616.392.7195 • 1.800.436.8391 • 616.392.4219 Fax



551-0073-04

# INSERT 5

# FIRE ALARM NOTIFICATION APPLIANCES & ACCESSORIES

# Simplex®

# True*Alert*® Multi-Candela Notification Appliances

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

Visible Notification Appliances with Synchronized Flash; Non-Addressable, Smart*Sync*™ Operation Compatible

## Features

**Visible only (V/O) 24 VDC notification appliances with high output xenon strobe, available for wall or ceiling mount:**

- Intensity is selectable as 15, 30, 75, or 110 candela with visible selection jumper secured behind strobe housing
- Operation is compatible with ADA requirements (refer to important installation information on page 3)
- Polarized input allows connection to compatible reverse polarity, supervised notification appliance circuit (NAC)
- Regulated circuit design ensures consistent flash output and provides controlled inrush current
- Rugged, high impact, flame retardant thermoplastic housings are available in red or white with clear lens
- Listed to UL 1971 and ULC S526

**Strobes provide synchronized flash for use with:**

- 4006, 4008, 4010, and 4100U Series fire alarm control panels with NACs selected to provide strobe synchronization or SmartSync two-wire control**
- 4009 IDNet™ NAC Extenders
- Separate strobe Synchronization Modules that are available for Class B or Class A operation
- Separate SmartSync Control Modules (SCMs) that provide Class B or Class A output from conventional NAC inputs

**Strobe housings provides flexible, easy, and convenient semi-flush or surface wall mounting:**

- Rear of housing does not extend into box
- Wall mount strobes easily mount to single gang, double gang, or 4-inch square outlet box
- Ceiling mount strobes mount to single gang boxes

**Wall mount strobe features:**

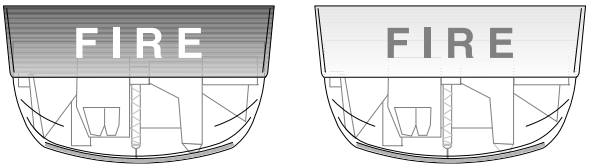
- Wiring terminals are accessible from the front of the housing providing easy access for installation, inspection, and testing
- Covers are available separately to convert housing color

**Optional adapters and wire guards:**

- Wall mount strobe adapters are available to cover surface mounted electrical boxes and to adapt to Simplex® 2975-9145 boxes
- UL listed red wire guards are available for wall or ceiling mount strobes*

* Refer to page 2 for guard listing. This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7125-0026:316 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Refer to page 2 for listing status of wire guards. 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 Safety Products Westminster.


Wall Mount Strobes




Ceiling Mount Strobes

## Description

**Multi-Candela TrueAlert synchronized strobes** provide convenient installation to standard electrical boxes. The enclosure designs are both impact and vandal resistant and provide a convenient strobe intensity selection. Since each model can be selected for intensity output, on-site model inventory is minimized and changes encountered during construction can be easily accommodated.

**Wall mount** strobe housings are a one-piece assembly (including lens) that mounts to a single or double gang, or 4" square standard electrical box. The cover can be quickly removed (a tool is required) and covers are available separately for color conversion.

**Ceiling mount** strobes install using standard single gang electrical boxes. Color choice is determined by model number.

## Strobe Intensity Selection

During installation, a selection plug at the back of the housing determines the desired strobe intensity. An attached flag with black letters on a highly visible yellow background allows the selected intensity to be seen at the side of the strobe lens.

## Strobe Application Reference

Proper selection of visible notification is dependent on occupancy, location, local codes, and proper applications of: the *National Fire Alarm Code* (NFPA 72), ANSI A117.1; the appropriate model building code: BOCA, ICBO, or SBCCI; and the application guidelines of the Americans with Disabilities Act (ADA).

** Simplex multi-candela SmartSync two-wire horn/strobe appliance operation is protected under one or more of the following U.S. Patent Numbers: 5,559,492; 5,622,427; 5,865,527; 5,886,620; 6,281,789; 6,954,137; 7,005,971; and 7,006,003.

## Synchronized Strobes

**Multiple Strobes.** When multiple strobes and their reflections can be seen from one location, synchronized flashes reduce the probability of photo-sensitive reactions as well as the annoyance and possible distraction of random flashing. These multi-candela strobes are synchronized over a two-wire circuit when connected to compatible NACs, to compatible Synchronized Flash Modules, or to SmartSync Control Modules.

## SmartSync Two-Wire Control

Some applications desire the audible notification appliances to be capable of being silenced before the alarm condition is reset (on-until-silenced) while the visible notification appliances are kept activated until the alarm condition is reset (on-until-reset). SmartSync operation mode provides this function using a single circuit (two-wire operation).

## SmartSync Control Sources

**SmartSync two-wire control is available from:**

- 4006, 4008, 4100U, and 4010 Fire Alarm Control Panels (refer to individual product data sheets for more information)
- 4009 IDNet NAC Extenders (refer to data sheet S4009-0002)
- SmartSync Control Module (SCM) Model 4905-9938 (refer to data sheet S4905-0003)

**Additional SmartSync** compatible notification appliances include separate horns and combination horn/strobe notification appliances.

## Product Selection

### Multi-Candela Visible Notification Appliances (Strobes)

| Model | Mounting | Housing Color | "FIRE" Lettering | Description |
|---|---|---|---|---|
| 4906-9101 | Wall | Red | White | Multi-candela strobe with intensity selectable as: 15, 30, 75, or 110 candela; synchronized flash rate; SmartSync two-wire control compatible |
| 4906-9103 | | White | Red | |
| 4906-9102 | Ceiling | Red | White | |
| 4906-9104 | | White | Red | |

### Wall Mount Strobe Adapters

| Model | Description | | Dimensions |
|---|---|---|---|
| 4905-9937 | Red | Surface Mount Adapter Skirt; use to cover 1-1/2" (38 mm) deep surface mounted boxes | 5-3/8" H x 5-1/4" W x 1-5/8" D (136 mm x 133 mm x 41 mm) Total depth with strobe = 4-3/8" (111 mm) |
| 4905-9940 | White | | |
| 4905-9931 | Red Adapter Plate for mounting to Simplex 2975-9145 box (typically for retrofit, may be mounted vertical or horizontal) | | 8-5/16" x 5-3/4" x 0.060" Thick (211 mm x 146 mm x 1.5 mm) |
| 2975-9145 | Red Mounting Box, requires Adapter Plate 4905-9931 | | 7-7/8" x 5-1/8" x 2-3/4" D (200 mm x 130 mm x 70 mm) |

### Ceiling Mount Strobe Adapter

| Model | Description | Dimensions |
|---|---|---|
| 4905-9910 | Surface Mount Adapter Plate; zinc plated; **required for mounting to handy box; not needed when using 4905-9926 guard** | 4-7/8" x 3-1/8" x 0.060" D (124 mm x 79 mm x 1.5) |

### Synchronization Modules (refer to data sheet S4905-0003 for additional information)

| Model | Description | | Dimensions |
|---|---|---|---|
| 4905-9914 | Class B | Synchronized Flash Module; epoxy encapsulated with in/out 18 AWG (0.82 $mm^2$) wire leads, rated for 2 A NAC, requires 5 mA for power | 1-3/8" x 2-7/16" x 13/16" (35 mm x 62 mm x 20 mm) |
| 4905-9922 | Class A | | |
| 4905-9938 | SmartSync Control Module with Class B or Class A output; mounts in 4" (102 mm) square box | | 4" x 4-1/8" x 1-1/4" D (102 mm x 105 mm x 32 mm) |

### Replacement Covers and Guards

| Model | Description | | Dimensions |
|---|---|---|---|
| 4905-9992 | Red cover with white "FIRE" lettering | For Wall mount strobes | 5-1/8" H x 5" W x 1-1/2" D (130 mm x 127 mm x 38 mm) |
| 4905-9993 | White cover with red "FIRE" lettering | | |
| 4905-9961* | Wall mount | Red wire guard with mounting plate, compatible with semi-flush or surface mounted boxes | 6-1/16" H x 6-1/16" W x 3-1/8" D (154 mm x 154 mm x 79 mm) |
| 4905-9926* | Ceiling mount | | 6-1/8" x 4-3/8" x 2-7/8" deep (156 mm x 111 mm x 73 mm) |

* UL listed by Space Age Electronics Inc.

## Strobe Specifications

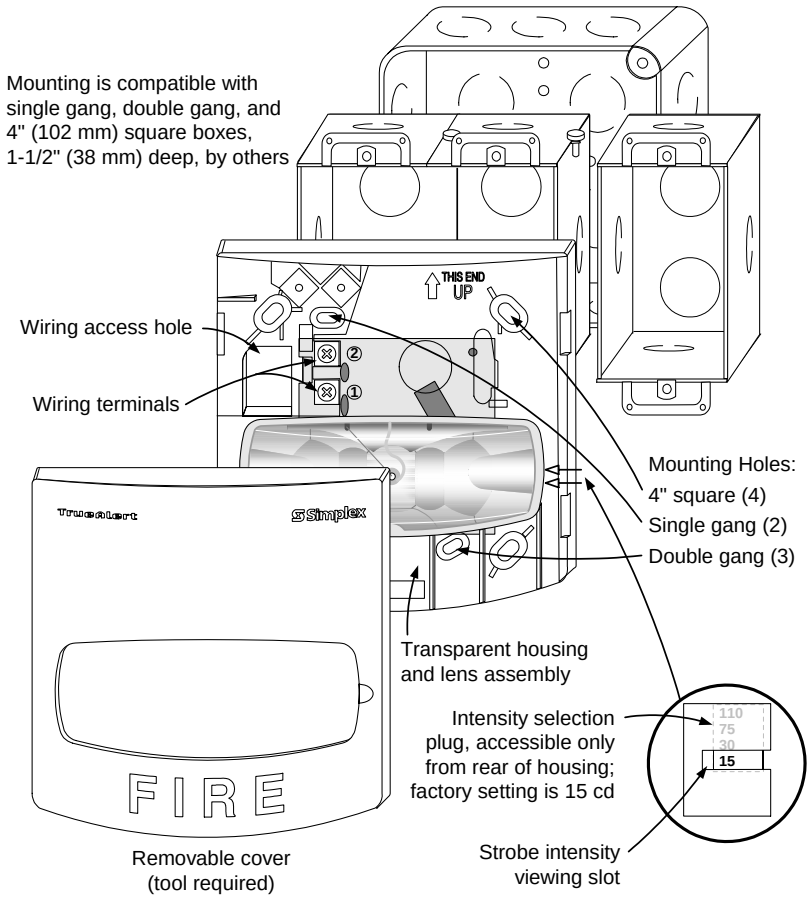
### Wall Mount or Ceiling Mount, Common Specifications

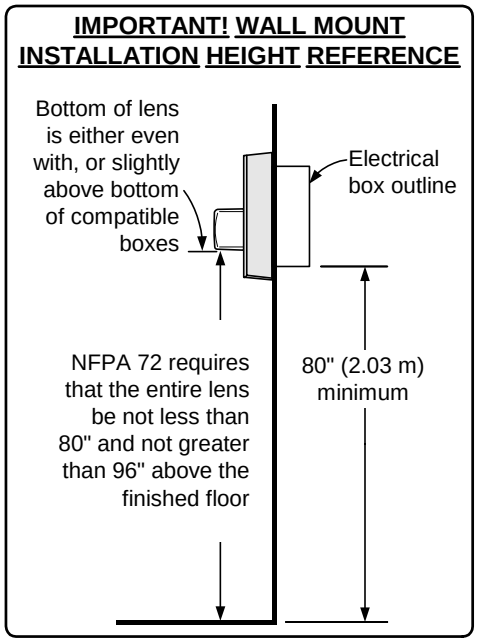
| | | | | | | |
|---|---|---|---|---|---|---|
| Rated Voltage Range | | | Regulated 24 VDC; see Note 1 below | | | |
| Flash Rate | | | 1 Hz | | | |
| Synchronized NAC Loading | | | Up to 35 synchronized strobes maximum per NAC | | | |
| Temperature Range | | | 32° to 122° F (0° to 50° C) | | | |
| Humidity Range | | | 10% to 93%, non-condensing at 100° F (38° C) | | | |
| Connections | | | Terminal blocks for 18 AWG to 12 AWG (0.82 $mm^2$ to 3.31 $mm^2$); two wires per terminal for in/out wiring | | | |
| **Wall Mount** | Housing Dimensions (with lens) | | 5-1/8" H x 5" W x 2-3/4" D (130 mm x 127 mm x 70 mm) | | | |
| | Maximum RMS Current Rating per Strobe Setting (see Note 2 below) | | **15 cd** | **30 cd** | **75 cd** | **110 cd** |
| | | | **60 mA** | **94 mA** | **186 mA** | **252 mA** |
| | Reference RMS Currents at other voltages | 18 VDC | 53 mA | 84 mA | 165 mA | 224 mA |
| | | 24 VDC | 40 mA | 63 mA | 124 mA | 168 mA |
| **Ceiling Mount** | Housing Dimensions (with lens) | | 4-3/4" L x 2-5/16" W x 2-5/8" D (121 mm x 75 mm x 67 mm) | | | |
| | Maximum RMS Current Rating per Strobe Setting (see Note 2 below) | | **15 cd** | **30 cd** | **75 cd** | **110 cd** |
| | | | **75 mA** | **125 mA** | **233 mA** | **316 mA** |
| | Reference RMS Currents at other voltages | 18 VDC | 67 mA | 111 mA | 207 mA | 281 mA |
| | | 24 VDC | 50 mA | 83 mA | 155 mA | 211 mA |

**NOTES:**

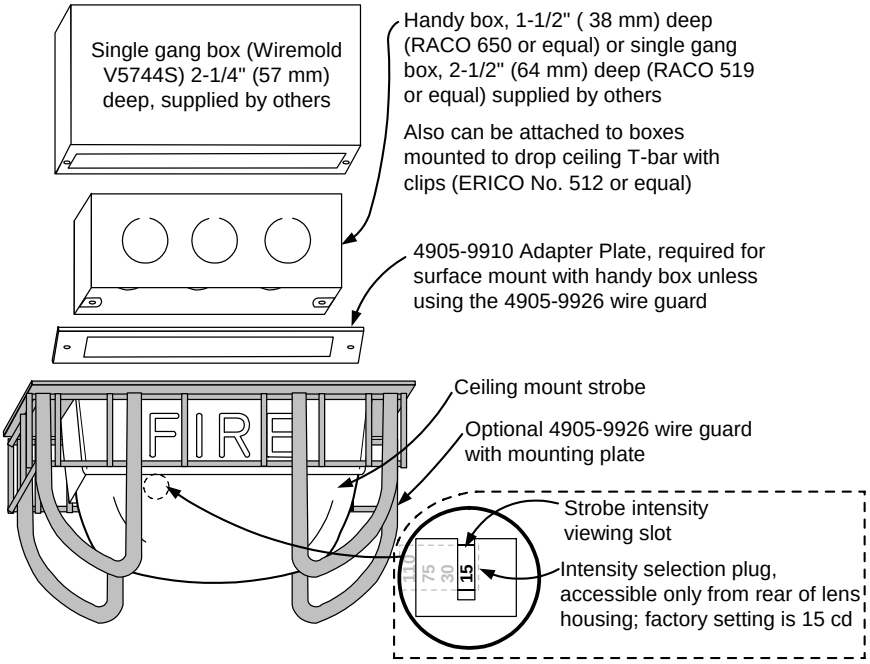
1. "Regulated 24 VDC" refers to the voltage range of 16 to 33 VDC per UL Standard 1971, *Signaling Devices for the Hearing Impaired*, changes effective May 1, 2004. This voltage range is the absolute operating range. Operation outside of this range may cause permanent damage to the strobe. Please note that 16 VDC is the lowest operating voltage that is allowed at the last appliance on the NAC under worst case conditions.
2. The maximum RMS current listed is the device nameplate rating. Strobe designs are constant wattage and the maximum RMS current rating occurs at the lowest allowable operating voltage. (RMS is root mean square and refers to the effective value of a varying current waveform.)

## Installation Reference, Surface or Semi-Flush Wall Mounting

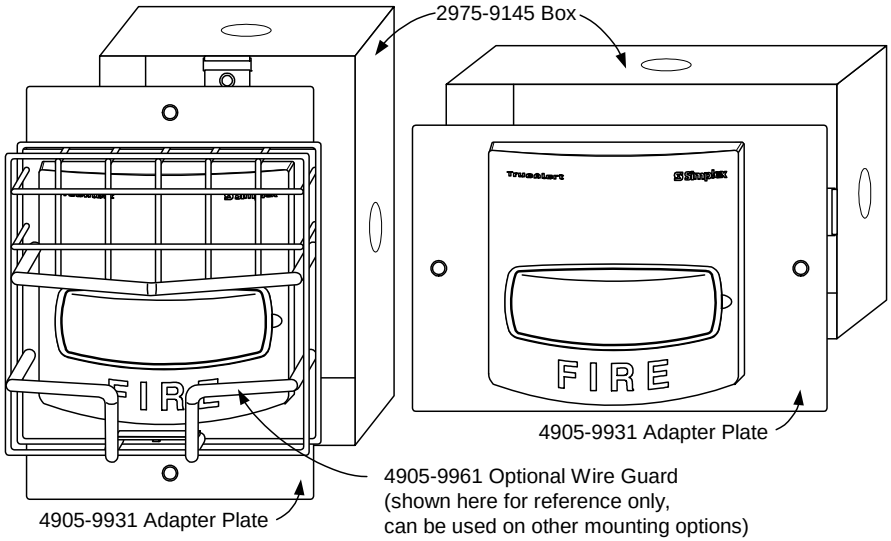


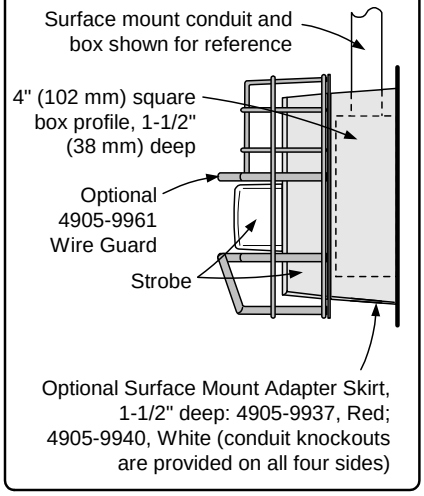
## Ceiling Mount Strobe Installation Reference




## Wall Mount Installation Reference; Adapter Plate, Guard, and Adapter Skirt




**Surface Mounting Reference with Optional Adapter Skirt and Optional Wire Guard**



# Simplex

# True*Alert*® Multi-Candela Notification Appliances

*UL, ULC, CSFM Listed; FM Approved;*
*MEA (NYC) Acceptance**

Smart*Sync*™ Operation Audible/Visible Notification
with Horn and Synchronized Flash, Non-Addressable

## Features

**Audible/visible (A/V) notification appliances with efficient electronic horn and high output xenon strobe, available for wall or ceiling mount:**

- Operation is compatible with ADA requirements (refer to important installation information on page 3)
- Rugged, high impact, flame retardant thermoplastic housings are available in red or white with clear lens

**Operates over a two-wire SmartSync circuit to provide:**

- Horns that are controlled separately from strobes on the same two-wire circuit
- "On-until-silenced" and "on-until-reset" operation on the same two-wire pair
- SmartSync horn activation of Temporal pattern, March Time pattern (at 60 BPM), or on continuously
- Strobe appliances on the same circuit operating at a synchronized 1 Hz flash rate
- Operation requires connection to a compatible SmartSync operation NAC or to SmartSync Control Module (SCM) 4905-9938

**Wall mount A/Vs features:**

- Wiring terminals are accessible from the front of the housing providing easy access for installation, inspection, and testing
- Covers are available separately to convert housing color
- Optional UL/ULC listed sound damper for locations requiring attenuation of 5 to 6 dBA (stairwells, small rooms, highly reverberant areas, etc.)

**Optional adapters and wire guards:**

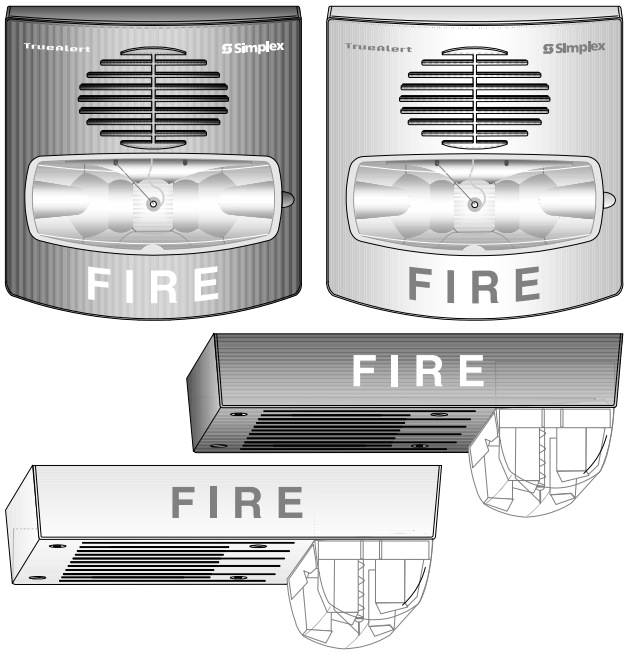
- Wall mount A/V adapters are available to cover surface mounted electrical boxes and to adapt to Simplex® 2975-9145 boxes
- UL listed red wire guards are available for wall or ceiling mount A/Vs*

**Visible notification appliance (strobe):**

- 24 VDC xenon strobe; intensity is selectable as 15, 30, 75, or 110 candela with visible selection jumper secured behind strobe housing
- Regulated circuit design ensures consistent flash output and provides controlled inrush current
- Listed to UL 1971 and ULC S526

**Audible notification appliance (horn):**

- Low current, 24 VDC electronic horn with harmonically rich sound output suitable for either steady or coded operation (Temporal or 60 BPM March Time pattern)
- Listed to UL 464 and ULC S525




Wall and Ceiling Mount A/Vs

## Description

**Multi-Candela TrueAlert A/Vs with horn and synchronized strobe** provide convenient installation to standard electrical boxes. The enclosure designs are both impact and vandal resistant and provide a convenient strobe intensity selection. Since each model can be selected for strobe intensity output, on-site model inventory is minimized and changes encountered during construction can be easily accommodated.

**Wall mount** A/V housings are a one-piece assembly (including lens) that mounts to a single or double gang, or 4" square standard electrical box. The cover can be quickly removed (a tool is required) and covers are available separately for color conversion.

**Ceiling mount** A/Vs install using standard 4" electrical boxes. Color choice is determined by model number.

## Strobe Intensity Selection

During installation, a selection plug at the back of the housing determines the desired strobe intensity. An attached flag with black letters on a highly visible yellow background allows the selected intensity to be seen at the side of the strobe lens.

* Refer to page 2 for guard listing. This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7125-0026:317 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. Refer to page 2 for listing status of wire guards. 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 Safety Products Westminster.

** Simplex multi-candela SmartSync two-wire horn/strobe appliance operation is protected under one or more of the following U.S. Patent Numbers: 5,559,492; 5,622,427; 5,865,527; 5,886,620; 6,281,789; 6,954,137; 7,005,971; and 7,006,003.

## Strobe Application Selection

Proper selection of visible notification is dependent on occupancy, location, local codes, and proper applications of: the *National Fire Alarm Code* (NFPA 72), ANSI A117.1; the appropriate model building code: BOCA, ICBO, or SBCCI; and the application guidelines of the Americans with Disabilities Act (ADA).

## Synchronized Strobes

**Multiple Strobes.** When multiple strobes and their reflections can be seen from one location, synchronized flashes reduce the probability of photo-sensitive reactions as well as the annoyance and possible distraction of random flashing. The multi-candela strobes of these A/Vs are synchronized by the controlling SmartSync operation NAC.

## SmartSync Two-Wire Control

SmartSync operation mode allows a two-wire circuit to provide the ability to activate both the horn and strobe on the same NAC and then allow the horn to be silenced while the strobe remains flashing. The horn operates as "on-until-silenced" while the strobe operation is "on-until-reset."

## SmartSync Control Sources

- 4006, 4008, 4100U, and 4010 Fire Alarm Control Panels (refer to individual product data sheets for more information)
- 4009 IDNet NAC Extender (refer to data sheet S4009-0002)
- SmartSync Control Module (SCM) 4905-9938 (refer to data sheet S4905-0003)

**Additional SmartSync** compatible notification appliances include separate horns and combination horn/strobe notification appliances.

## Product Selection

### Multi-Candela A/Vs

| Model | Mounting | Housing Color | "FIRE" Lettering | Description |
|---|---|---|---|---|
| 4906-9127 | Wall | Red | White | Horn with Multi-Candela Strobe; strobe intensity selectable as: 15, 30, 75, or 110 candela; operates with SmartSync two-wire control |
| 4906-9129 | | White | Red | |
| 4906-9128 | Ceiling | Red | White | |
| 4906-9130 | | White | Red | |

### Wall Mount A/V Accessories

| Model | Description | | Dimensions |
|---|---|---|---|
| 4905-9937 | Red | Surface Mount Adapter Skirt; use to cover 1-1/2" (38 mm) deep surface mounted boxes | 5-3/8" H x 5-1/4" W x 1-5/8" D (136 mm x 133 mm x 41 mm) depth with strobe = 4-3/8" (111 mm) |
| 4905-9940 | White | | |
| 4905-9931 | Red Adapter Plate for mounting to Simplex 2975-9145 box (typically for retrofit, may be mounted vertical or horizontal) | | 8-5/16" x 5-3/4" x 0.060" Thick (211 mm x 146 mm x 1.5 mm) |
| 2975-9145 | Red Mounting Box, requires Adapter Plate 4905-9931 | | 7-7/8" x 5-1/8" x 2-3/4" D (200 mm x 130 mm x 70 mm) |
| 4905-9838 | Optional Sound Damper; package of 20; field installed adhesive backed horn output attenuator; reduces output 5 to 6 dBA **NOTE:** After Sound Damper installation, measure sound level to ensure compliance with applicable code requirements | | 1-3/4" Diameter (44.5 mm) with 0.31" (8 mm) sound opening |

### SmartSync Control Module

| Model | Description | Dimensions |
|---|---|---|
| 4905-9938 | SmartSync Control Module with Class B or Class A output; mounts in 4" (102 mm) square box; refer to data sheet S4905-0003 for details | 4" x 4-1/8" x 1-1/4" D (102 mm x 105 mm x 32 mm) |

### Replacement Covers for Wall Mount A/Vs

| Model | Description | Dimensions |
|---|---|---|
| 4905-9994 | Red cover with white "FIRE" lettering | 5-1/8" H x 5" W x 1-1/2" D (130 mm x 127 mm x 38 mm) |
| 4905-9995 | White cover with red "FIRE" lettering | |

### Wire Guards and Ceiling Mount A/V Adapter

| Model | Description | | | Dimensions |
|---|---|---|---|---|
| 4905-9961* | Wall mount red wire guard with mounting plate, compatible with semi-flush or surface mounted boxes | | | 6-1/16" H x 6-1/16" W x 3-1/8" D (154 mm x 154 mm x 79 mm) |
| 4905-9927* | Ceiling Mount | Red Wire Guard for mounting to flush mounted electrical box | | 8-1/2" x 6-1/8" x 3" (216 mm x 156 mm x 76 mm) |
| 4905-9928* | | Red Adapter Plate, required to mount guard to surface mounted electrical box | | 9" x 7" (229 mm x 178 mm) |
| 4905-9915 | | White | Surface Mount Adapter Box Extension, use to cover 1-1/2" deep surface mounted boxes | 4-3/4" x 6-7/8" x 1-1/2" deep, (121 mm x 175 mm x 38 mm) |
| 4905-9916 | | Red | | |

* UL listed by Space Age Electronics Inc.

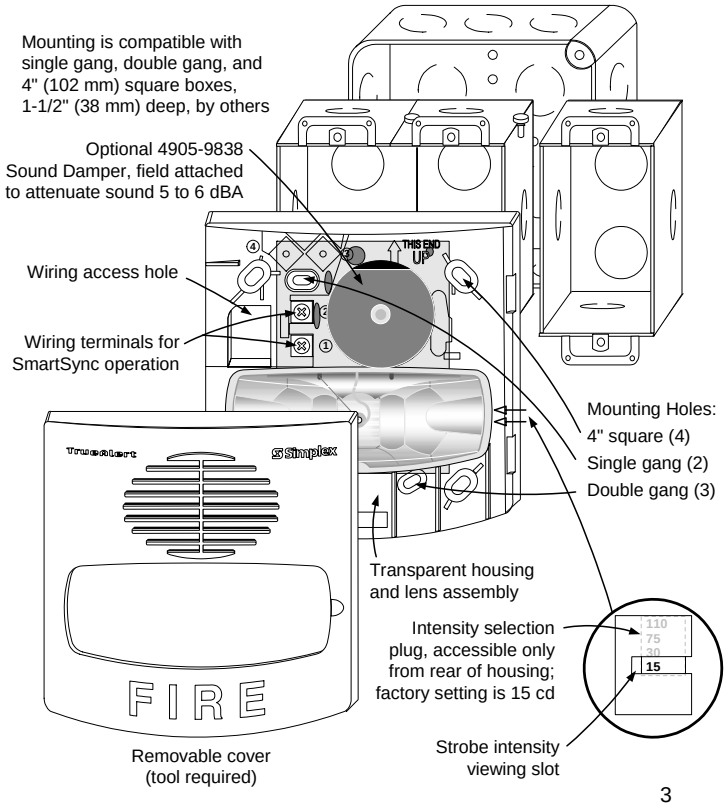
## A/V Specifications

| Wall Mount or Ceiling Mount, Common Specifications | | | | | | |
|---|---|---|---|---|---|---|
| Rated Voltage Range | | | Regulated 24 DC; see Note 1 below | | | |
| Flash Rate and Synchronized NAC Loading | | | 1 Hz; with up to 35 synchronized strobes maximum per NAC | | | |
| Environmental; Temperature and Humidity | | | 32° to 122° F (0° to 50° C); 10% to 93%, non-condensing at 100° F (38° C) | | | |
| Connections | | | Terminal blocks for 18 AWG to 12 AWG (0.82 $mm^2$ to 3.31 $mm^2$) ; two wires per terminal for in/out wiring | | | |
| Horn Output Characteristics | | | 2400 to 3700 Hz sweep, modulated at 120 Hz rate | | | |
| Horn Output Ratings (see Note 2 for polar dispersion reference) | | Model Type | **Wall Mount** | | **Ceiling Mount** | |
| | | Sound Type (see Note 2) | **Steady** | **Coded** | **Steady** | **Coded** |
| | | Reverberant Chamber Test, per UL 464 @ 10 ft (~3 m) | 86 dBA | 82 dBA | 87 dBA | 83 dBA |
| | | Anechoic Chamber Test, per ULC S525 @ 3 m (~10 ft) | 88 dBA | 94 dBA | 90 dBA | 98 dBA |
| Wall Mount | Housing Dimensions (with lens) | | 5-1/8" H x 5" W x 2-3/4" D (130 mm x 127 mm x 70 mm) | | | |
| | Maximum RMS Current Rating per Strobe Setting (see Note 3 below) | | **15 cd** | **30 cd** | **75 cd** | **110 cd** |
| | | | **75 mA** | **116 mA** | **221 mA** | **285 mA** |
| | Reference RMS Currents at other voltages | 18 VDC | 67 mA | 103 mA | 196 mA | 253 mA |
| | | 24 VDC | 50 mA | 77 mA | 147 mA | 190 mA |
| Ceiling Mount | Housing Dimensions (with lens) | | 4-3/4 L" x 6-7/8" W x 2-5/8" D (121 mm x 175 mm x 67 mm) | | | |
| | Maximum RMS Current Rating per Strobe Setting (see Note 3 below) | | **15 cd** | **30 cd** | **75 cd** | **110 cd** |
| | | | **86 mA** | **132 mA** | **250 mA** | **320 mA** |
| | Reference RMS Currents at other voltages | 18 VDC | 76 mA | 117 mA | 222 mA | 284 mA |
| | | 24 VDC | 57 mA | 88 mA | 167 mA | 213 mA |

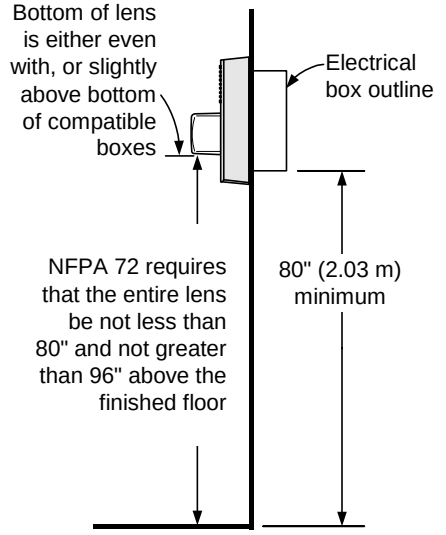
**NOTES:**

1. "Regulated 24 DC" refers to the voltage range of 16 to 33 VDC per UL Standard 1971, *Signaling Devices for the Hearing Impaired*, changes effective May 1, 2004. This voltage range is the absolute operating range. Operation outside of this range may cause permanent damage to the appliance. Please note that 16 VDC is the lowest operating voltage that is allowed at the last appliance on the NAC under worst case conditions.
2. Coded values are typical of the output measured with a Temporal coded or a March Time coded pulse and with a sound level meter reading on a "fast" setting. Polar dispersion per ULC S525 testing = -3 dBA at +/-40° off-axis; -6 dBA at +/- 50° off-axis.
3. Currents are with horn on steady. The maximum RMS current listed is the device nameplate rating. Strobe designs are constant wattage and the maximum RMS current rating occurs at the lowest allowable operating voltage. (RMS is root mean square and refers to the effective value of a varying current waveform.)

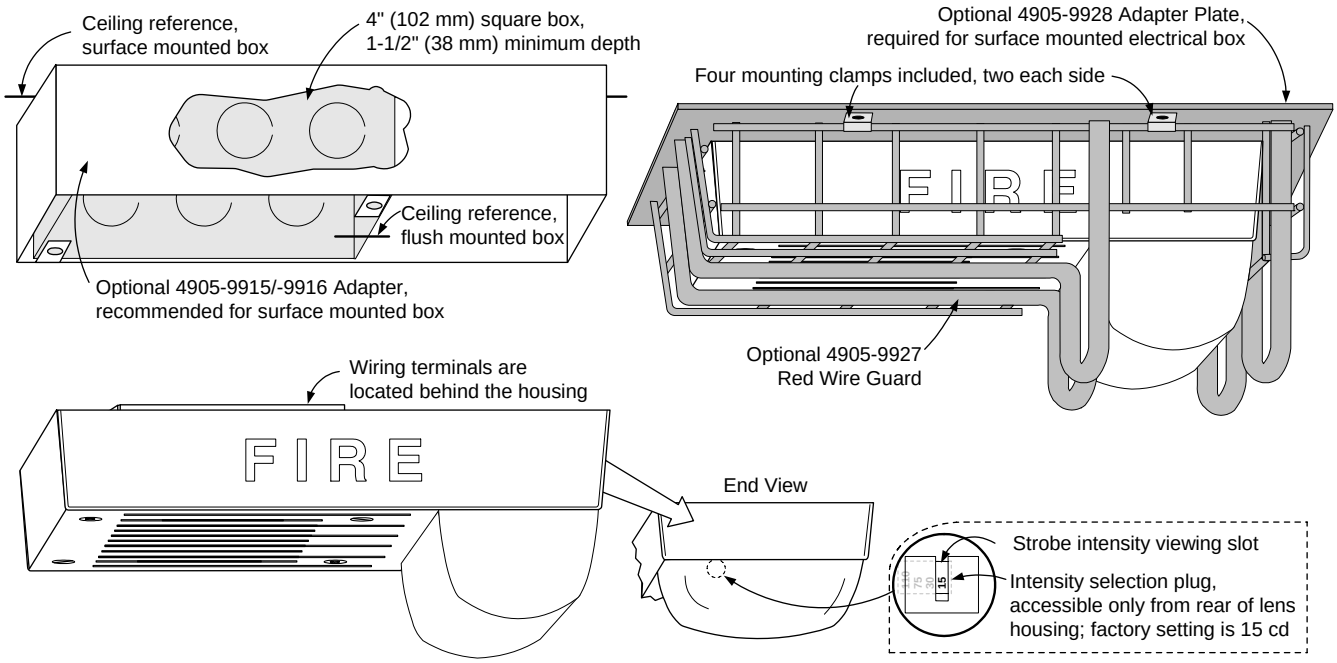
## Installation Reference, Surface or Semi-Flush Mounting



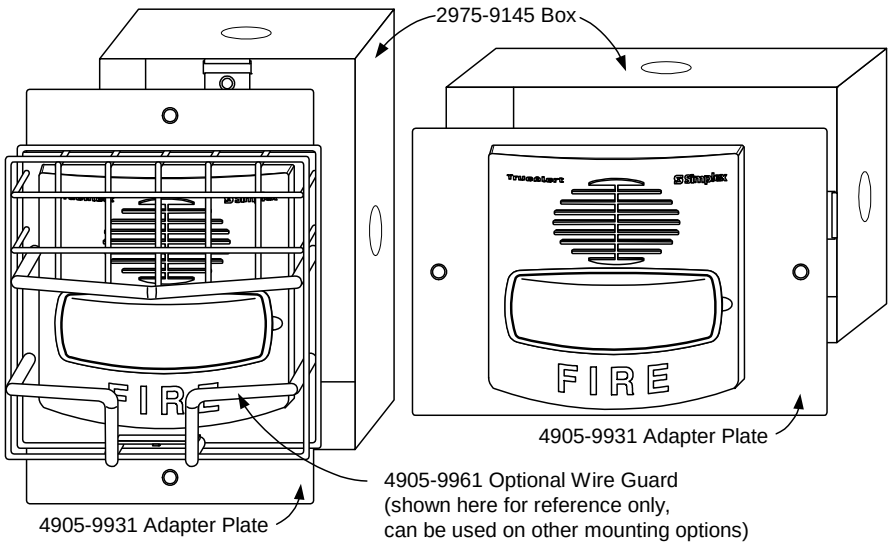

**IMPORTANT! WALL MOUNT INSTALLATION HEIGHT REFERENCE**



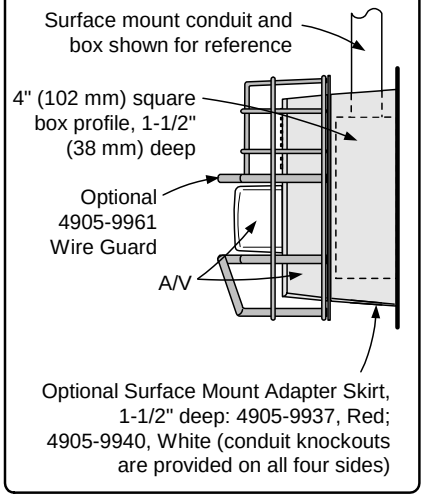
## Ceiling Mount A/V and Guard Installation Reference




## Wall Mount Installation Reference; Adapter Plate, Guard, and Adapter Skirt




**Surface Mounting Reference with Optional Adapter Skirt and Optional Wire Guard**



Simplex®

# Non-Addressable Peripherals

*UL, ULC, CSFM Listed;*
*FM Approved**

## 4905-9835 Temporal Code 4 Module for CO Gas Alarm Notification

## Features

**Provides Temporal Code 4 (TC4) NAC (Notification Appliance Circuit) control for Carbon Monoxide (CO) gas warning:**

- The TC4 CO gas warning is a repeated sequence of four cycles of 100 msec on with 100 msec off, followed by 5 seconds off per NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Warning Equipment in Dwelling Units*
- Compatible appliances includes: CO Sounder Base 4098-9798, 4901-9820 Horn (set for free-run), and 4903 Series 4-wire A/V appliances horn input (*not compatible with SmartSync horn control appliances*)

**Compatible Simplex® equipment NAC sources:**

- 4100ES, 4100U, or 4010ES NAC outputs
- 4009 IDNet NAC Extender NAC outputs
- Each module requires an input NAC that powers the 3A rated output NAC for control of compatible audible notification appliances only (*not for strobes*)

**Three selectable operation modes:**

- **Synchronized operation** allows a separate and dedicated control NAC to both activate and synchronize the Temporal Code 4 output timing of up to 20, 4905-9835 modules
- **Unsynchronized operation** also allows the separate and dedicated control NAC to activate the Temporal Code 4 output timing of up to 20, 4905-9835 modules, but without synchronization between the modules
- **Stand-Alone operation** allows the input NAC in alarm to activate Temporal Code 4 timing for NACs dedicated for CO gas alarm; no fire alarm signals are available, no control NAC is used
- For both Synchronized and Unsynchronized modes, when the control NAC is off, the module output NACs will follow the fire alarm signals of the input NAC
- **NOTE:** For TC4 output, both the input NACs and the control NACs requires a Steady On signal

**Compact, sealed construction:**

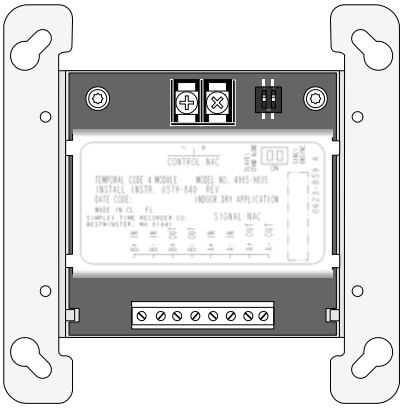
- Mounts in standard 4" square electrical box
- Screw terminals for wiring connections

**Listed to UL Standard 864 and ULC Standard S527**

## Description

**CO gas alarm warnings** are required to be different from fire alarm warnings. In the event of a CO gas alarm, the presence of a Temporal Code 4 audible signal pattern identifies the type of condition to the responders to assist in determining the proper actions to be taken.

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:328 for allowable values and/or conditions concerning material presented in this document. This product was not accepted by MEA (NYC) 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.



4905-9835 Temporal Code 4 Module
(shown approximately 1/2 size)

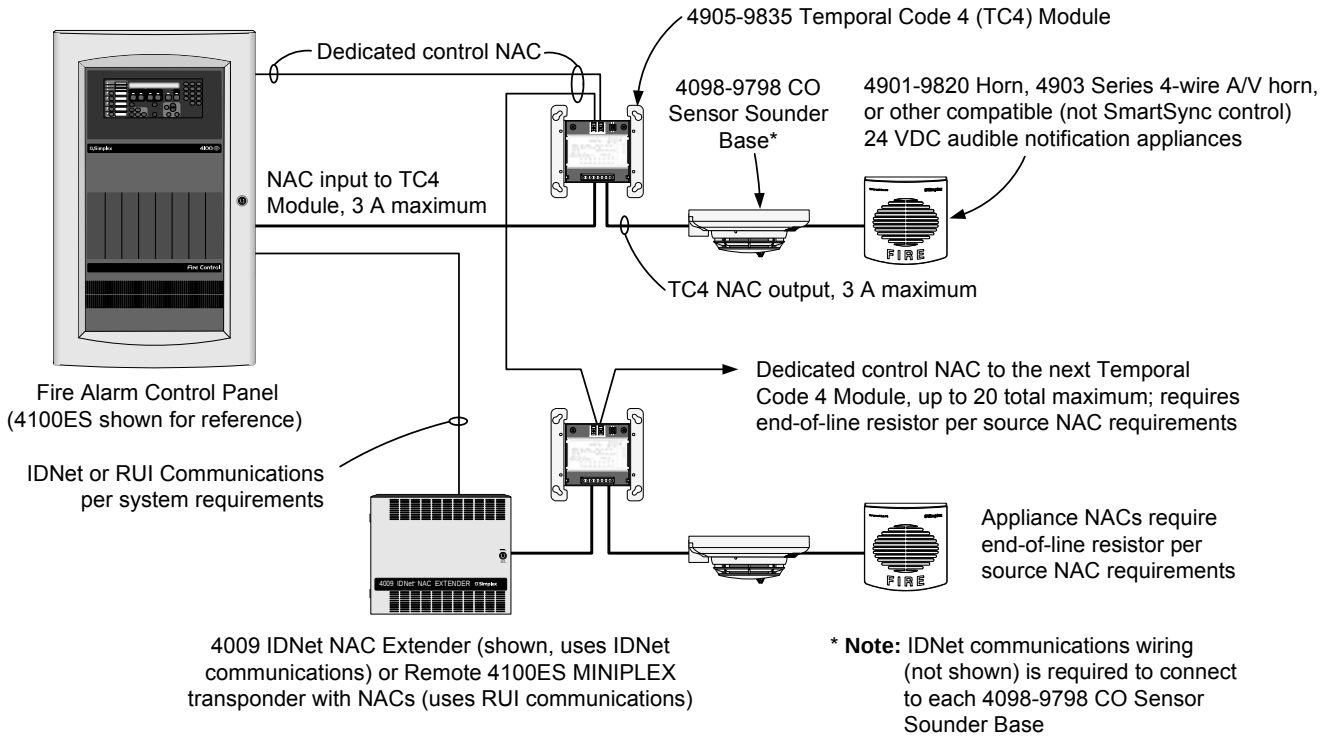
## Description *(Continued)*

**CO gas alarm, or fire alarm.** Use of the 4905-9835 Temporal Code 4 Module allows the NFPA 720 Temporal Code 4 signal to be generated using a standard Steady On audible appliance NAC input. Under the fire alarm panel's control, the audible notification signal can be selected for a conventional fire pulse pattern for a fire alarm condition, or the Temporal Code 4 pattern can be activated for a CO gas alarm condition.

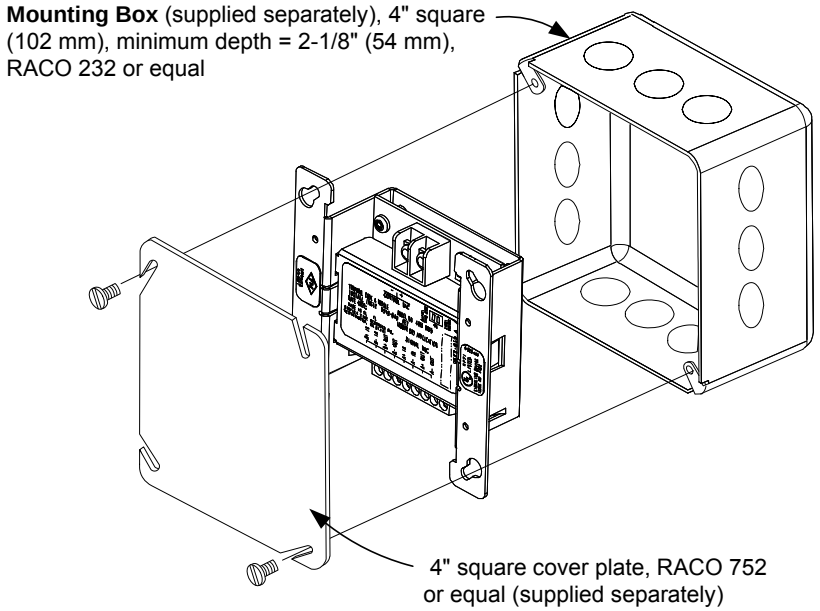
## Specifications

| | |
|---|---|
| NAC Control | For 24 VDC NACs, up to 3 A maximum, limited by input NAC rating; for control of audible notification appliances compatible with TC4 code pulse duty cycle |
| Input NAC Current Requirements | Supervisory current = 0.18 mA |
| | Alarm current = 15 mA |
| Control NAC Current Requirements | Supervisory current = 0 mA |
| | Alarm current = 3 mA |
| Mounting Distance to input NAC Source | Mount close-nippled, 20 ft (6 m) maximum distance |
| Wire Connections | Screw terminals for in/out wiring, 18 to 12 AWG wire (0.82 to 3.31 $mm^2$ ) |
| Dimensions | 4" x 4 ⅛" x 1 ⅜" D (102 mm x 105 mm x 35 mm) |
| Mounting Plate Material | Sheet metal, galvanized |
| Temperature Range | 32° to 120° F (0° to 49° C), intended for indoor operation |
| Humidity Range | Up to 93% RH at 100° F (38° C) |

## System Connection Reference




## Mounting Reference




## Additional Reference

| Document | Description | Document | Description |
|---|---|---|---|
| 579-840 | Installation Instructions | S4010-0004 | 4010ES Control Panel |
| S4098-0041 | CO Sensor Base data sheet | S4901-0010 | 4901-9820 Horns |
| S4100-0031 | 4100ES Basic Reference | S4903-0011 | 4903 Series 4-wire A/Vs |