

Baxter Place

Portland, ME

Fire Alarm System  
Equipment Submittal  
Phase II & Phase III

08/29/14

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20 Thomas Drive  
Westbrook, ME 04092-3824



**Project: Baxter Place  
297 – 309 Commercial St.  
Portland, ME**

**Customer: Lathrop Property Management  
10 Moulton St.  
Portland, ME 04101**

**Simplex Representative: John Hale**

**FIRE ALARM SYSTEM  
PHASE II & PHASE III  
EQUIPMENT SUBMITTAL**

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

SimplexGrinnell District Contact Information:

District Manager: Allen Paul

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NICET # 77524

**Submittal Approval:**

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_



# **BAXTER PLACE PHASE II & PHASE III FIRE ALARM SYSTEM EQUIPMENT SUBMITTAL**

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

### **Insert 2 Control Equipment, Batteries & Accessories**

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Simplex Sealed Lead-Acid System Batteries Data Sheet (S2081-0006)  
AES IntelliNet Wireless Fire Alarm Communicator Data Sheet (7788)  
Space Age Documentation Cabinet Data Sheet (LT10559)

### **Insert 3 Initiating/Addressable Devices, Relays & Accessories**

Simplex Addressable Manual Stations Data Sheet (S4099-0001)  
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Simplex Addressable Duct Smoke Sensor Data Sheet (S4098-0030)  
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Simplex Individual Addressable Module (IAM) Data Sheet (S4090-0001)  
Simplex Relay IAM Addressable Module Data Sheet (S4090-0002)  
Gentex Photoelectric Smoke Alarm Data Sheet (9123)  
Gentex Combination Photoelectric & CO Alarm Data Sheet (GN-503)

### **Insert 4 Notification Appliances & Accessories**

Simplex Visible Notification Appliances Data Sheet (S4906-0001)  
Simplex Horn/Visible Notification Appliances Data Sheet (S4906-0002)  
Simplex Non-Addressable Mini-Horn Data Sheet (S4901-0013)  
Simplex TrueStart II Installation Tool Data Sheet (FD510)



INSERT 1

PROJECT BILL OF MATERIAL





**BILL OF MATERIAL  
BAXTER PLACE  
FIRE ALARM SYSTEM EQUIPMENT PHASE II**

<b>TAB</b>	<b>QTY</b>	<b>MODEL</b>	<b>DESCRIPTION</b>
<b>RADIO MASTER BOX</b>			
2	1	7788-F	AES RADIO MASTER BOX
2	1	BD7-12	AES BATTERY, 12V 7AH
2	1	1640	AES TRANSFORMER
2	1	GSW TSW-01S	ADI TAMPER SWITCH FOR AES RADIO MASTER BOX
2	1	SSU00685	SPACE AGE DOCUMENT STORAGE CABINET
<b>INITIATING/ADDRESSABLE DEVICES &amp; ACCESSORIES</b>			
3	26	4099-9003	IDNET DOUBLE ACTION PULL STATION
3	58	4098-9714	TRUEALARM PHOTO SMOKE SENSOR
3	58	4098-9792	TRUEALARM SENSOR BASE
3	6	4098-9798	SSD SENSOR BASE WITH CO MODULE/SOUNDER
3	6	4098-9733	TRUEALARM HEAT SENSOR
3	2	4905-9835	TEMPORAL CODE 4 MODULE FOR CO GAS ALARM
3	8	4090-9002	IDNET RELAY IAM
3	8	4090-9802	SURFACE MNT DOUBLE GANG BOX COVER PLATE W/LITE PIPE
3	25	4090-9001	IDNET SUPERVISED IAM
3	24	4090-9810	4090-9001 IAM SINGLE GANG BOX MOUNTING BRACKET
3	24	4090-9806	SEMI-FLUSH MNT SINGLE GANG BOX COVER PLATE W/LITE PIPE
3	1	4098-9756	TRUEALARM DUCT SMOKE SENSOR W/ RELAY OUTPUT
3	1	2098-9806	REMOTE TEST STATION W/ LED AND KEY SWITCH
3	1	4098-9857	SAMPLING TUBE, 73"
3	99	9123	GENTEX 120V/9V SMOKE DETECTOR
3	63	GN-503	GENTEX PHOTO/CO DETECTOR 120VAC/9VDC
<b>NOTIFICATION APPLIANCES &amp; ACCESSORIES</b>			
4	4	4901-9859	MINI-HORN, WHITE



**BILL OF MATERIAL  
BAXTER PLACE  
FIRE ALARM SYSTEM EQUIPMENT PHASE III**

<b>TAB</b>	<b>QTY</b>	<b>MODEL</b>	<b>DESCRIPTION</b>
<b>CONTROL EQUIPMENT, BATTERIES &amp; ACCESSORIES</b>			
2	2	4009-9201	4009 IDNET NAC EXTENDER, 120 VAC
2	4	2081-9274	BATTERY, SYSTEM, 12VOLT, SEALED, LEAD ACID 10Ah
<b>NOTIFICATION APPLIANCES &amp; ACCESSORIES</b>			
4	64	4906-9129	A/V M-C NON-ADDRESS, WHT, WALL
4	40	4906-9103	V/O M-C NON-ADDRESS, WHT, WALL
4	160	4901-9859	MINI-HORN, WHITE
4	1	TRUESTART II	SIMPLEX TRUESTART II TEST INTSTRUMENT



INSERT 2

CONTROL EQUIPMENT, BATTERIES &  
ACCESSORIES



### 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

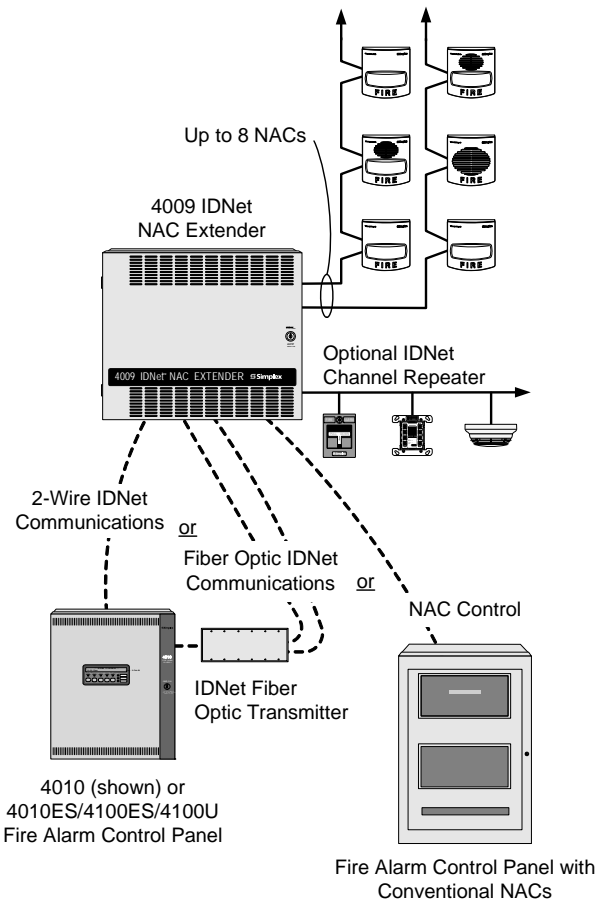
**UL Listed to Standard 864**

### 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.

**Hardware 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		

\* 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 <b>either</b> an IDNet Repeater <b>or</b> 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	
2975-9802		Red trim	

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

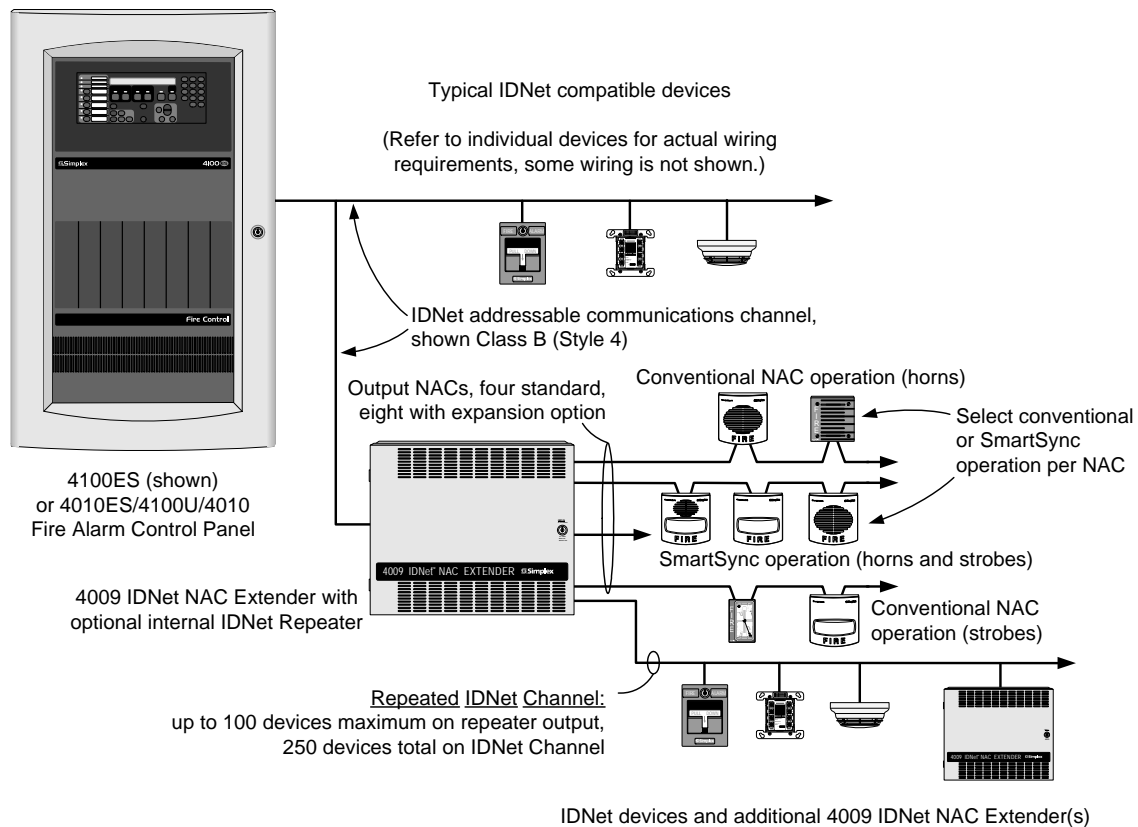
Model	Description	Comments
2081-9272	6.2 Ah Battery, 12 VDC	Two batteries are required, 24 VDC operation
2081-9274	10 Ah Battery, 12 VDC	
2081-9288	12.7 Ah Battery, 12 VDC	
2081-9275	18 Ah Battery, 12 VDC	Requires external battery cabinet, two batteries are required, 24 VDC operation

### External Accessories (select per system requirements)

Model	Description	Comments
4090-9105	IDNet Fiber Optic Transmitter	Class B operation
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	

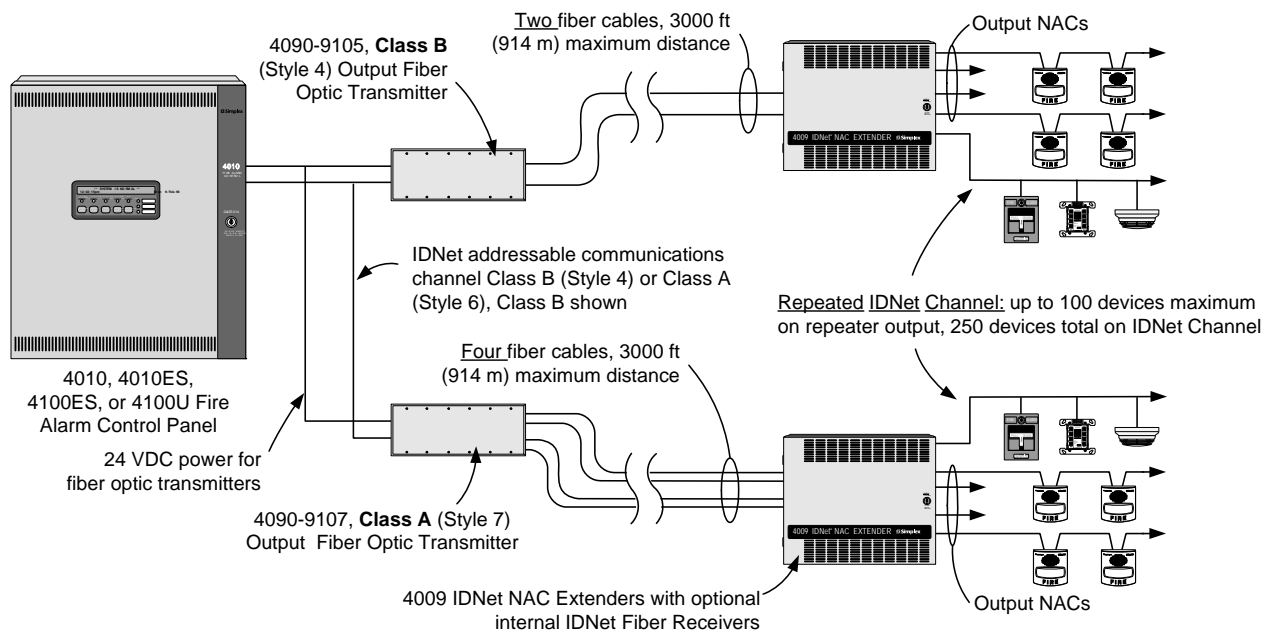


## Typical IDNet Connection Example



**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

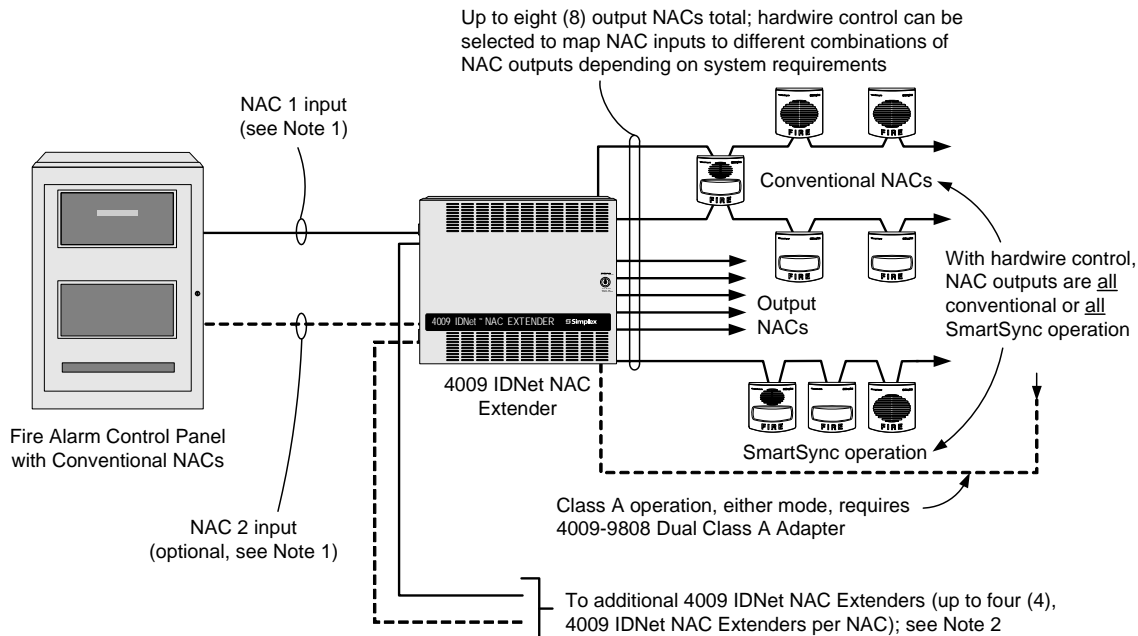
Input	NAC Control Function	
NAC 1	Strobe Control	All NAC outputs (1-8)
NAC 2	Horn Control	

## 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

<b>Input Ratings</b>	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
<b>Output Ratings</b>	Total Rating	8 A, Special Application appliances 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 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

<b>IDNet Repeater Module (4009-9809)</b>	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)

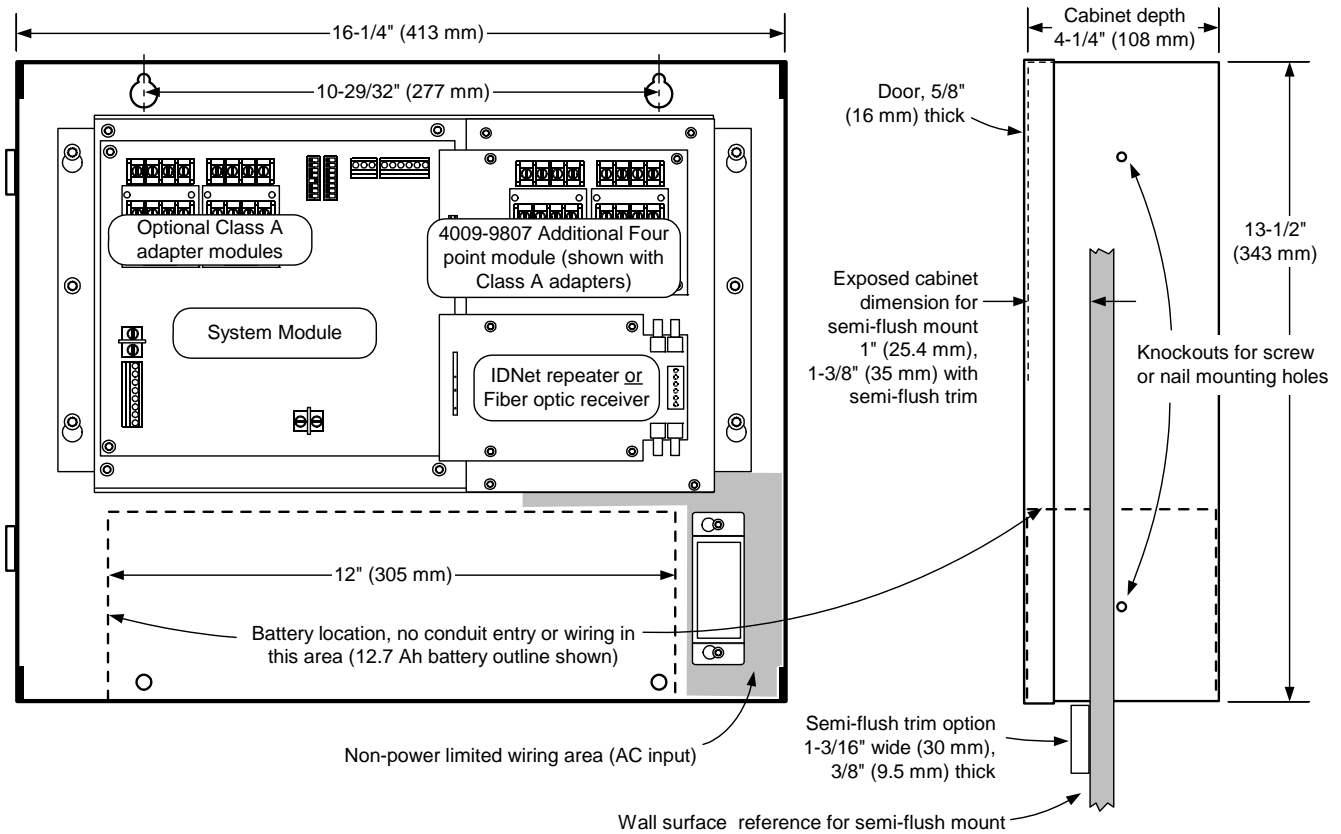
Operating Temperature	32° to 120° F (0° to 49° C)
Operating Humidity Range	10% to 90% RH from 32° F to 104° F (0° C to 40° C)
Wiring Connections*	Terminal blocks for 18 AWG (stranded) to 12 AWG (solid)

### 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)

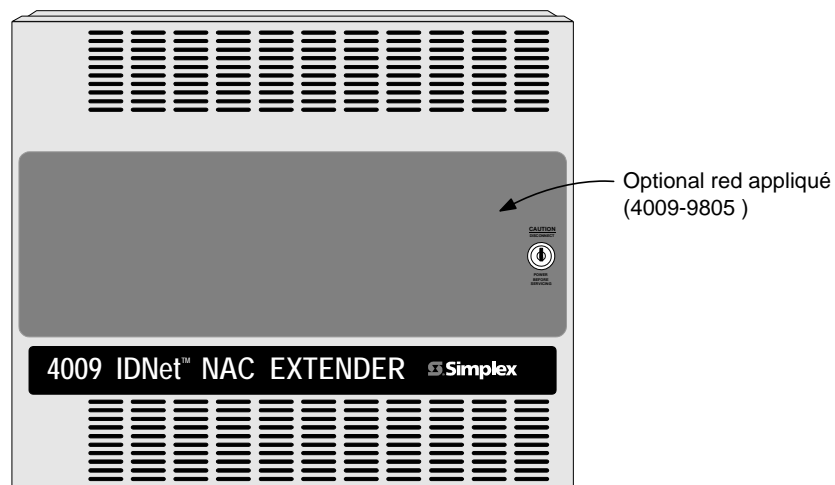
\* Metric wire equivalents: 18 AWG = 0.82 mm<sup>2</sup>; 12 AWG = 3.31 mm<sup>2</sup>

## 4009 IDNet NAC Extender Mounting and Module Placement Information

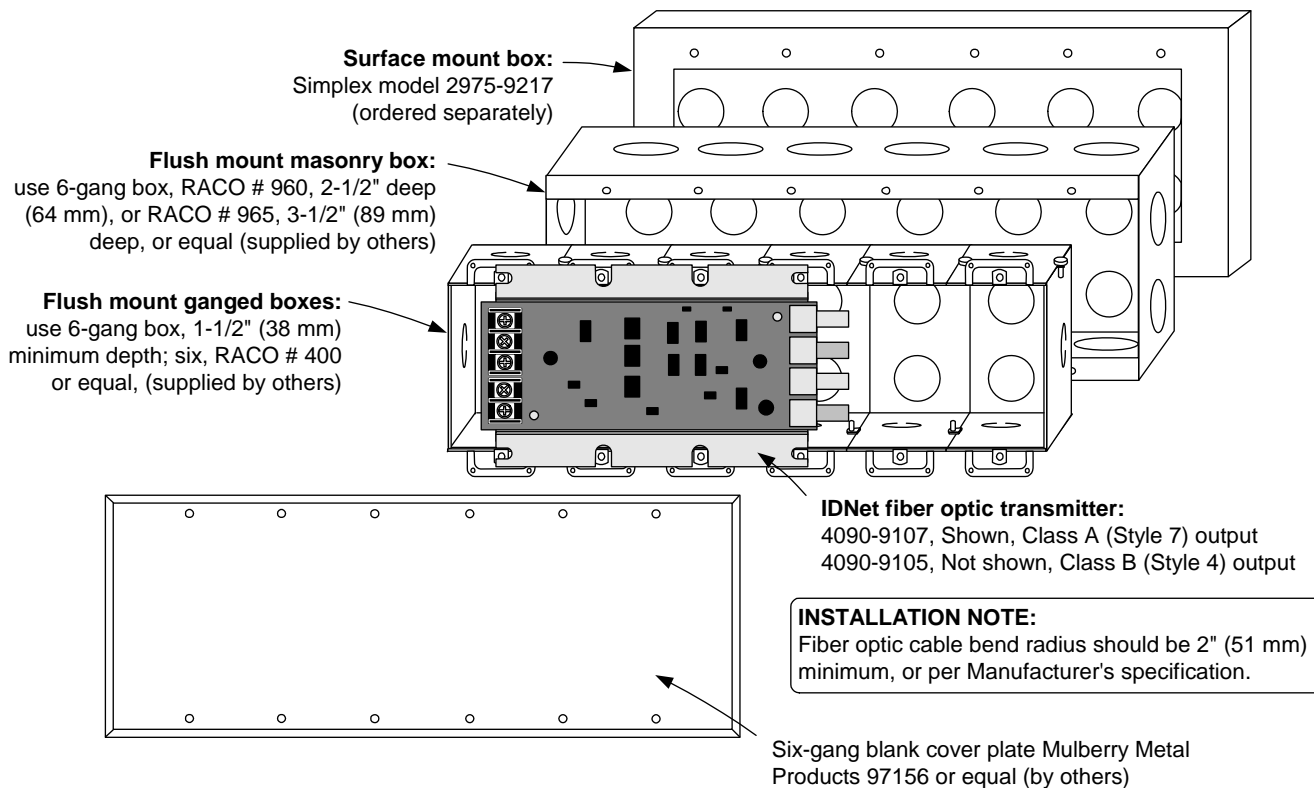


**NOTE:** Recommended conduit entrance varies with module selection. Refer to general installation instructions 574-181, specific module installation instructions, and to field wiring diagrams 842-068 before locating conduit entrance.

## 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	85 mA	85 mA	185 mA	185 mA
4009-9301	240 VAC input				
<u>4009-9807</u>	Additional Four Point NAC	40 mA	+ _____	40 mA	+ _____
<u>4009-9808</u>	Dual Class A Adapter (no additional current)	-	-	-	-
<b>Auxiliary Power Output</b>		(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)

<u>4009-9809</u>	IDNet Repeater		70 mA		70 mA	
<u>4009-9810*</u>	Fiber Optic Receiver, Class B	Select <u>one</u> per Extender	65 mA	+ _____	65 mA	+ _____
<u>4009-9811*</u>	Fiber Optic Receiver, Class X		80 mA		80 mA	
<b>IDNet Devices</b> (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	+ _____
* Note: IDNet Fiber Optic Transmitter current is supplied from the host fire alarm control panel		IDNet Module Supervisory Current	[S2] = _____			
			IDNet Module Alarm Current		= [A3] _____	
			Maximum Available Current		= 8 A*	
<b>Step 2. Calculate Available NAC Current</b>			Subtract Auxiliary Power Output		- [A1] _____	
			Subtract IDNet Module Current		- [A3] _____	
* 8 A for Special Application Appliances; 6 A for Regulated 24 DC Appliances			<b>Available NAC Current</b>		= [A4] _____	

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

NAC Type	NAC Circuit #	NAC Alarm Current
Standard Panel NACS, <u>2 A maximum</u> per NAC	Circuit 1	+ _____
	Circuit 2	+ _____
	Circuit 3	+ _____
	Circuit 4	+ _____
Optional Four Point NAC Module, <u>1.5 A maximum</u> Special Application rating, <u>1 A maximum</u> 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] =	_____
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### Step 5. Calculate Total Alarm Current

Total Alarm Current = Basic Panel Current [A2] + IDNet Module Current [A3] + Actual NAC Current [A5] =	_____
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S4009-0002-11 1/2013

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### 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.

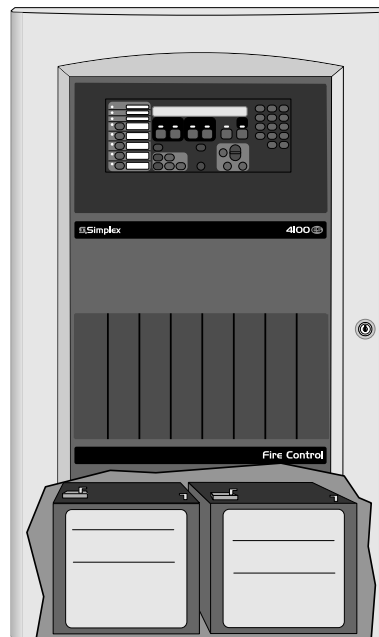
Because of their sealed construction, packaging is allowed within the system electronics enclosure (see illustration on page 2). When this is applicable, the quantity of system cabinets and the battery wiring distances are both minimized. Where required, external battery cabinets can be close-nipped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

### Battery Details

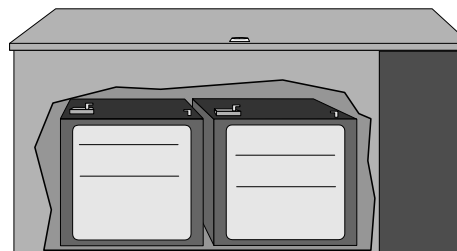
**Charging.** These batteries are intended to be used with compatible Simplex battery chargers.

**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)

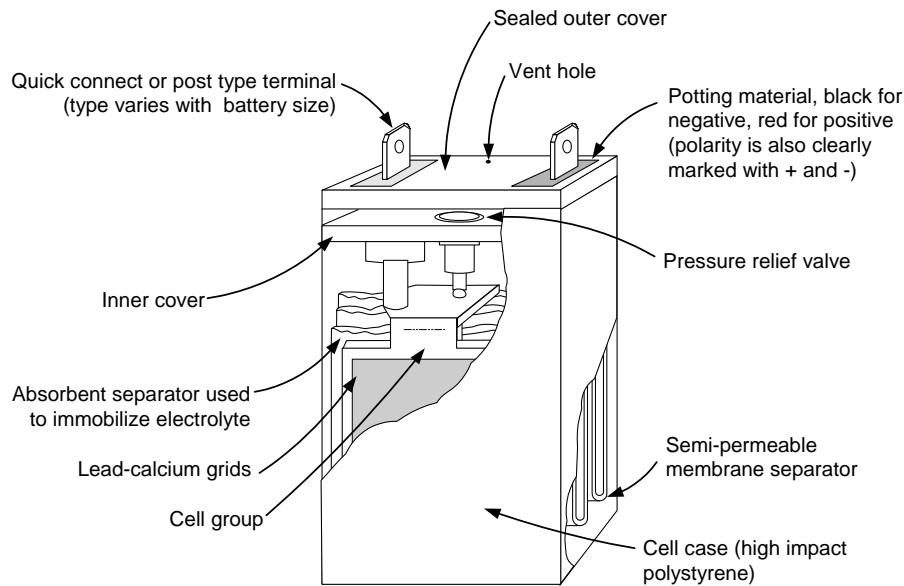
**Shipping.** Sealed lead-acid batteries are shipped via ground or sea transportation only. They are not shipped via air.

**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:

- 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.
- 4010 Cabinets will accommodate 2081-9275, 18 Ah batteries, but will not allow bottom entry conduit.
- Use 4081 series companion cabinet and charger, refer to page 4.
- 4020 Cabinets will accommodate 2081-9271, 33 Ah batteries, but will not allow bottom entry conduit.
- Some control panel models are listed for battery replacement reference only.
- 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 <b>without</b> 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 <b>without</b> charger, with locking solid door and battery harness; for close-nipped 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		

\* 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 <b>with</b> charger for the 4010 and 4004R fire alarm control panel; <b>for up to 50 Ah batteries</b> ; with front door <i>Listings include: UL, ULC, FM, CSFM, and MEA (NYC), see data sheet for details</i>	22-1/2" W x 16-3/4" 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 <i>Listings include: UL and CSFM</i>	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 4100-5112 4100-5113	4100ES/4100U Additional SPS	
			4100-5125 4100-5126 4100-5127	4100ES/4100U Remote Power Supply (RPS)	
			4100-5120 4100-5121 4100-5122	4100ES/4100U TrueAlert Addressable Power Supply (TPS)	
			4100-0104 4100-0114 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; <b>NOTE:</b> Required for ULC listed charging of 110 Ah batteries; <i>Listings include: UL, ULC, FM, CSFM, and MEA (NYC), see data sheet for details</i>	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, <b>required for ULC listing</b> , mounts above access panel using knockout provided			

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S2081-0006-20 1/2012

www.simplexgrinnell.com

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# 7788F/7744F Series

## Wireless Fire Alarm Communicators for IntelliNet



Model 7788F



### 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).



### 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 geographic 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



## 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 terminal 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.



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

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Email [info@aes-intellinet.com](mailto:info@aes-intellinet.com) | Web [www.aes-intellinet.com](http://www.aes-intellinet.com)



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AES Corporation

7788-7744F/1/12/R4

**NO  
EXCUSES!**

SIGNALING



## 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 2007 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



ISO 9001  
REGISTERED  
COMPANY

**ACEBOX**

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



# Specifications:

The fire alarm documents box (FAD) shall be UL Listed, 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 PIN: EA0316 (Qty. 10)

Property Information	Minimum Required Documentation (SIG-FUN)
Name of property: _____	(Reference NFPA-72 2013 Section 7.2.1)
Address: _____	1 Written narrative providing intent and system description
Description of property: _____	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
Occupancy type: _____	2 Riser diagram
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	3 Floor plan layout showing location of all devices and control equipment
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	4 Sequence of operation in either an input/output matrix or narrative form
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	5 Equipment technical data sheets
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	6 Manufacturers published instructions, including operation and maintenance instruction
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	7 Battery calculations (where batteries are provided)
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	8 Voltage drop calculations for notification appliance circuits
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	9 Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	10 Completed record of completion in accordance with 7.5.6 and 7.8.2
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	11 Copy of site specific software, where applicable
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	12 Record (as built) drawings
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	13 Periodic inspection, testing, and maintenance documentation in accordance with Section 7.6
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
	14 Records, record retention, and record maintenance in accordance with 7.7
	<input type="checkbox"/> NA <input type="checkbox"/> Enclosed <input type="checkbox"/> At Location
Signed: _____	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)



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

No Excuses, Just Solutions!

This document is subject to change without notice, see doc # ED0479 for legal disclaimer

INSERT 3

INITIATING/ADDRESSABLE DEVICES &  
ACCESSORIES





### 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)

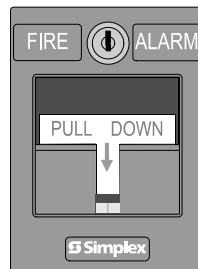
#### Multiple mounting options:

- 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

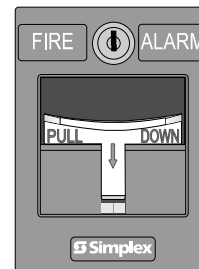
### Description

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.

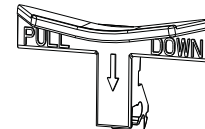
\* Refer to page 2 for specific model listings. This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7150-0026:224 for allowable values and/or conditions concerning material presented in this 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.



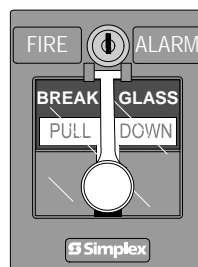
4099-9001  
Single action



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	ABAISSÉZ	
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)

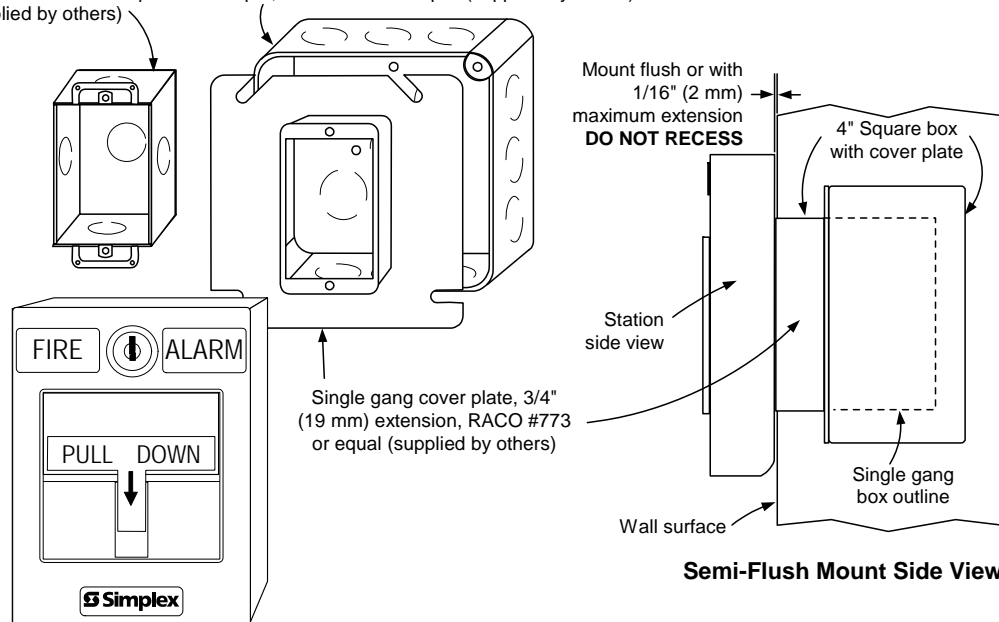
### Addressable Manual Station Semi-Flush Mounting

#### Single Gang Box Mount

Single gang box, 2-1/2" deep (64 mm), RACO #500 or equal (supplied by others)

#### 4" Square Box Mount

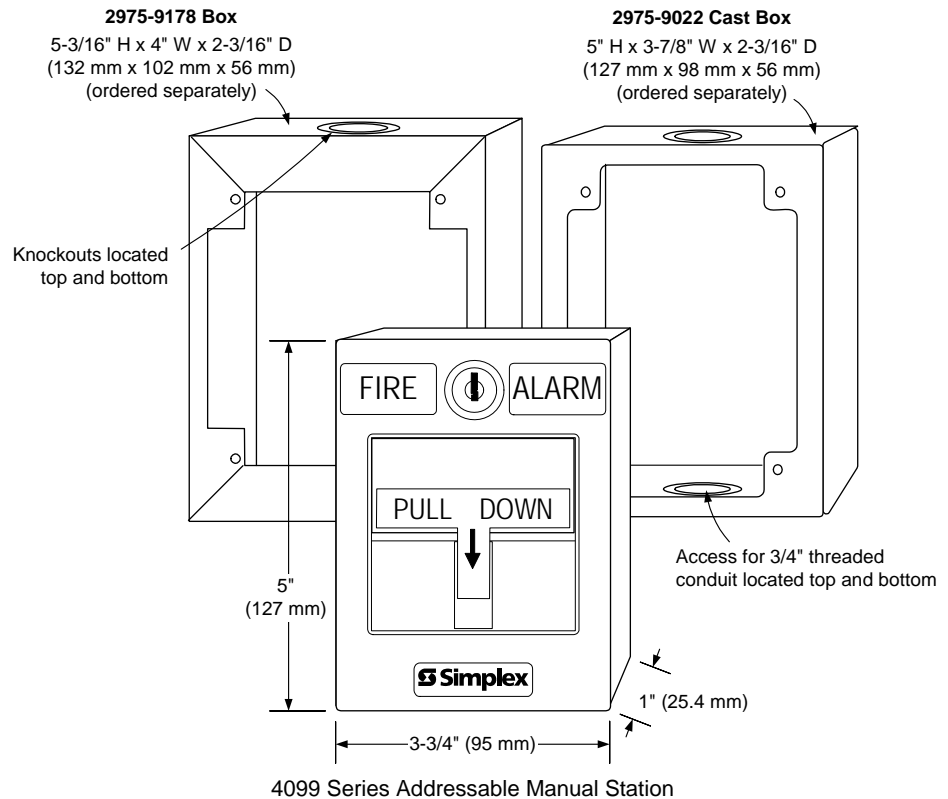
4" (102 mm) square box, 2-1/8" (54 mm) minimum depth, RACO #231 or equal (supplied by others)



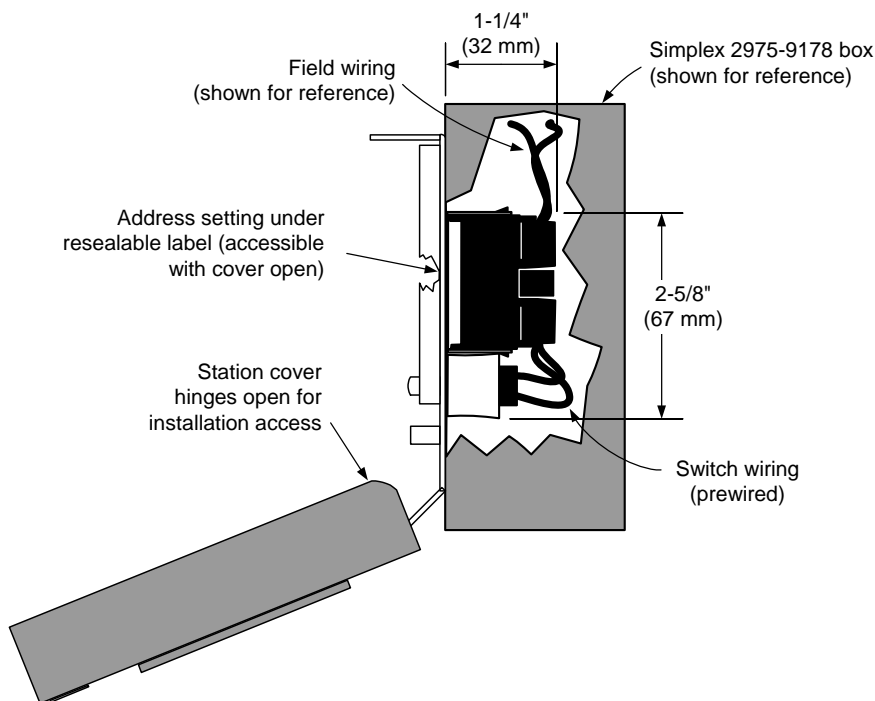
## Addressable Manual Stations Surface Mounting

**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.



## Surface Mount Side View with Internal Detail



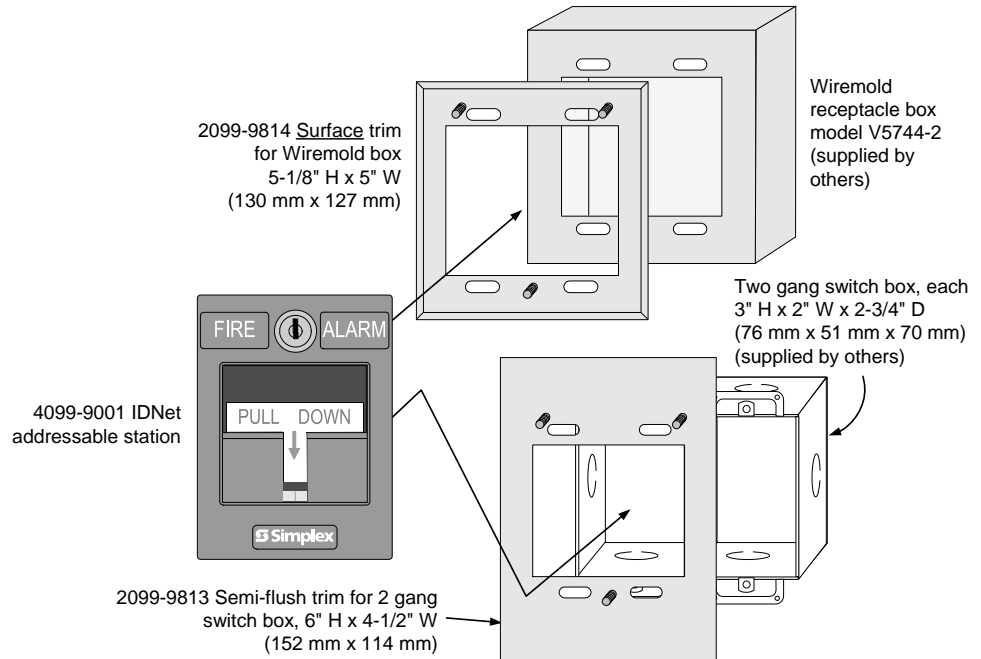
## Application Reference

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.

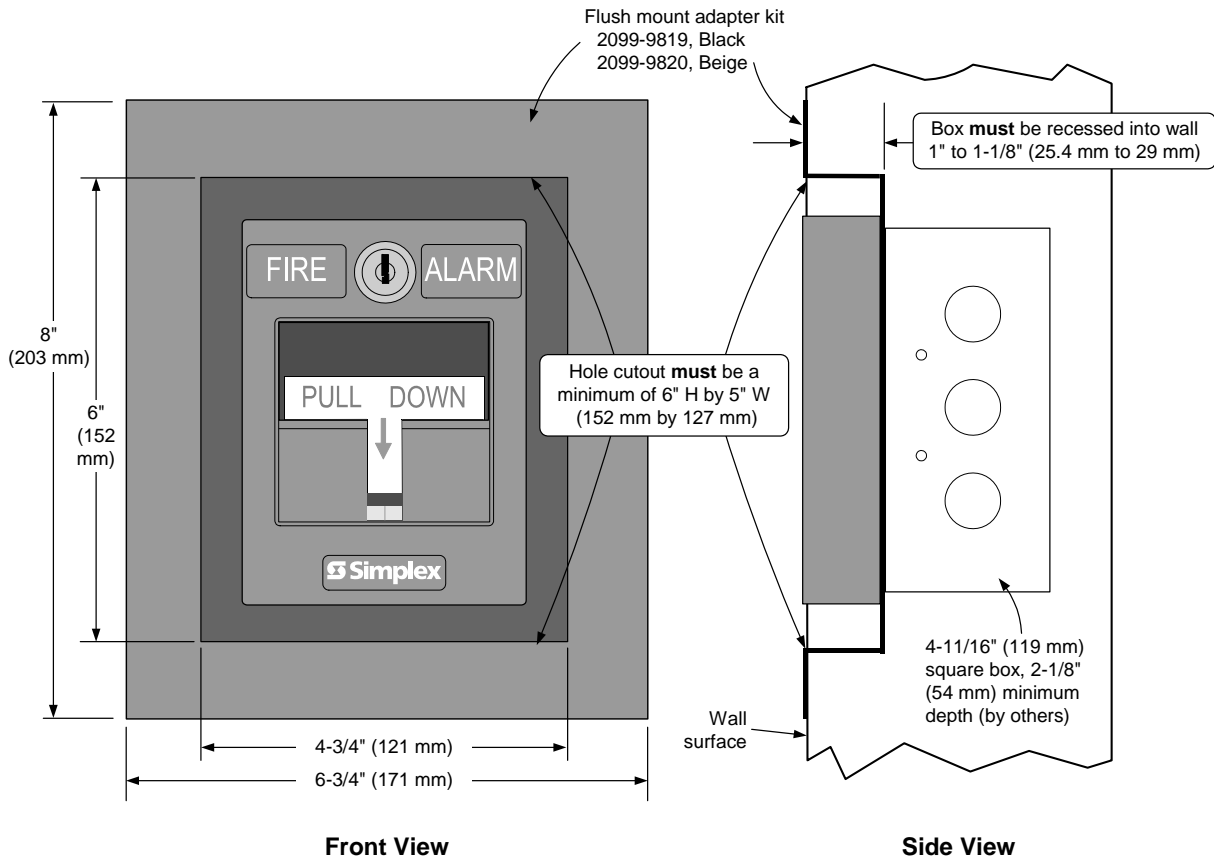
1. Stations shall be located in the normal path of exit and distributed in the protected area such that they are unobstructed and readily accessible.
2. Mounting shall be with the operable part not less than 42 in (1.07 m) and not more than 48 in (1.22 m) above floor level.
3. At least one station shall 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



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### 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

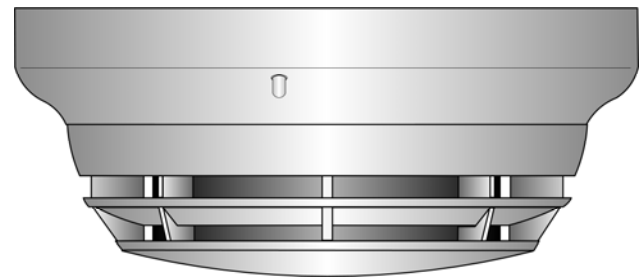
#### General features:

- 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
- Different bases are available to support a supervised or unsupervised output relay, and/or a remote LED alarm indicator

#### 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.

# TrueAlarm 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 (relay is unsupervised and requires separate 24 VDC)

### Supervised Relay Bases (not compatible with 2120 CDT):

- **4098-9791, 4-Wire Sensor Base**, use with remote or locally mounted 2098-9737 relay, requires separate 24 VDC
- **4098-9780, 2-Wire Sensor Base**, use with remote or locally mounted 4098-9860 relay, no separate power required
- Supervised relay operation is programmable and can be manually operated from control panel
- Includes wired connections for remote LED alarm indicator or 4098-9822 relay (relay is unsupervised and requires separate 24 VDC)

## 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)

### 4098-9860, Remote or local mount supervised relay:

- SPDT dry contacts, power limited rating of 2 A @ 30 VDC, resistive; non-power limited rating of 0.5 A @ 125 VAC, resistive

### 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.

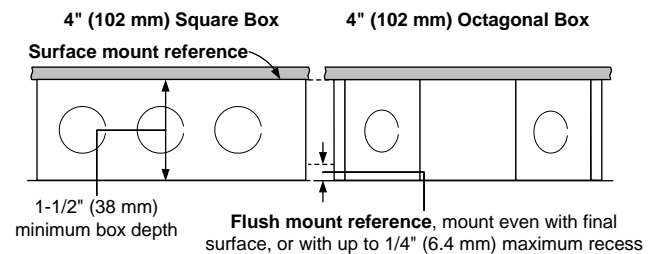
Since TrueAlarm sensors use the same base, different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing 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)

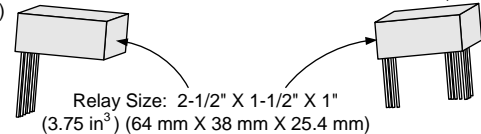
**Without relay in the box:** 4" octagonal or 4" square, 1-1/2" deep; single gang, 2" deep

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

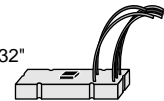


**2098-9737 Supervised Relay** (mounts in base electrical box or remotely)

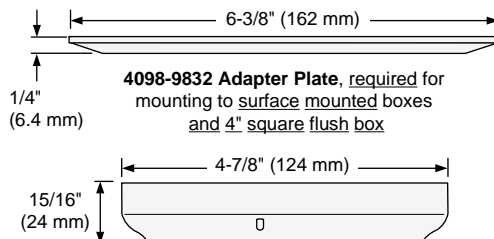
**4098-9822 Relay** (mounts in base electrical box)



**4098-9860 Supervised Relay** (mounts in base electrical box or remotely; 2-3/8" X 1-1/4" X 11/32" (1 in³) (60.4 mm X 31.8 mm X 8.6 mm))



**NOTE:** Review total wire count, wire size, and accessories being wired to determine required box volume.



**TrueAlarm Bases**  
4098-9780, 4098-9789, 4098-9791, & 4098-9792

## TrueAlarm 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 = <b>Quick</b>
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 = <b>Ultra Fast</b>

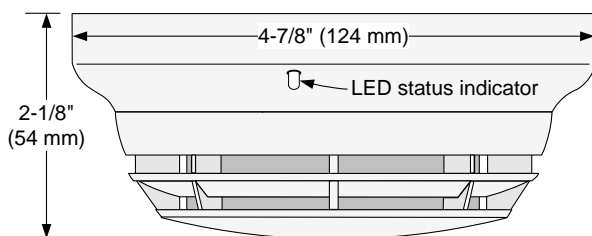
Smoke Sensors:

- 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%, 3.0%, and 3.7%. Application type and sensitivity are selected and then 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.



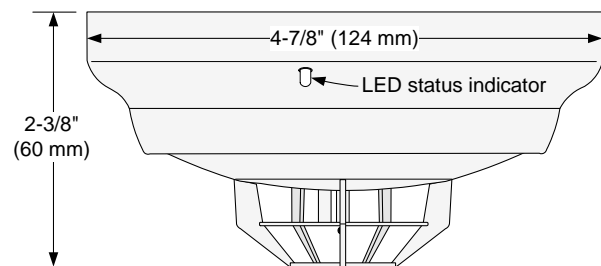
4098-9714 Photoelectric Sensor with Base

### 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

**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 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 (for use with Sensors 4098-9714 and 4098-9733)

(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	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	2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay	4" octagonal or 4" square box
4098-9791**	4-Wire Sensor Supervised Relay Base with connections for LED Indicator or Unsupervised Relay	2098-9737 Supervised Remote Relay 2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay	<b>Note:</b> Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference.
4098-9780**	2-Wire Sensor Supervised Relay Base with connections for LED Indicator or Unsupervised Relay	4098-9860 Supervised Remote Relay 2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay	<b>** NOTE:</b> 4098-9791 and 4098-9780 are NOT compatible with the 2120 CDT

### TrueAlarm Sensors

Model	Description	Compatibility	Mounting Requirements
4098-9714	Photoelectric Smoke Sensor	Bases 4098-9792, 4098-9789, 4098-9791, and 4098-9780	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	<b>Remote Mounting</b> requires 4" octagonal or 4" square box, 1-1/2" minimum depth
4098-9860	Supervised Relay, mounts remote or in base electrical box	For use with 4098-9780 base	<b>Base Mounting</b> 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, 4098-9791, and 4098-9780	Single gang box, 1-1/2" minimum depth
4098-9822	Unsupervised Relay, tracks base LED status; Note: Mounts only in base electrical box	Bases 4098-9789, 4098-9791, and 4098-9780	4" octagonal box, 2-1/8" deep with 1-1/2" extension ring
4098-9832	Adapter Plate	Bases 4098-9792, 4098-9789, 4098-9791, and 4098-9780	<b>Required</b> 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	IDNet or MAPNET II communications, auto-selected, 1 address per base
Communications Connections	Screw terminals for in/out wiring, 18 to 14 AWG (0.82 mm <sup>2</sup> to 2.08 mm <sup>2</sup> )
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 <sup>2</sup> )
UL Listed Operating Temperature Range	32° to 100° F (0° to 38° C)
Operating Temperature Range	with 4098-9733 Heat Sensor: 32° to 122° F (0° to 50° C) with 4098-9714 Smoke Sensor: 15° to 122° F (-9° to 50° C)
Storage Temperature Range	0° F to 140° F (-18° C to 60° C)
Humidity Range	10 to 95% RH
4098-9714 Smoke Sensor Air Velocity Rating	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

### 4098-9780 Base With Supervised Remote Relay 4098-9860 (see page 2 for contact ratings)

Power	Supplied from communications
-------	------------------------------

### 4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789, 4098-9791, and 4098-9780 (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

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S4098-0019-18 6/2014

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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)

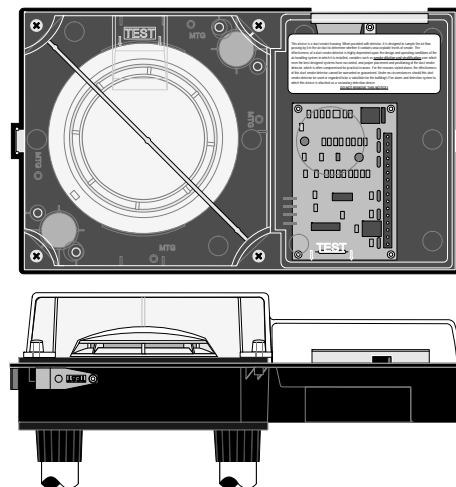
#### Sampling tubes (ordered separately):

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

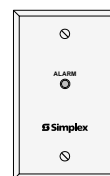
#### Remote module options (ordered separately):

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

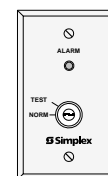
\* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 3240-0026.241 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, 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.

## 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; 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 4098-9756	Use single gang box, 3" H x 2" W x 2" D (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 <sup>2</sup> ) 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

## Photoelectric Sensing (Continued)

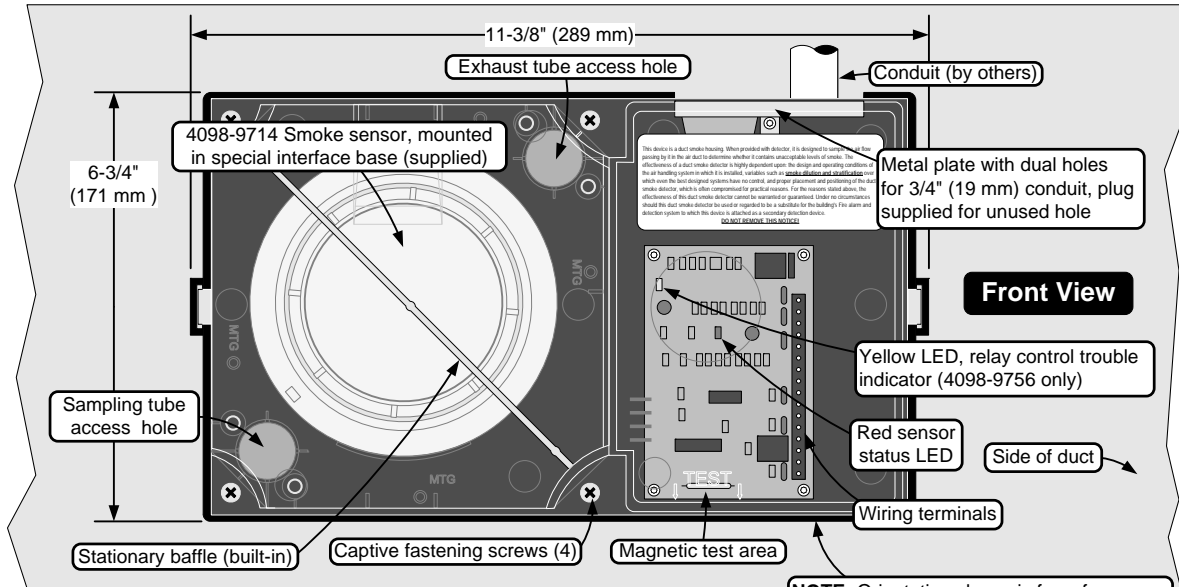
Typically duct sensor applications require less sensitive settings (such as 2.5% per foot obscuration) due to the ducts being a relative dirty environment. However, the standard seven levels of TrueAlarm sensor sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of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

## Fire Alarm Control Panel Features

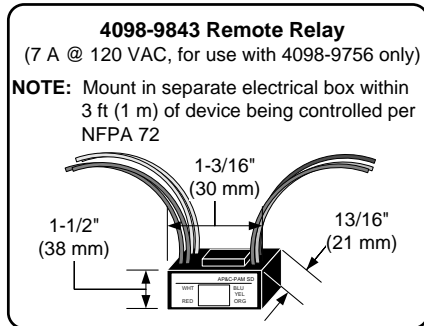
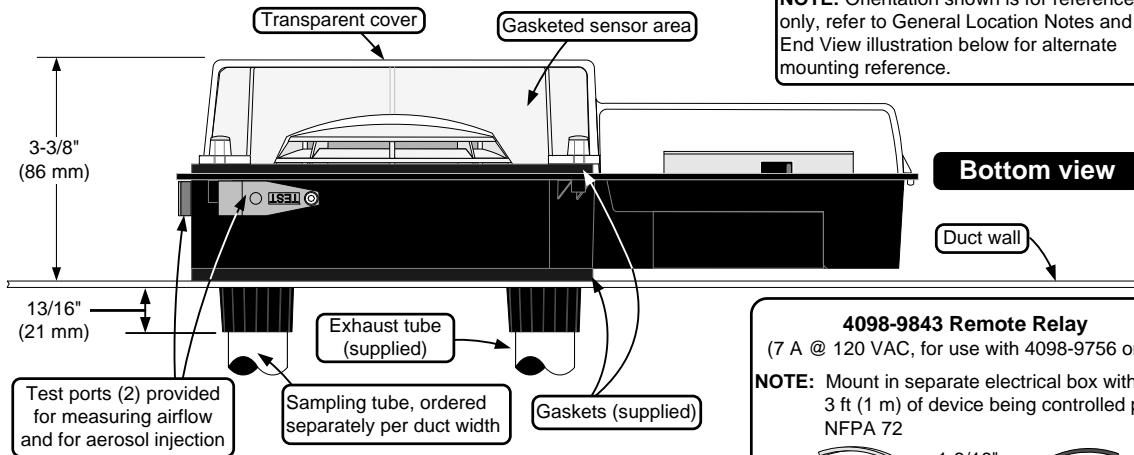
- Individual smoke sensitivity selection
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allows accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check verifies sensor integrity
- Automatic environmental 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 Housing Detail Reference

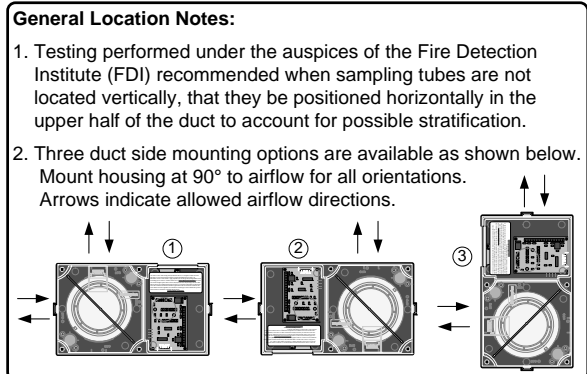
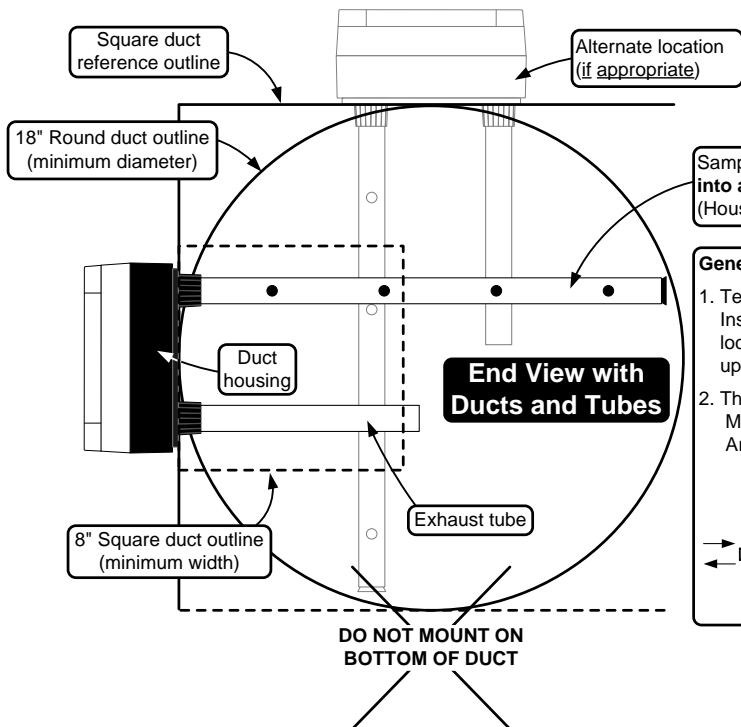
**NOTE:** Refer to Installation Instructions 574-776 for additional installation detail and maintenance information.



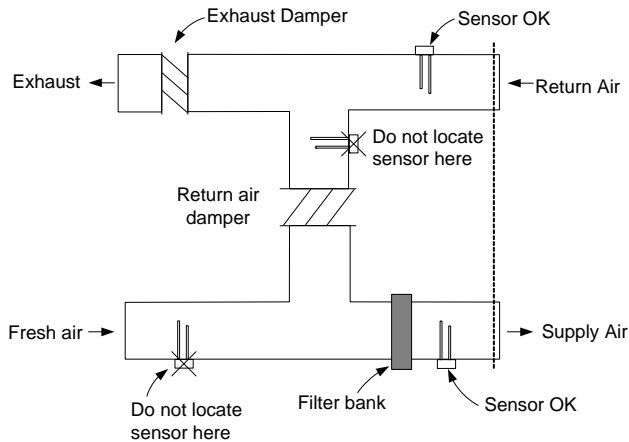
**NOTE:** Orientation shown is for reference only, refer to General Location Notes and End View illustration below for alternate mounting reference.



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.)



## 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 <sup>2</sup> to 3.31 mm <sup>2</sup> )
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 k $\Omega$ , 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 $\mu$ A @ 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

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S4098-0030-9 11/2012

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#### Features

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

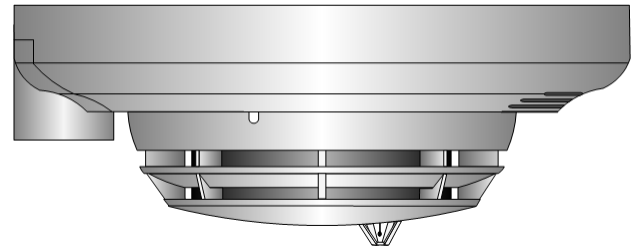
- For use with 4100ES or 4010ES fire alarm control panels with software revision 2.01.02 or higher
- For use with 4100U fire alarm control panels with software revision 12.05 or higher
- CO sensor bases support (and require) a TrueAlarm photoelectric, photo/heat or heat sensor (ordered separately)
- Model 4098-9770 provides standard features, model 4098-9771 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/4010ES/4100U 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)
- 4100ES and 4010ES panels provide ten (10) year end of life status indication with CO sensor expiration notices occurring within 12 months and within 6 months, allowing service replacement planning
- 4100U panels provide five (5) year end of life status indication with the 12 and 6 month replacement notices
- 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, 4098-9747) 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 Tyco Fire Protection Products.

## 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 10 year operational lifetime (5 years for 4100U panels), tracked by date code built into the CO sensor module electronics. Although the CO sensor will continue to function after the 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.

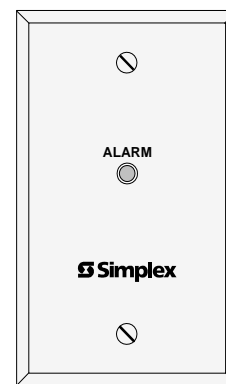
## TrueAlarm CO Service Reports

**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. (Sample shows 10 year life tracking with a 4100ES or 4010ES panel.)

Service Port				Page 1	
REPORT 6 : TrueAlarm CO Report		12:34:56am	MON	06-JUN-14	
-----					
Channel 1 (M1)					
Zone		Current	End of		
Name	CUSTOM LABEL	Value	Life Date	State	
M1-1-2	Conference Room 17 CO Toxic Gas	457PPM	30-MAY-24	PRI	
M1-2-2	Boiler Room CO Toxic Gas	0PPM	30-MAY-24	NOR	
TRUE ALARM CO REPORT COMPLETED					
Press RETURN for next Screen OR CTRL-X to abort					

## 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 Analog Sensing Product Selection Chart

### TrueAlarm CO Sensor Base

Model	Description	
4098-9770	CO Base, Standard operation	Select TrueAlarm sensor from list below
4098-9771	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	
4098-9747	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)	
Model	Description	Mounting Requirements
4098-9832	Adapter Plate, <b>required</b> for surface mounted 4" electrical boxes	Refer to page 6, mounting reference
2098-9808	Choose <b>one</b> 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†
Photoelectric Smoke Sensor 4098-9714	1	✓	—	—	—	—	—	—	option
	2	—	✓	—	option	—	—	—	option
Photo/Heat Multi-Sensor 4098-9754	3	✓	—	—	—	option	option	—	option
	4	—	✓	—	option	option	option	—	option
	5	—	—	✓	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.



## 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 = <b>Quick</b>
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 = <b>Ultra Fast</b>

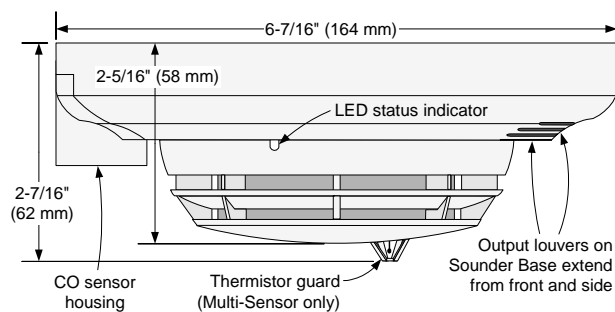
Smoke Sensors:

- 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%, 3.0%, and 3.7%. Application type and sensitivity are selected and then 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

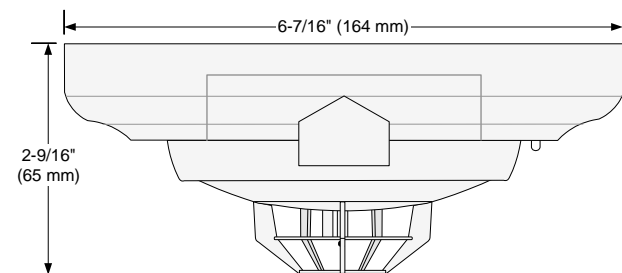
**TrueSense analysis correlates both thermal activity and smoke activity** at a single multi-sensor location using an extensively tested covariance relationship. As a result, TrueSense detection improves response to conditions indicative of faster acting, hot flaming fires when compared to the response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

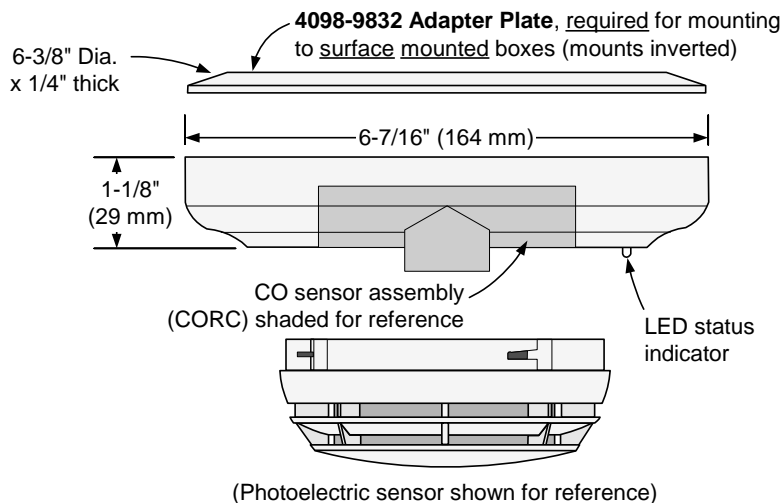
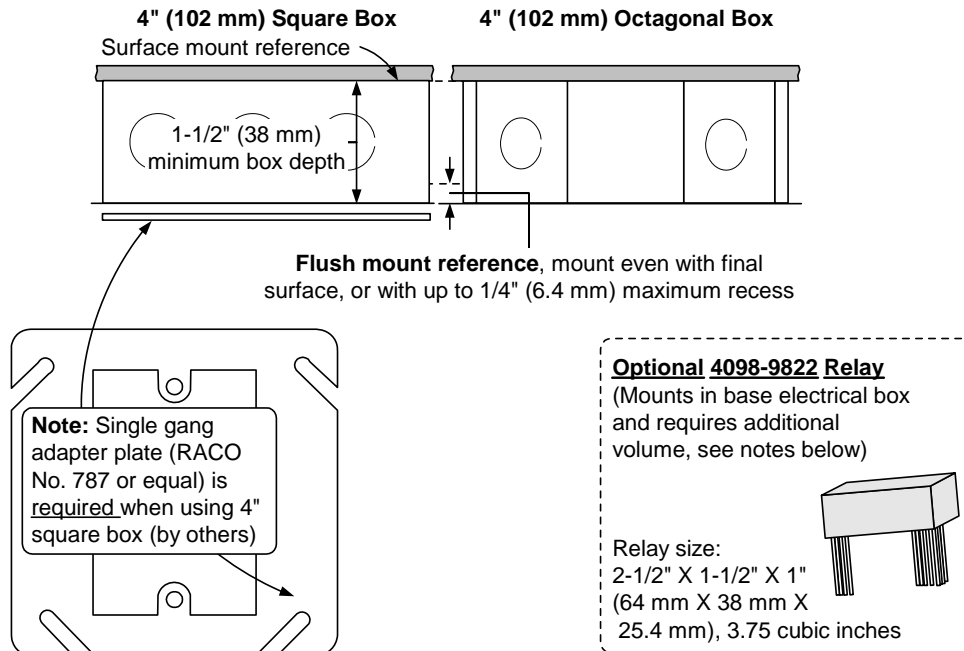
**WARNING:** In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.

## 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



### 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

Communications and Sensor Supervisory Power	IDNet communications, 1 address per base	
Communications and Sounder Power Connections	Screw terminals for in/out wiring, 18 to 14 AWG (0.82 mm <sup>2</sup> to 2.08 mm <sup>2</sup> )	
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 <sup>2</sup> )
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, <i>Audible Signaling Appliance</i> ; UL Standard 268, <i>Smoke Detectors for Fire Protective Signaling Systems</i> 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	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.) 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 <b>Example:</b> 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

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S4098-0052-2 7/2014

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### 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:**

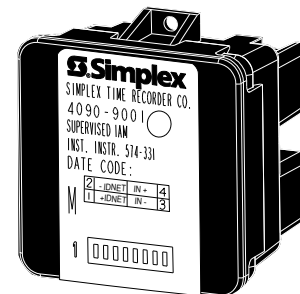
- Provides monitoring of tamper switch (supervisory) and waterflow switch (alarm) on same circuit using one point
- Available with IDNet communications only

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

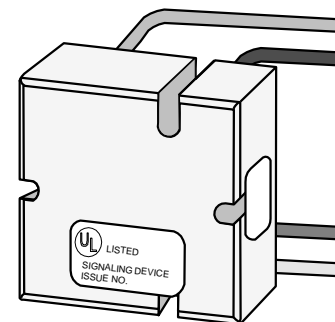
- Contact closure status can be tracked
- Momentary contact closure conditions can be selected at the panel to be latched or tracked (not available with the 2120 CDT)

**UL listed to Standard 864**

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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, <b>required for optional trim plates</b>

### 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
4081-9005	733-984	1.8 kΩ, 1/2 W

Use for current limited monitoring applications

## 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 <sup>2</sup> to 2.08 mm <sup>2</sup> )
	4090-9051 Color coded wire leads, 18 AWG (0.82 mm <sup>2</sup> ), 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

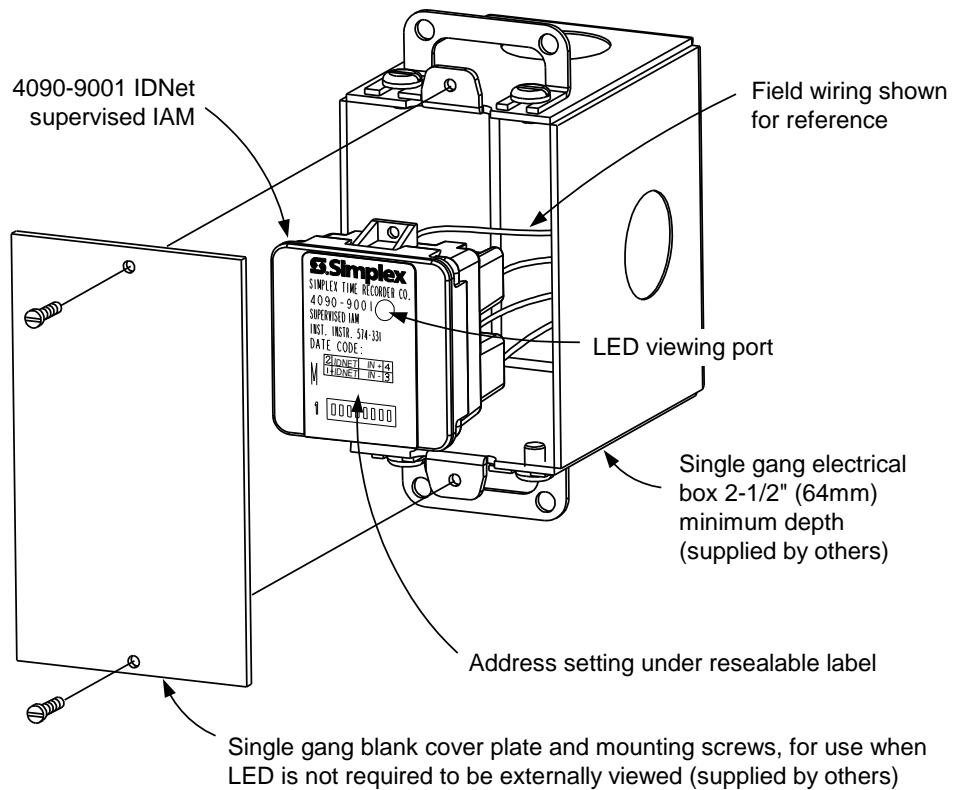
### Wiring Distances

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)

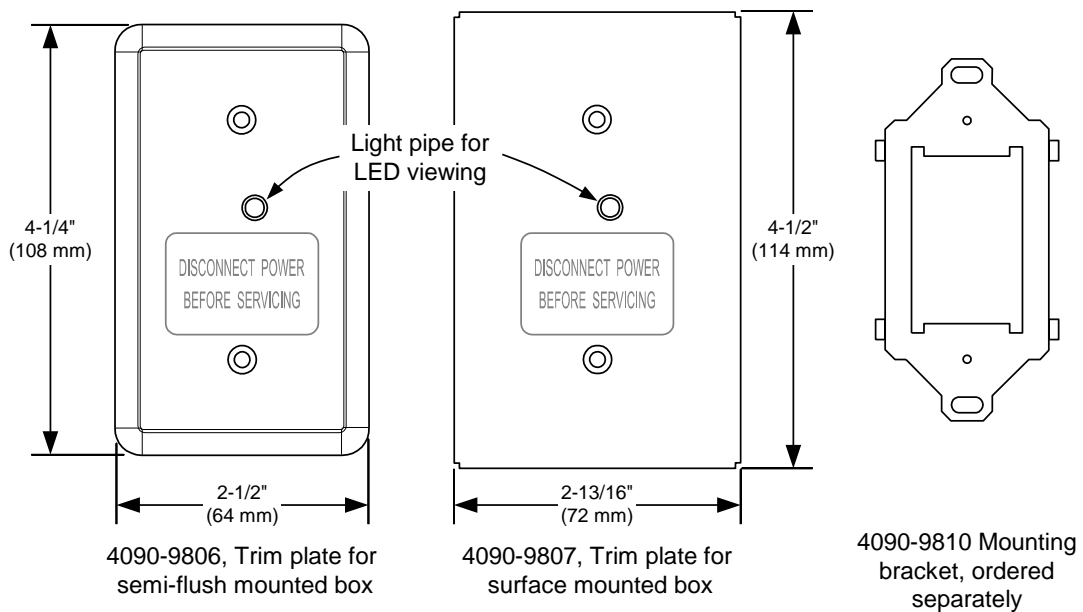
### Mechanical

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



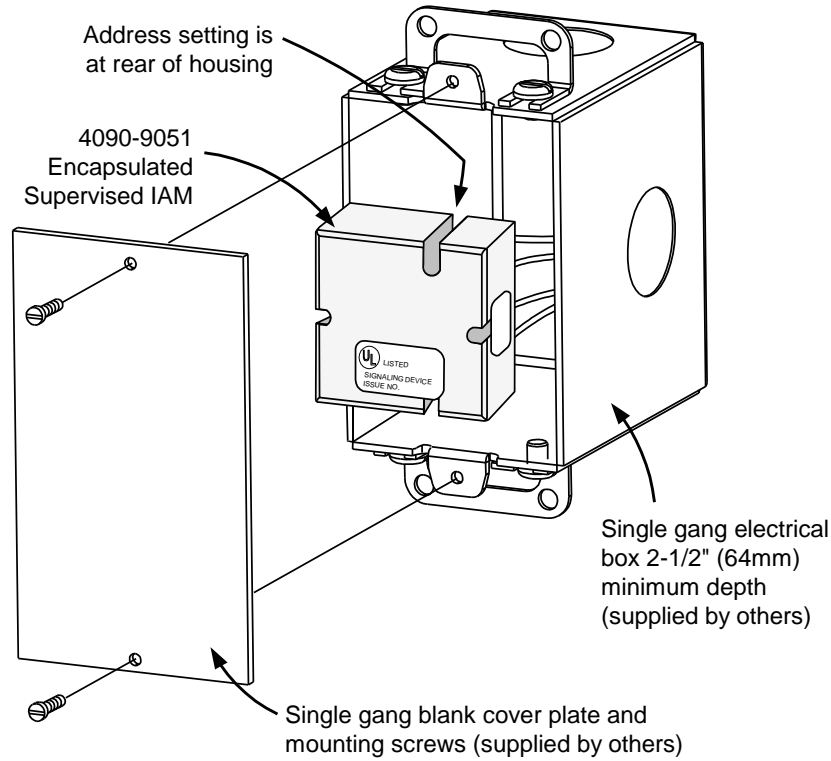
### Mounting Reference, Single Gang Blank Cover Plate



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

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

## 4090-9051 Mounting Information



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### Features

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

- IDNet addressable control for use with Simplex® fire alarm control panel models 4100ES, 4010ES, 4100U, 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
- Relay is set to OFF on initial power up and upon loss of IDNet communications

#### Compact, sealed construction:

- Enclosed design minimizes dust infiltration
- Mounts in standard 4” (102 mm) square electrical box, optional adapter bracket is available to mount in a 4 11/16” (119 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.

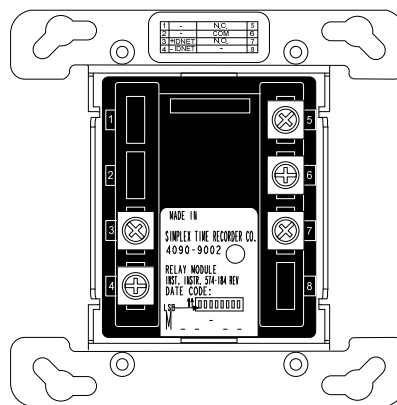
### Product Selection

Model	Description
4090-9002	Relay IAM

#### Optional Adapter and Trim Plates

Model	Description	
4090-9813	Adapter plate to fit 4 11/16” (119 mm) square electrical box	
4090-9801	For semi-flush mounted box	Trim Plate, galvanized steel, with LED viewing window; includes mounting screws
4090-9802	For surface mounted box	

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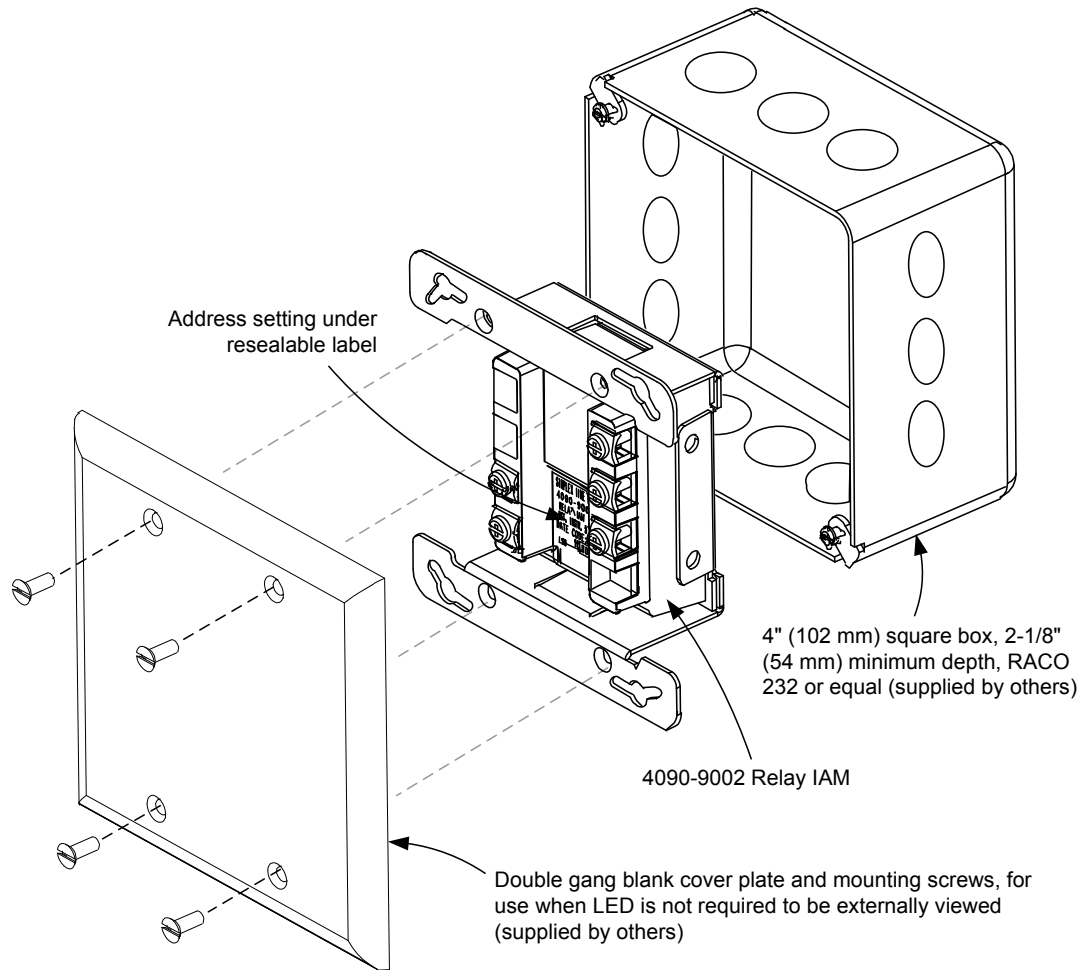


4090-9002 IDNet Relay IAM Package  
(shown approximately 1/2 size)

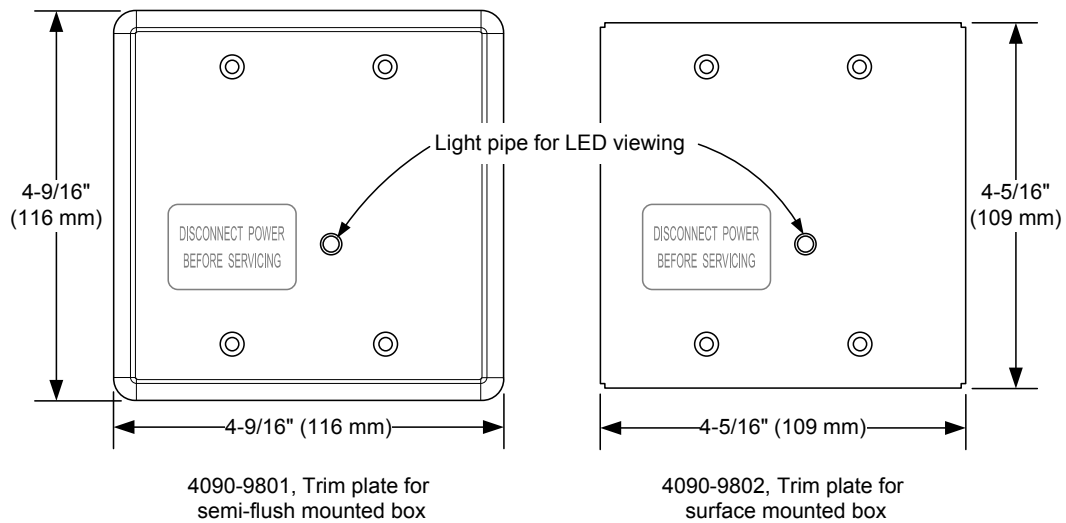
### Specifications

Communications	IDNet communications, 1 address per device	
Relay IAM Power	Supplied by IDNet communications	
<b>Contact Ratings*</b> (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 the installation instructions for additional information.		
Wire Connections	Screw terminals for in/out wiring, 18 to 14 AWG wire (0.82 to 2.08 mm <sup>2</sup> )	
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 1/8" H x 4 1/8" W x 1 3/8" 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)	
Installation Instructions	574-184	

## Relay IAM Mounting Information



### Mounting Reference, Double Gang Blank Cover Plate



### Optional Trim Plates for Visible LED

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S4090-0002-9 11/2013

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

### 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.

### 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

9000 /  
9003  
SERIES



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

### Product Listings

**SIGNALING**



**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



## 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		●		●	●

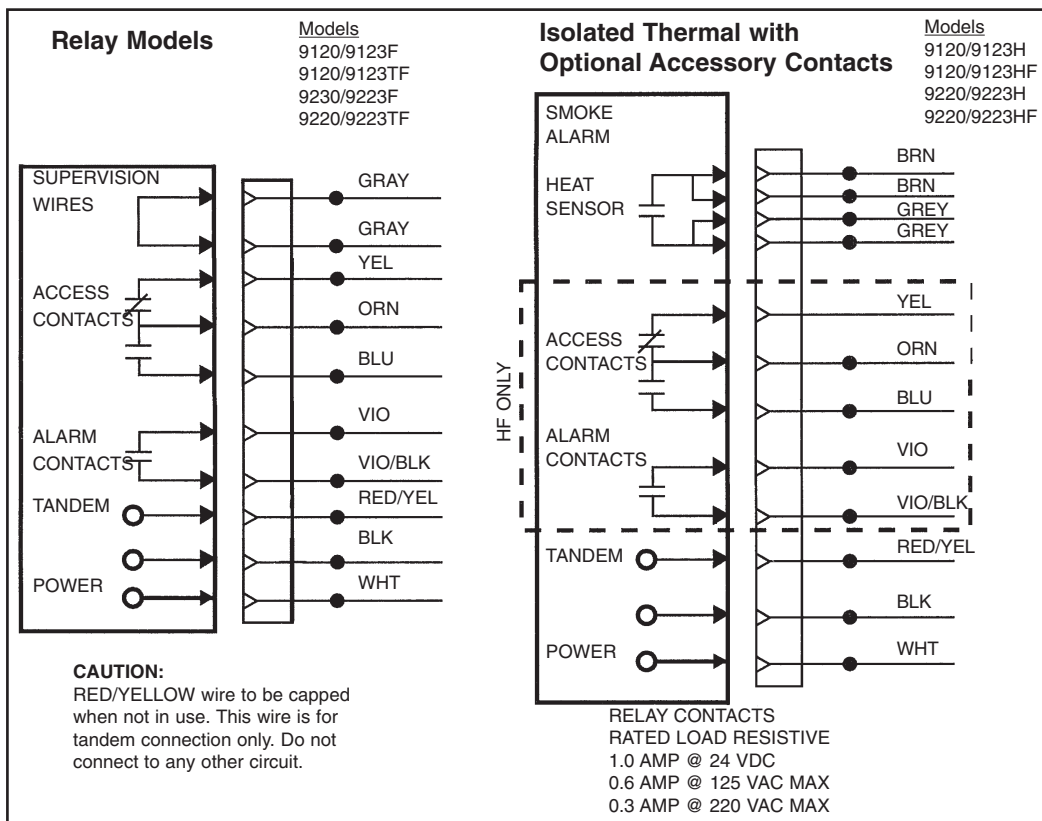
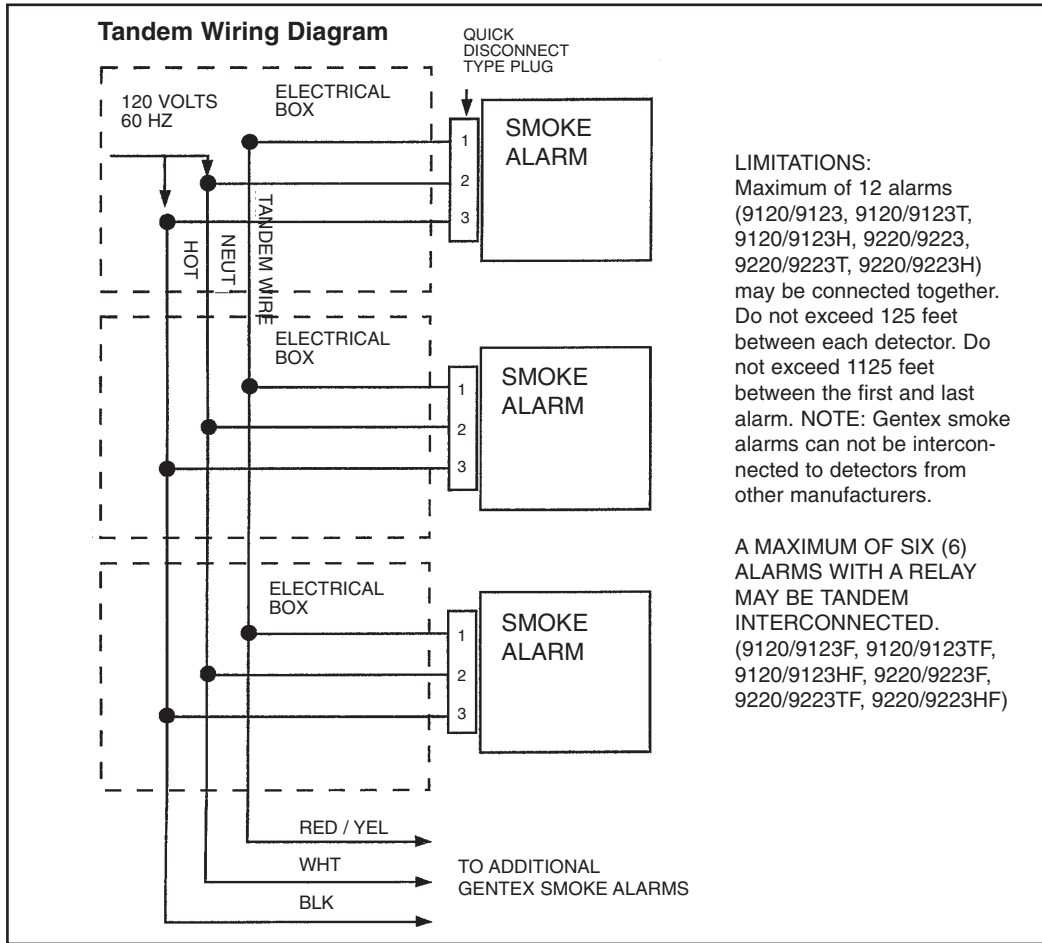
## 9003 (9123/9223) Series - Temporal 3 Evacuation Piezo Sounder

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



# 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) 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.

- Nominal sensitivity shall be 2.5%.
- 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.
- The alarm shall have a 9VDC alkaline battery as a back-up in the event building power is lost.
- The 9VDC battery impedance shall be verified by the circuit of the smoke alarm.
- The alarm shall provide an indicator when the battery is low in power or high impedance or is missing.
- 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.
- The sensing chamber shall be fully screened to prevent entrance of small insects, thus reducing the probability of false alarms.
- A solid state piezo alarm rated at 90dBA at 10ft.
- A visual LED monitor (condition indicator) will slow pulse in normal operation and rapid pulse in alarm.
- 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.
- The detector shall have interconnect capabilities of up to 12 units or 6 units with relay.
- The alarm shall have interconnection capabilities of 12 units on 9120/9120T/9120H/9123/9123T/9123H/9220/922T/9220H/9223/9223T/9223H and shall have interconnection capabilities of 6 units on 9120F/9120TF/9120HF/9123F/9123TF/9123HF/9220F/9220TF/9220HF/9223F/9223TF/9223HF.
- 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.
- Unit must be UL 217 and UL 1730 listed for both wall and ceiling mount.
- 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

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# 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



LISTED



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

### Product Compliance



- 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

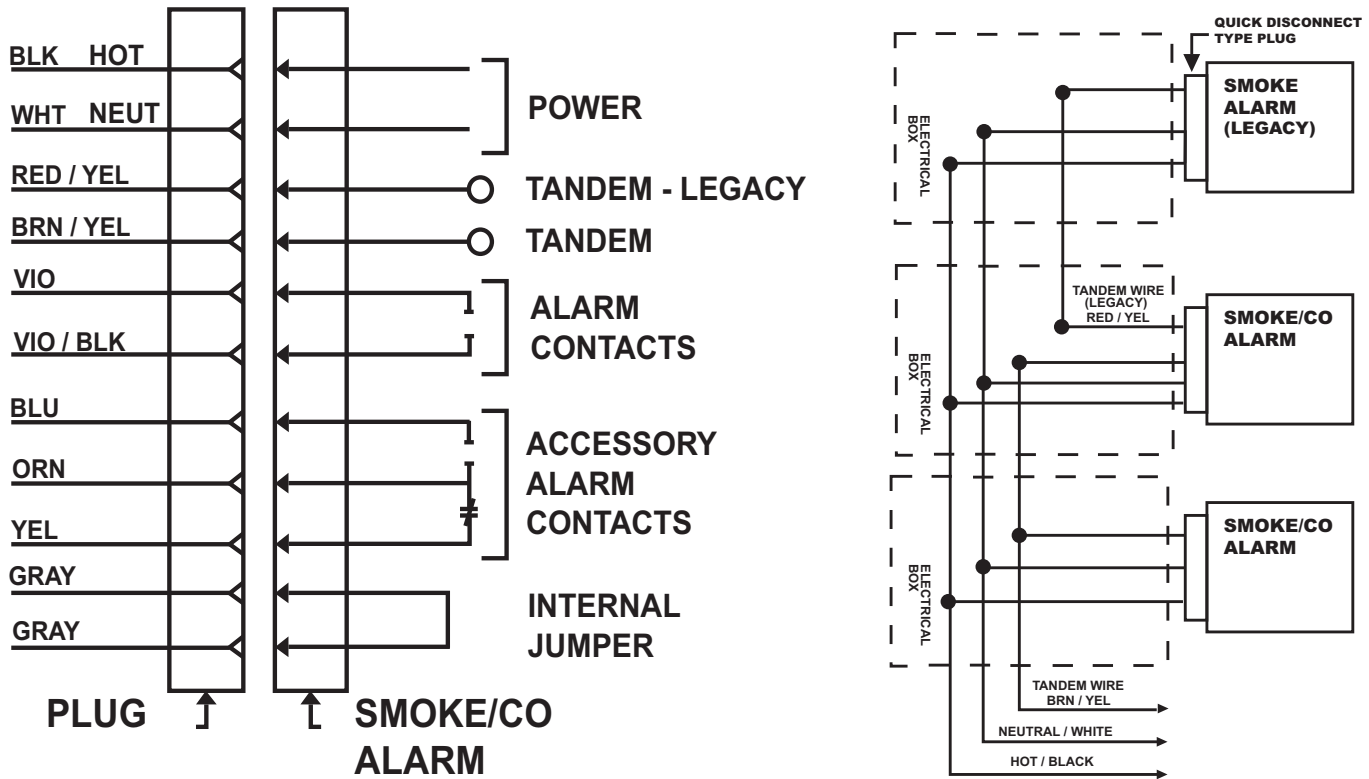
### Additional CO Alarm Features

- 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.

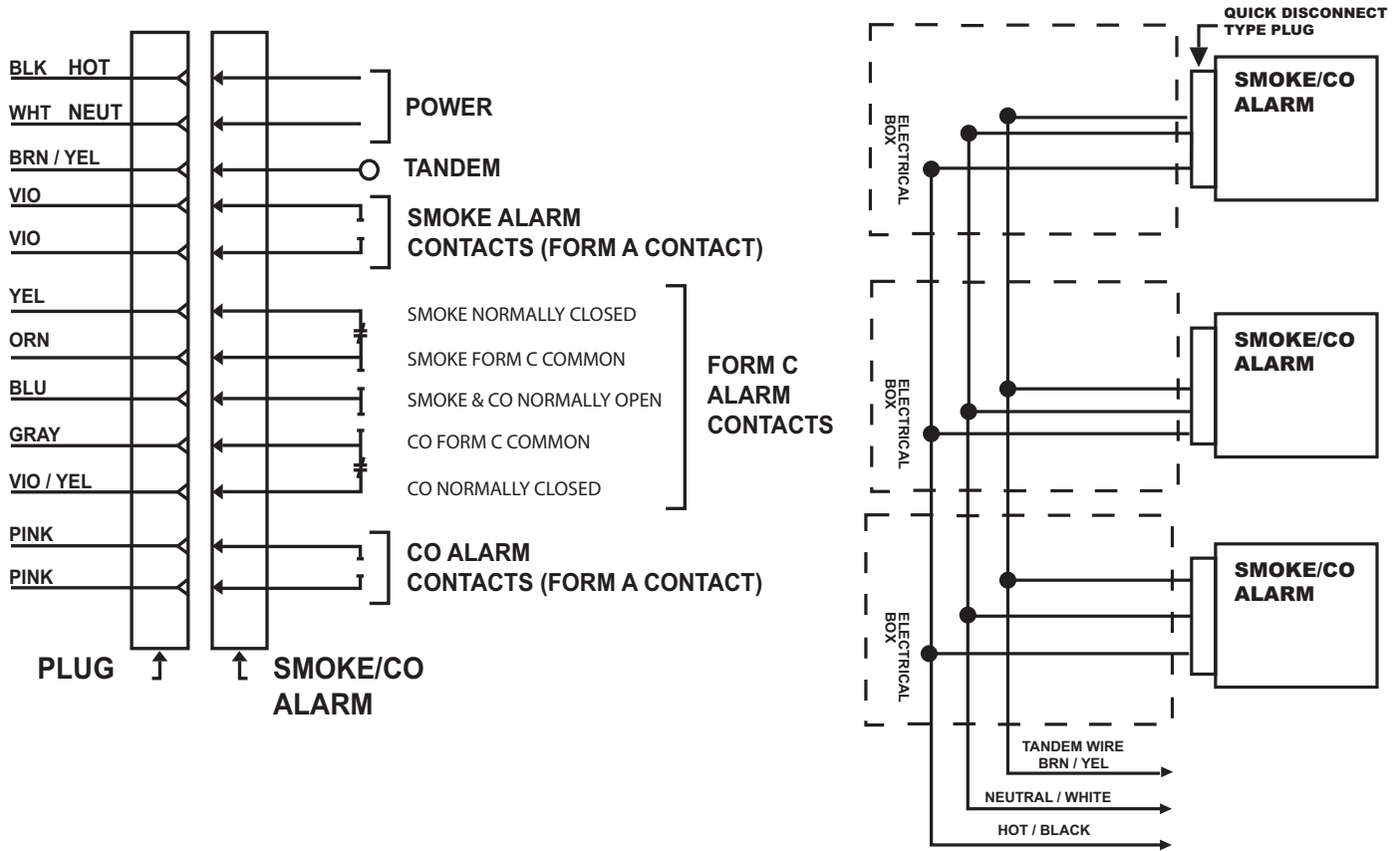
- If a GN-503 Series or CO1209 Series unit is annunciating for a CO event, legacy products that are tandem interconnected will not activate and will remain silent.
- If smoke alarm portion of device goes into alarm, all smoke alarms, CO alarms or combination smoke/CO alarms tandem wired will sound smoke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

- Nominal smoke sensitivity shall be 2.5%.
- 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.
- The CO alarm shall utilize an electrochemical sensing element with a minimum 5-year life.
- 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.
- The GN-503 Series device shall have a Duracell® MN 1604 9VDC alkaline battery as a back-up in the event building power is lost.
- The 9VDC battery impedance shall be verified by the circuit of the smoke/CO alarm.
- The alarm shall provide an indicator when the battery is low in power, high impedance or is missing.
- The CO alarm will provide an audible indicator of 3 quick chirps every 30 seconds at end of life of CO sensor.
- The sensing chamber shall be fully protected to prevent entrance of small insects, thus reducing the probability of false alarms.
- The alarm shall include a solid state red color LED that will indicate presence of CO at the unit.
- The alarm shall include a solid state piezo alarm rated at 85dBA at 10ft.
- A visual LED monitor (condition indicator) shall slow pulse in normal operation and rapid pulse in alarm (red color)
- 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.
- The device shall have tandem interconnect capability of up to 12 smoke/CO alarms.
- 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.
- 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.
- 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.
- The combination smoke/CO alarm shall be non-latching (self-restoring).
- Unit must be ANSI/UL 217 and ANSI/UL 2034 listed for both wall and ceiling mounting.
- 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



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616.392.7195 • 1.800.436.8391 • 616.392.4219 Fax

Gentex Corporation reserves the right to make changes to the product data sheet at their discretion.

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NOTIFICATION APPLIANCES & ACCESSORIES



## 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:**

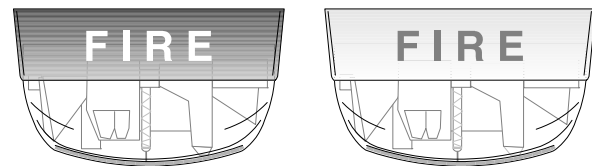
- Wiring terminals are accessible from the front of the housing providing easy access for installation, inspection, and testing
- Covers are available separately to convert housing color

**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\*



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.

\* 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.

## 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)
4905-9940		White Total depth with strobe = 4-3/8" (111 mm)
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; <b>required for mounting to handy box; not needed when using 4905-9926 guard</b>	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 <sup>2</sup> ) 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		
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	

\* UL listed by Space Age Electronics Inc.

## Strobe Specifications

### Wall Mount or Ceiling Mount, Common Specifications

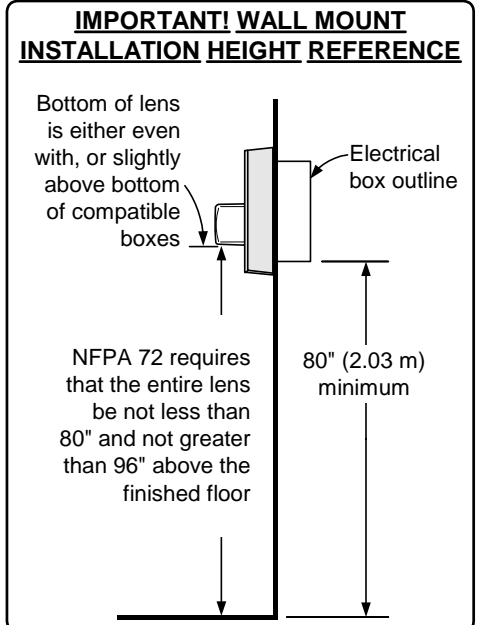
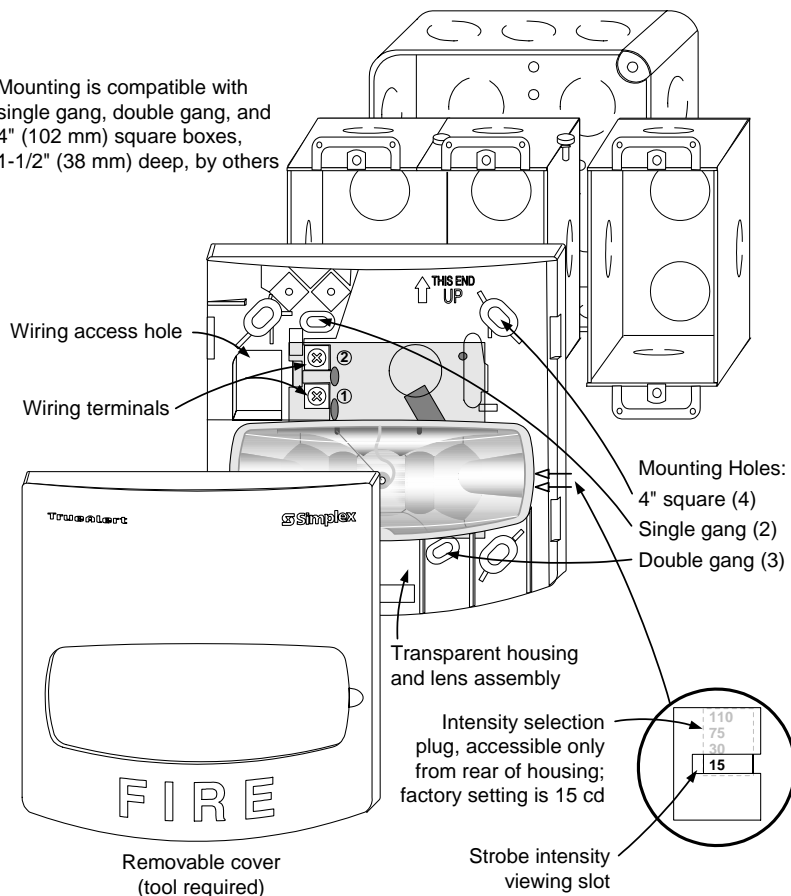
Rated Voltage Range		Regulated 24 VDC; see Note 1 below			
Flash Rate		1 Hz			
Synchronized NAC Loading		Up to 35 synchronized strobes maximum per NAC			
Temperature Range		32° to 122° F (0° to 50° C)			
Humidity Range		10% to 93%, non-condensing at 100° F (38° C)			
Connections		Terminal blocks for 18 AWG to 12 AWG (0.82 mm <sup>2</sup> to 3.31 mm <sup>2</sup> ); two wires per terminal for in/out wiring			
<b>Wall Mount</b>	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)	<b>15 cd</b>	<b>30 cd</b>	<b>75 cd</b>	<b>110 cd</b>
		<b>60 mA</b>	<b>94 mA</b>	<b>186 mA</b>	<b>252 mA</b>
	Reference RMS Currents at other voltages	18 VDC	53 mA	84 mA	165 mA
24 VDC		40 mA	63 mA	124 mA	168 mA
<b>Ceiling Mount</b>	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)	<b>15 cd</b>	<b>30 cd</b>	<b>75 cd</b>	<b>110 cd</b>
		<b>75 mA</b>	<b>125 mA</b>	<b>233 mA</b>	<b>316 mA</b>
	Reference RMS Currents at other voltages	18 VDC	67 mA	111 mA	207 mA
24 VDC		50 mA	83 mA	155 mA	211 mA

#### NOTES:

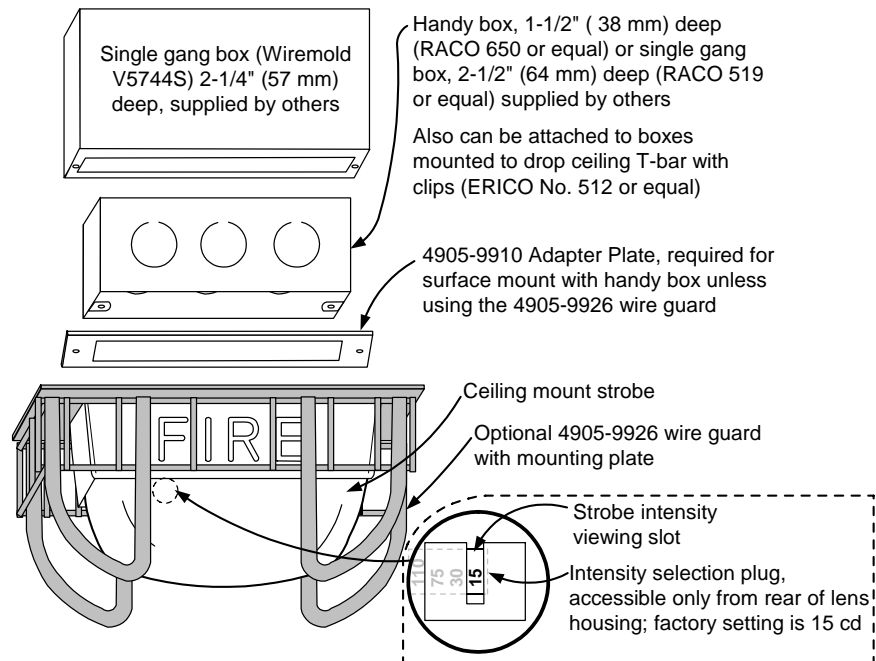
1. "Regulated 24 VDC" refers to the voltage range of 16 to 33 VDC per UL Standard 1971, *Signaling Devices for the Hearing Impaired*, changes effective May 1, 2004. This voltage range is the absolute operating range. Operation outside of this range may cause permanent damage to the strobe. Please note 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

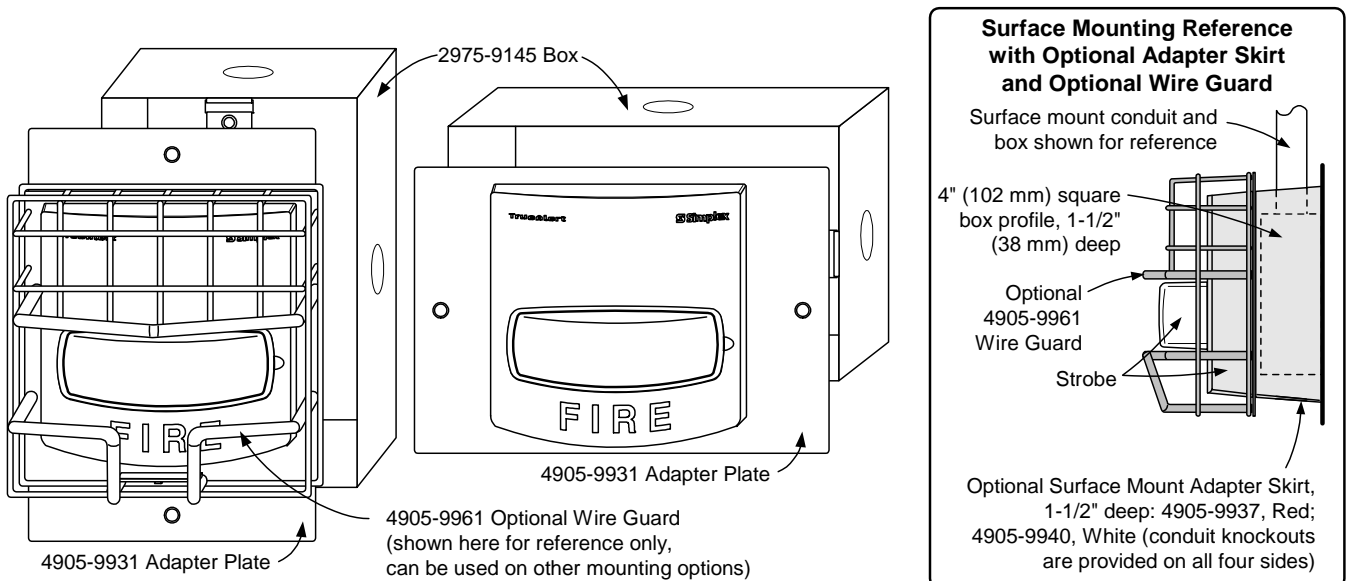
Mounting is compatible with single gang, double gang, and 4" (102 mm) square boxes, 1-1/2" (38 mm) deep, by others



## Ceiling Mount Strobe Installation Reference



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



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## 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:

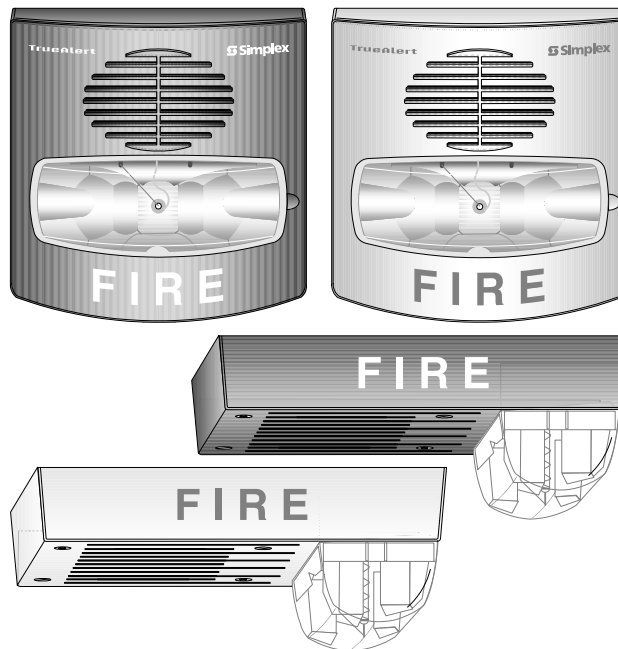
- Wall mount A/V adapters are available to cover surface mounted electrical boxes and to adapt to Simplex® 2975-9145 boxes
- UL listed red wire guards are available for wall or ceiling mount A/Vs\*

### 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.

## 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)
4905-9940	White Surface Mount Adapter Skirt; use to cover 1-1/2" (38 mm) deep surface mounted boxes	depth with strobe = 4-3/8" (111 mm)
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 <b>NOTE:</b> 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*	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*	Ceiling Mount Red Adapter Plate, required to mount guard to surface mounted electrical box	9" x 7" (229 mm x 178 mm)
4905-9915	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		

\* UL listed by Space Age Electronics Inc.

## 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.

## A/V Specifications

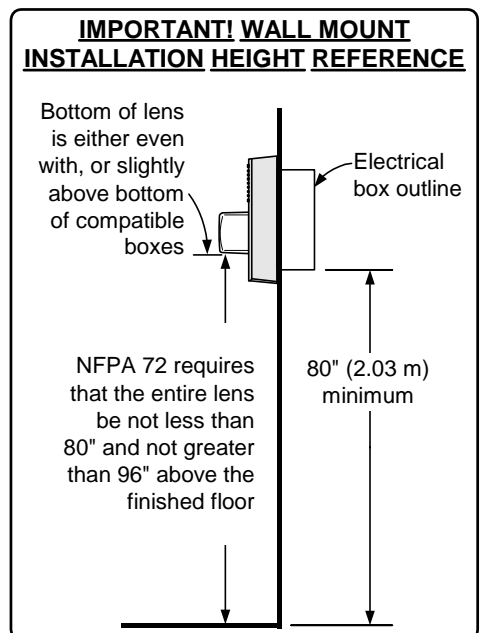
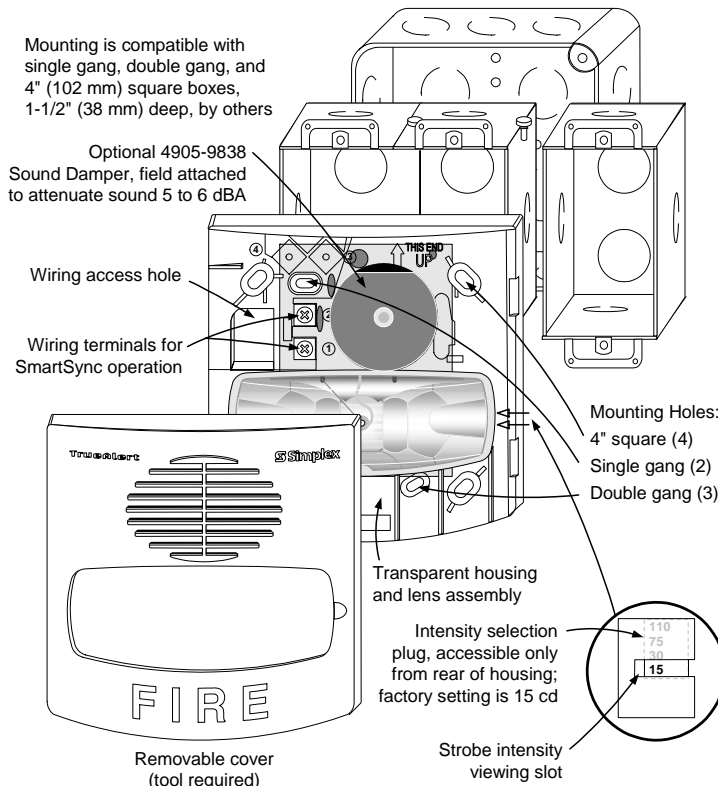
### Wall Mount or Ceiling Mount, Common Specifications

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 <sup>2</sup> to 3.31 mm <sup>2</sup> ); 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
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
24 VDC		57 mA	88 mA	167 mA	213 mA

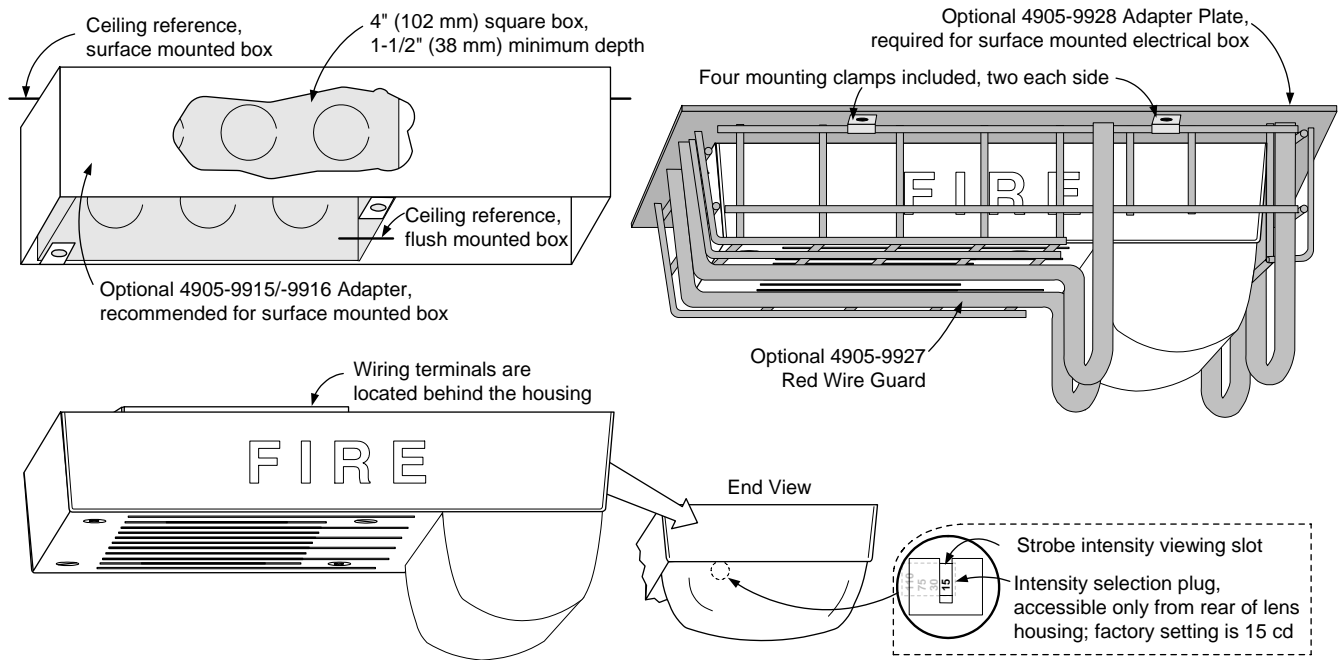
#### NOTES:

- "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.
- 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.
- 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.)

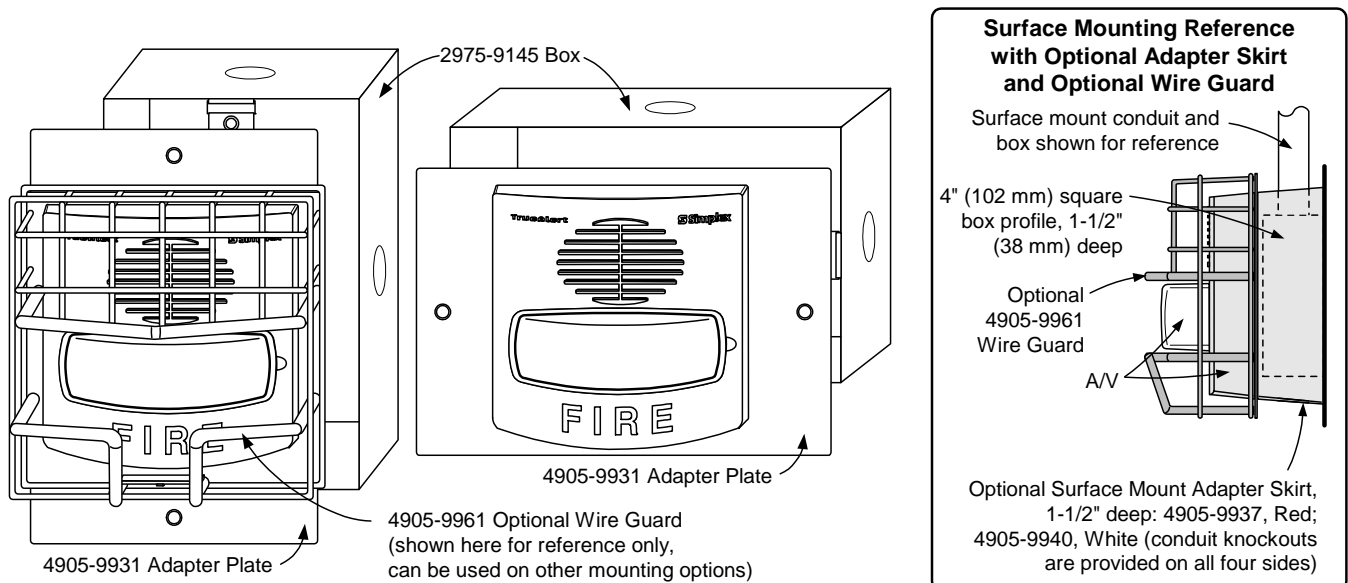
### Installation Reference, Surface or Semi-Flush Mounting



## Ceiling Mount A/V and Guard Installation Reference



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



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#### Features

##### Low current, 24 VDC electronic mini-horn provides:

- Operation with Simplex® SmartSync™ 2-wire horn/strobe control\*\*
- Small profile horn packaged in a rugged, high impact, flame retardant thermoplastic housing, available in red or white
- Snap-on cover presents a clean and neat appearance (removal requires a tool)
- Convenient mounting to a single gang electrical box, flush or surface mounted

##### SmartSync two-wire control of audible and visible notification appliance provides:

- Control of mini-horn tone as Temporal Pattern, March Time pattern (DIP Switch selectable for 60 BPM or 20 BPM), or on continuously; controlled separately from visible appliances on the same circuit
- Visible appliances on the same SmartSync circuit operate at a synchronized 1 Hz flash rate
- Operation that allows “on-until-silenced” and “on-until-reset” on the same two-wire pair

##### Listing reference:

- UL listed to Standard 464
- ULC listed to Standard S525

#### Description

**Mini-horns provide** a loud and penetrating notification sound controlled by SmartSync two-wire operation. The compact package allows mounting in a variety of convenient locations. An output level switch allows selection of low or high sound output as required for the location (see specifications for details).

**SmartSync operation mode** allows a two-wire circuit to activate both the horn and strobe on the same NAC (notification appliance circuit) and then allows 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 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)

**Canadian two-stage alarm applications.** A second switch position allows the SmartSync March Time pattern input to be selected as either 60 BPM or 20 BPM. 20 BPM is typically required for Canadian two-stage alarm applications as the pre-signal, followed by the Temporal Pattern. Two-stage alarm operation requires a 4010 or 4100U as the control panel.



Red Mini-Horn, Front and Side View

#### Product Selection

Model	Description
4901-9858	Red Mini-Horn
4901-9859	White Mini-Horn

#### Specifications

Rated Voltage Range	16 VDC to 33 VDC
Current Rating	19 mA maximum
Dimensions	4-1/2" H x 2-3/4" W x 1-1/4" D (114 mm x 69 mm x 32 mm)
Temperature Range	32° to 122° F (0° to 50° C)
Humidity Range	10% to 93%, non-condensing @ 100° F (38° C)
Connections	Terminal blocks for 18 AWG to 12 AWG (0.82 mm <sup>2</sup> to 3.31 mm <sup>2</sup> ); two wires per terminal for in/out wiring

#### Sound Output Ratings

Sound Level Test	Output Level Selection	
	High	Low†
Reverberant Chamber Test, per UL 464 @ 10 ft (~3 m)	79 dBA	68 dBA†
Anechoic Chamber Test, per ULC S525 @ 3 m (~10 ft)	93 dBA	82 dBA†
Polar Dispersion Reference per ULC S525	-3 dBA at ± 40° off-axis	-6 dBA at ± 85° off-axis

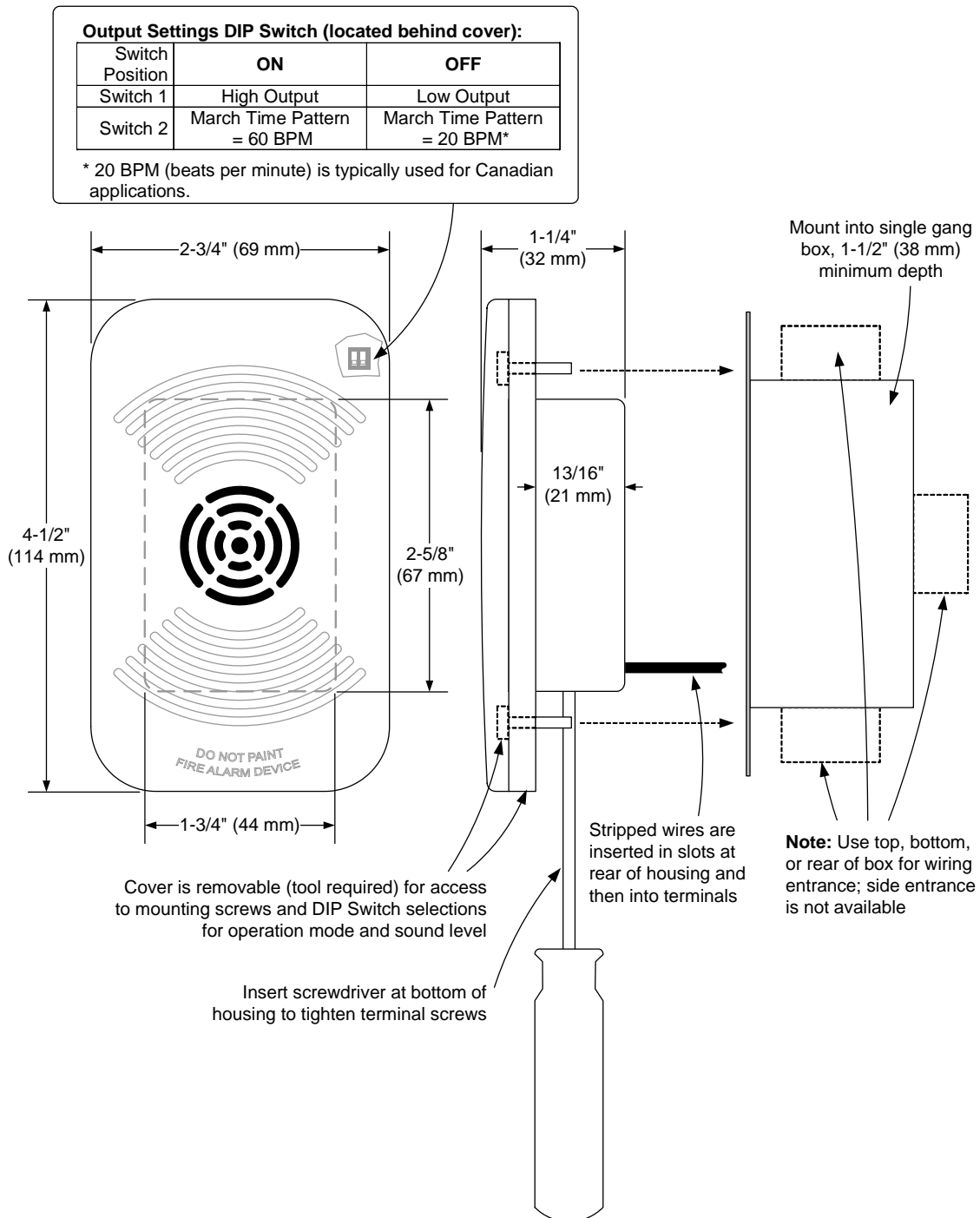
† The low level setting is not suitable for ULC fire applications and is for private mode applications per UL 464. Always test installed sound level against local requirements.

\* 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 7135-0026:334 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. 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.

\*\* SmartSync two-wire horn/strobe operation is protected under U.S. Patent No. 6,281,789.

## Installation Reference

For additional information, refer to Installation Instructions 579-870.



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S4901-0013-1 4/2010

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A blurred background image of an electrician in a blue shirt using wire cutters on a bundle of red and black wires.

## Simplex TrueAlert ES Notification Reinvented

### Contractor Benefits:

- **New appliance design allows for easier, error-free installation**
- **Fewer power supplies, batteries and dedicated AC lines required; no end of line resistors**
- **Smaller gauge, unshielded wiring can be used, creating significant material savings compared to conventional installations**
- **Smaller conduit can be used and less is required—further reducing installation costs**
- **Industry's most flexible wiring architecture allows for more efficient wire runs and makes it easier to correct wiring mistakes**
- **TrueStart II Installation Tool makes troubleshooting easier and reduces the time needed to verify wiring and appliance installation**

### Smarter, simpler installation significantly reduces labor and wiring costs.

Addressable technology revolutionized fire detection systems. Today, Simplex and Tyco are bringing that same revolutionary approach to the notification systems that warn building occupants of a fire or other emergency. Introducing Simplex TrueAlert ES, our new family of intelligent, addressable notification appliances.

Every aspect of notification, from design and installation to maintenance, testing and expansion, has been thoroughly redesigned to deliver better protection, maximum ease of use and lower operating costs. Contractors in particular will realize significant benefits to make jobs easier—and more profitable.

### Efficient installation

Due to the nature of the technology, the wiring for conventional notification systems is restrictive and rather inflexible.

In contrast, TrueAlert ES addressable devices are easier and more cost-effective to install. Several innovations make this possible:

- Flexible wiring architecture offers more forgiveness, so more appliances can be connected per circuit.
- This new wiring architecture also means fewer power supplies, batteries and dedicated AC lines are required.
- Devices can be installed with smaller gauge, unshielded wiring. The ability to use smaller conduit further reduces materials costs per job.



## ➔ TrueStart II Installation Tool

Simplex has also simplified testing during installation. Our new TrueStart II Installation Tool has been specifically designed for addressable circuit wiring, which makes testing and commissioning of fire alarm circuits and devices easy. With TrueStart II, you can...

- Test all panel circuits for wiring faults
- Identify wiring problems, such as shorts, grounds and cross talk
- Report device counts, device types and errors
- Reduce commissioning time and total labor costs

The device is battery operated, rechargeable and easily portable. Plus, all test results can be downloaded from the device to a PC.

### Benefits for your clients, too

TrueAlert ES is service-ready, meaning each appliance can be tested remotely, which saves building owners a lot of time, manpower and compliance headaches.

TrueAlert ES appliances also provide better protection because they are electronically supervised—24 hours a day, 7 days a week—by a Simplex 4100ES fire alarm control panel. This gives building owners the confidence of knowing the notification appliances are always operational and ready to perform in an emergency.

The entire TrueAlert ES system is reliable, cost-effective and highly scalable, so it can grow as life-safety needs evolve.

With smarter installation, less cost for you and more convenience for your clients, TrueAlert ES is the best choice for your business. That's notification reinvented.

