

Features

Master Controller (top) bay standard equipment:

- 32-Bit Master Controller with color-coded operator interface and raised switches for high confidence feedback
- Dual configuration program CPU, convenient service port access, and capacity for up to 2500 addressable points
- CPU assembly includes 2 GB dedicated compact flash memory for on-site system programming and information storage
- An Enhanced Power Supply (EPS+) and battery charger (9 A total) with on-board *IDNAC* SLCs (signaling line circuit) for addressable appliance control, *IDNet 1+* isolated addressable device control channel, and programmable function auxiliary output
- Also available with InfoAlarm Command Center expanded content user interface (see data sheet S4100-0045)

Standard addressable device interfaces include:

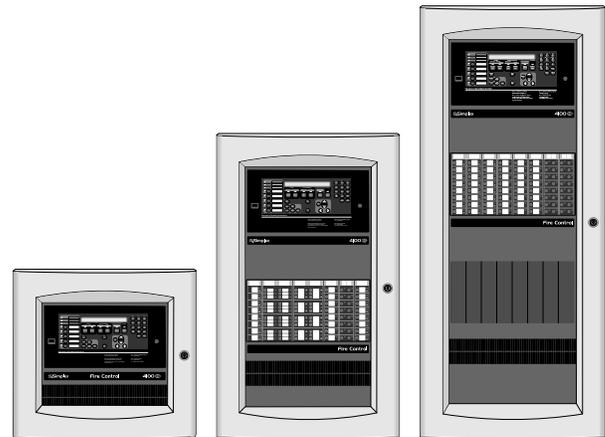
- IDNet 1+ 250 point addressable device SLC supports TrueAlarm analog sensors and IDNet communications monitoring and control devices, and *operates with isolated output* for use with either shielded or unshielded, twisted or untwisted single pair wiring
- MINIPLEX Transponder and remote LCD and LED annunciator support via RUI+ (remote unit interface) communications port *with isolated output* for use with either shielded or unshielded, twisted or untwisted single pair wiring

Standard EPS+ power supplies provide enhanced power delivery IDNAC SLCs to addressable notification appliances:

- With IDNAC SLCs, a *constant* 29 VRMS source voltage is maintained, even during battery standby, allowing strobes to operate at higher voltage with lower current and ensuring a consistent current draw and voltage drop margin under both primary power and secondary battery standby
- Efficiencies include lower strobe currents, wiring distances up to 2 to 3 times farther than with conventional notification, support for more appliances per IDNAC SLC, ability to use smaller gauge wiring, all providing installation and maintenance savings with high assurance appliances that operate during normal system testing will operate during worst case alarm conditions
- IDNAC SLCs are compatible with both TrueAlert ES and TrueAlert addressable notification appliances, and remote 4009 IDNAC Repeaters to extend power and wiring distance even farther

Optional modules and connections include:

- Fire Alarm Network Interfaces, city connections, and up to five (5) RS-232 ports for printers and terminals
- Building Network Interface Module (BNIC) for Ethernet connectivity options (see data sheet S4100-0061)
- Side mounted DACT assembly requiring minimal panel space; DACT is compatible with IP Communicators
- Emergency communications systems (ECS) equipment; 8 channel digital audio or 2 channel analog audio



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

Option Modules (Continued)

- Additional IDNet 1+ addressable device communications modules and IDNet+ quad output isolator modules; additional power supplies, alarm relays, and auxiliary relays
- LED/switch modules and panel mount printers; VESDA Air Aspiration Systems interface, ASHRAE BACnet Interface, TCP/IP Bridges
- Battery brackets for seismic area protection (see page 2)
- 4100ES compatible legacy interface modules, including control of conventional (non-addressable) NACS (see data sheet reference list on page 8)

4100ES Listings reference:

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

Software Feature Summary

CPU provides dual configuration programs:

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

PC based programmer features:

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

* See pages 7 and 8 for product that is UL or ULC listed and additional listing information. This product has been listed by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7165-0026:0251 for allowable values and/or conditions concerning material presented in this document. 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.

Introduction

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

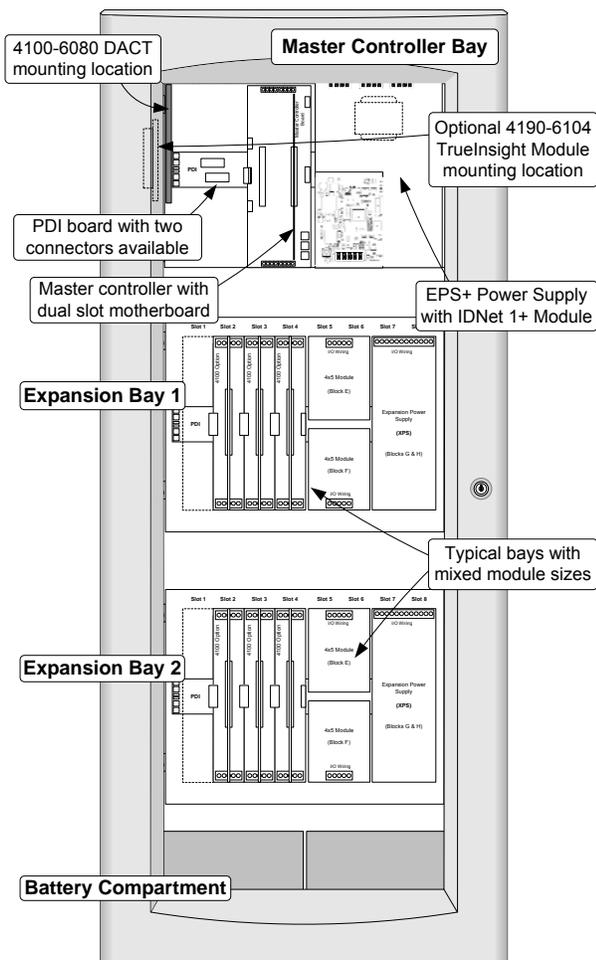
Modular design. A wide variety of functional modules are available to meet specific system requirements. Selections allow panels to be configured for either Stand-Alone or Networked fire control operation.

Module Bay Description

The Master Controller Bay (top) includes a standard multi-featured enhanced power supply (EPS+), the master controller board, two vertical expansion blocks, and operator interface equipment.

The Expansion Bays include a Power Distribution Interface (PDI) for connection of single or multiple block modules, and/or slot style (motherboard/daughter card) modules.

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



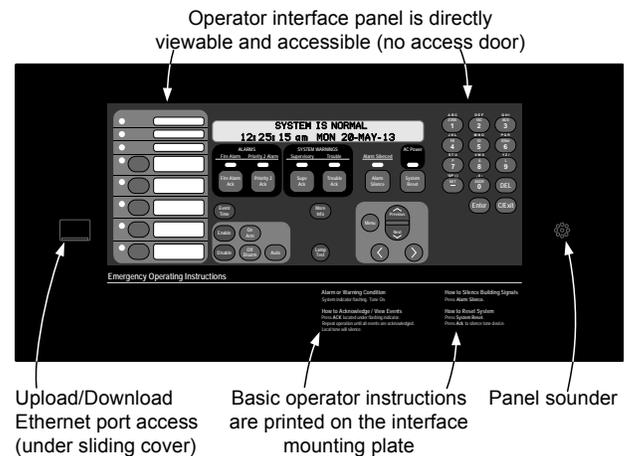
4100ES Module Placement Reference in 3-Bay Cabinet

Mechanical Description

- Boxes can be close-nipped; each box provides convenient stud markers for drywall thickness and nail-hole knockouts for quicker mounting
- Smooth box surfaces are provided for locally cutting conduit entrance holes exactly where required
- Cabinet assembly design has been seismic tested and is certified to IBC and CBC standards as well as to ASCE 7-05 category D, requires battery brackets as detailed on data sheet S2081-0019
- The latching front panel assembly easily lifts off for internal access
- Modules are power-limited (except as noted, such as relay modules)
- The NEMA 1 box is ordered separately and available for early installation
- Doors are available with tempered glass inserts or solid; boxes and doors are available in platinum or red
- Boxes and door/retainer assemblies are ordered separately per system requirements; refer to data sheet S4100-0037

Operator Interface Detail Reference

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



Software Feature Summary

- **“Install Mode”** allows grouping of multiple troubles for uninstalled modules and devices into a single trouble condition (typical with future phased expansion); with future equipment and devices grouped into a single trouble, operators can more clearly identify events from the commissioned and occupied areas
- Module level ground fault searching assists installation and service by locating and isolating modules with grounded wiring
- **“Recurring Trouble Filtering”** allows the panel to recognize, process, and log recurring intermittent troubles (such as external wiring ground faults), but only sends a single outbound system trouble to avoid nuisance communications
- WALKTEST silent or audible system test performs an automatic self-resetting test cycle
- Support for TrueAlarm individual analog sensing and IDNAC addressable notification with front panel information and selection access

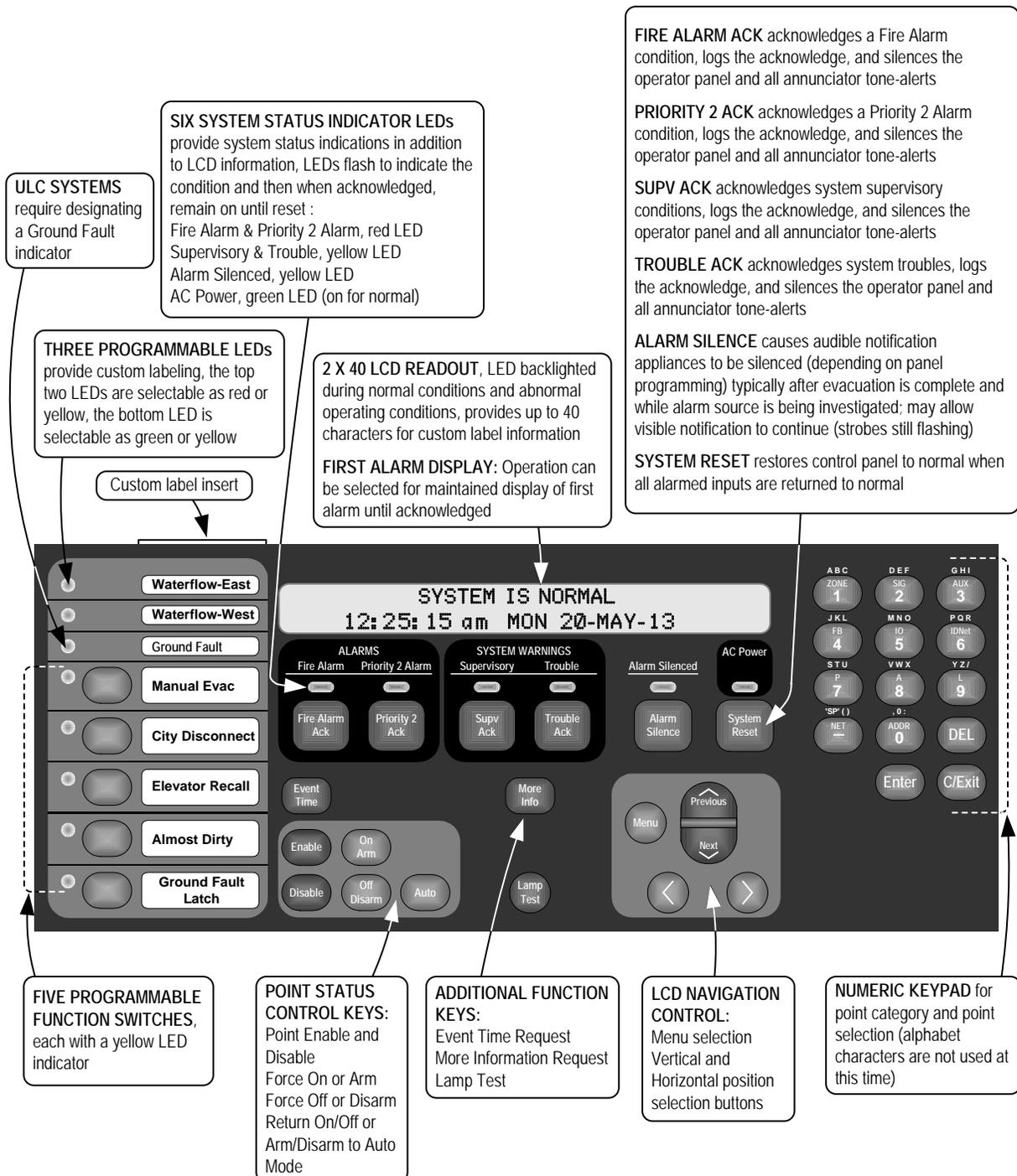
Operator Interface

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

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

Operator Interface Features

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



IDNet Addressable Device and IDNAC Addressable Notification Appliance Control

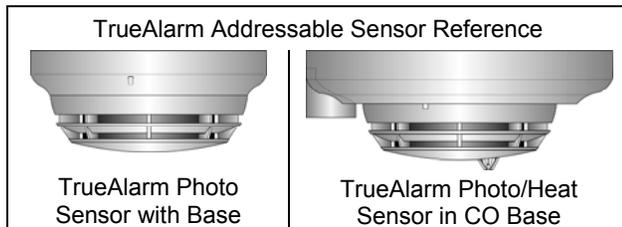
Overview. The 4100ES with EPS+ power supplies provides IDNet 1+ addressable initiating device and IDNAC addressable notification appliance Signaling Line Circuits (SLCs) that supervise wiring connections and the individual device/appliance communications status on their SLC. With these 2-wire SLCs, initiation, monitoring, and control devices such as manual fire alarm stations, TrueAlarm sensors, control relays, and sprinkler waterflow switches; and notification appliances such as strobes and horns can communicate their identity and status and receive fire alarm system control. Additional interface modules include circuit isolators, conventional IDC zone adapters, and interface to other system circuits such as fans, dampers, and elevator controls.

IDNet Addressable Device Operation

Each addressable device on the IDNet 1+ communication channel is continuously interrogated for status condition such as: normal, off-normal, alarm, supervisory, or trouble. Both Class B and Class A operation is available. Sophisticated poll and response communication techniques ensure supervision integrity and allow for "T-tapping" of the circuits for Class B operation. Devices with LEDs pulse the LED to indicate receipt of a communications poll and can be turned on steady from the panel. With addressable devices, the location and status of the connected device is monitored and logged, and displayed on the operator interface LCD and on remote system annunciators with each device having its own 40 character custom label for precise identification.

TrueAlarm Addressable Sensor Operation

Addressable initiating device communications include operation of TrueAlarm smoke and temperature sensors. Smoke sensors transmit an output value based on their smoke chamber condition and the CPU maintains a current value, peak value, and an average value for each sensor. Status is determined by comparing the current sensor value to its average value. Tracking this average value as a continuously shifting reference point filters out environmental factors that cause shifts in sensitivity.



Programmable sensitivity of each sensor can be selected at the control panel for different levels of smoke obscuration (shown directly in percent) or for specific heat detection levels. To evaluate whether the sensitivity should be revised, the peak value is stored in memory and can be easily read (or downloaded as a report) and compared to the alarm threshold directly in percent.

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

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

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

Diagnostics and Default Device Type

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

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

IDNet Addressable Device Wiring Reference

IDNet 1+ Addressable Channel Capacity. The CPU bay system power supply (EPS+) provides an IDNet 1+ signaling line circuit (SLC) that supports up to 250 addressable monitor and control points intermixed on the same pair of wires. Additional 250 address IDNet 1+ circuit modules are available.

IDNet 1+ SLC Wiring Specifications

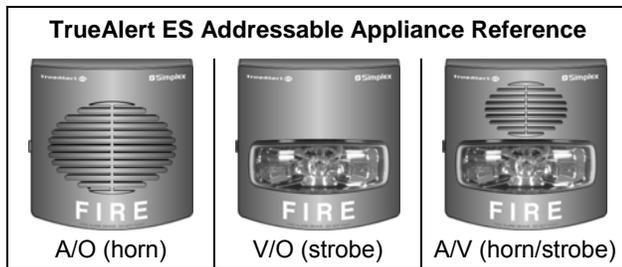
Maximum Distance from Control Panel per Device Load	0 to 125	4000 ft (1219 m); 50 ohms
	126-250	2500 feet (762 m); 35 ohms
Total Wire Length Allowed With "T" Taps for Class B Wiring	Up to 12,500 ft (3.8 km); 0.60 µF	
Maximum Capacitance Between IDNet+ Channels	1 µF	
Wire Type and Connections	Shielded or unshielded, twisted or untwisted wire*	
Connections	Terminal blocks for 18 to 12 AWG	
Installation Instructions (see for more information)	579-1014	

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

IDNAC SLC Control of TrueAlert and TrueAlert ES Addressable Notification

Addressable notification appliance communications include operation of TrueAlert and TrueAlert ES Visible only (V/O, strobe), Audible only (A/O, horn), Audible/Visible (A/V, horn/strobe), and strobes of Speaker/Visible (S/V) notification appliances. (S/V appliances require separate speaker wiring.) IDNAC SLC addressable communications allow each horn and strobe to be individually controlled using a single two-wire circuit, confirms the wiring connections to the individual notification appliance's electronic circuit, and confirms communications between each appliance and the fire alarm control panel. Addressable communications increases supervision integrity versus conventional notification systems by providing supervision beyond the circuit wiring to each individual appliance and by constantly verifying the ability of each appliance to communicate with the control panel.

Individual Appliance Status and Settings. Each addressable notification appliance is polled by the control panel to verify its ability to communicate. The fire alarm control panel monitors each addressable notification appliances for its status, condition, type of appliance, and configured appliance settings. A fault in any individual appliance automatically reports a trouble condition to the control panel.



Location Information, Diagnostics, and Troubleshooting. Each addressable notification appliance has its own 40 character custom label to identify the location of the appliance and to aid in troubleshooting fault conditions. In conventional notification systems, conventional appliances are not capable of communicating with the control panel. Fault reporting on a conventional system is limited to the circuit wiring and the entire area (zone) covered by appliances on the notification appliance circuit (NAC) making it much more difficult and costly to locate and correct the source of a problem.

Tracking Appliance Details. The 4100ES with IDNAC SLCs provides intelligent addressable communications that allow detailed information associated with each addressable notification appliance to be reported to the fire alarm control panel for diagnostics and troubleshooting. Detailed information available includes; the appliance location, status, condition, type of appliance, and configured appliance settings.

New Installation, Retrofit, and Life-Cycle Cost Benefits. With each addressable appliance capable of being controlled separately on the same two-wire SLC, installation time and expense for both retrofit and new construction can be significantly reduced. When Class B wiring is used, wiring can be "T-tapped", allowing more savings in distance, wire, conduit (size and utilization), and overall installation efficiency.

Panel Control Convenience. Applicable operation settings for each appliance can be programmed *without having to replace appliances or remove them from the wall or ceiling*. An appliance's notification zone can be easily changed through programming without having to add additional circuits, conduit, and wiring. Audible and visible appliances for non-Fire Emergency Communications notification can be programmed to operate separately *on the same pair of wires as the fire alarm notification appliances*. The result is lower installation, retrofit, and overall life-cycle cost of ownership compared with traditional conventional notification systems.

IDNAC SLC Hardware Reference

EPS+ and EPS Power Supplies provide three, 3 A IDNAC SLCs for control and power to TrueAlert ES and TrueAlert addressable notification appliances. Both power supplies incorporate an efficient switching design that provides a regulated output of 29 VRMS, even during battery operation. With 29 VRMS minimum output at the panel, addressable notification SLCs can support wiring distances 2 to 3 times farther than available with conventional notification, or support more appliances per SLC, or work with smaller gauge wiring, or combinations of these benefits, all resulting in installation and maintenance savings with high assurance appliances that operate during normal system testing will operate during worst case alarm conditions.

Virtual NACs Provide Control Convenience. For control convenience, IDNAC notification appliances can be grouped into *Virtual NACs* for group control, grouping that can be made across SLCs, not defined by their wiring connection.

IDNAC SLC Appliance Wiring Reference

Recommended wire type	UTP, unshielded twisted pair
IDNAC SLC Capacity	Up to 63 addresses and up to 75 unit loads (appliances are typically one unit load, devices such as Isolators may require more than one load, refer to individual device data sheet for specific information)
Maximum wire length allowed with "T-Taps" for Class B wiring, per SLC	10,000 ft (3048 m)
Maximum wire length per SLC to any appliance	4000 ft (1219 m)
Maximum wiring resistance between appliances	26 Ω
Wiring connections	Terminal blocks for 18 to 12 AWG
Installation Instructions (see for more information)	579-1015

CPU Bay Module Details

Master Controller and Motherboard:

- Mounts in Slot 2 of a two slot motherboard and provides one Style 4 or Style 7, RUI+, isolated communications channel with earth fault detection
- RUI+ isolated communications controls up to 31 devices per master controller at up to 2500 ft (762 m) for single run, or 10,000 ft (3048 m) total if wiring is Class B and T-tapped; if more distance is required, up to four total RUI channels are supported; add up to three 4100-1291 RUI expansion modules (4100-1291 provides unisolated RUI communications)
- RUI remote equipment includes: MINIPLEX transponders, 4603-9101 LCD Annunciators, 4602-9101 Status Command Units (SCU), 4602-9102 Remote Command Units (RCU), 4602 Series LED Annunciator Panels, 4100 Series 24 I/O and LED/Switch modules
- Open slot space on the left of the CPU motherboard is available for either another dual slot motherboard, or for one or two block modules (refer to diagram on page 2)
- Slot 1 of the motherboard is primarily for the 4100-6078 Network Interface Board with media modules

EPS+ Power Supply: (see page 9 for more detail)

- Rating is 9 A total with “Special Application” appliances
- Outputs are power-limited, except for the battery charger
- Provides system power, battery charging, auxiliary power, auxiliary relay, earth detection, on-board IDNet 1+ communications channel for 250 points, three on-board 3 A IDNAC SLCs, and provisions for either an optional City Connect Module or an optional Alarm Relay Module
- **IDNet 1+ SLC Output** provides Class B or Class A communications for up to 250 addressable devices (as described on page 4)
- **DCAI (Dual Class A IDNAC Isolator)** module creates two Class A outputs from one IDNAC SLC Class B Input; up to two can be connected to one IDNAC SLC, with up to 6 total per EPS; total Class A output loop current is limited to the 3 A rating of the IDNAC SLC

EPS+ Power Supply (Continued):

- **Battery Charger** is dual rate, temperature compensated, and charges up to 50 Ah sealed lead-acid batteries mounted in the battery compartment (33 Ah for single bay cabinets); also is UL listed for charging up to 115 Ah batteries mounted in an external cabinet (see data sheet S2081-0012 for details)
- **Battery and Charger Monitoring** includes battery charger status and low or depleted battery conditions; status information provided to the master controller includes analog values for: battery voltage, charger voltage and current, actual system voltage and current, and individual IDNAC SLC currents
- **Low Battery Cutout** is selectable for each EPS+ (and EPS) power supply, Canadian models are shipped selected, other models are shipped unselected

2 A Programmable Output:

- Select for conventional non-synchronous NAC operation to provide supervised reverse polarity for sounder base power, Suppression Release Peripheral (SRP) power, or other coded NAC operation requirements
- Select for Auxiliary (AUX) operation for sounder base power, 4-wire detector power, or door holder; supervised AUX operation does not require an end-of-line relay to provide Power-Limited operation

EPS+ Power Supply Mounted Optional Modules (select one):

- **City Connect Module** (4100-6031, with disconnect switches, or 4100-6032, without disconnect switches) can be selected for conventional dual circuit city connections
- **Alarm Relay Module** (4100-6033) provides three Form C relays that are used for Alarm, Trouble, and Supervisory, rated 2 A resistive @ 32 VDC

Master Controller Selection Information

Master Controller and Expansion Bay Selection

Model	Model Type and Listing		Description	Current	
4100-9311	120 VAC, 50/60 Hz Input		4100ES Master Controller Assembly with LCD and operator interface , 9 A EPS+ Enhanced Power Supply/battery charger with 250 point IDNet 1+ interface, 3 Class B IDNAC SLCs, RUI+ isolated output communications interface, and one output configurable for Auxiliary or simple NAC operation	Without IDNet devices: Supervisory = 217 mA Alarm = 480 mA	
4100-9312	English	120 VAC, 50/60 Hz Canadian			ULC
4100-9313	French				
4100-9511	220-240 VAC, 50/60 Hz Input		4100ES Master Controller Assembly, No Display, No Operator Interface , 9 A EPS+ Enhanced Power Supply/battery charger with 250 point IDNet 1+ interface, 3 Class B IDNAC SLCs, RUI+ isolated output communications interface, and one output configurable for Auxiliary or simple NAC operation	With 200 IDNet devices and 20 device LEDs in alarm: Supervisory = 417 mA Alarm = 770 mA	
4100-9331	120 VAC, 50/60 Hz input		4100ES Master Controller Assembly, No Display, No Operator Interface , 9 A EPS+ Enhanced Power Supply/battery charger with 250 point IDNet 1+ interface, 3 Class B IDNAC SLCs, RUI+ isolated output communications interface, and one output configurable for Auxiliary or simple NAC operation	Without IDNet devices: Supervisory = 217 mA Alarm = 480 mA	
4100-9332	120 VAC, 50/60 Hz input, Canadian, English				
4100-2300	Expansion Bay Assembly; order for each required expansion bay				
4100-2303	Slot Module Stabilizer Bracket, used when expansion bays have style modules				

(Continued on next page)

Module Selection Information

Communication Modules

Model	Description	Size	Supv.	Alarm	
4100-6078	For Master Controller; mounts in Slot 3	Modular Network Interface; each requires two media modules (below)	1 Slot	46 mA	46 mA
4100-6061	For Redundant Master Controller		1 Slot	46 mA	46 mA
4100-6056	Wired Media Module	Select two media cards as required; mounts on 4100-6078 or 4100-6061	N.A.	55 mA	55 mA
4100-6057	Fiber Optic Media Module		N.A.	25 mA	25 mA
4100-6047	Building Network Interface Card (BNIC), refer to data sheet S4100-0061 for details	2 Blocks	291 mA	291 mA	
4100-6055	Network Access Dial-in Service Modem, mounts to 4100-6078 or 4100-6061 Network Interface Card, requires telephone line connection	N.A.	60 mA	60 mA	
4100-1291	Remote Unit Interface Module (RUI, unisolated); up to 3 maximum per control panel	1 Slot	85 mA	85 mA	
4100-6031	Select one per EPS+ or EPS	City Circuit, with disconnect switches	N.A.	20 mA	36 mA
4100-6032		City Circuit, w/o disconnect switches	N.A.	20 mA	36 mA
4100-6033		Alarm Relay, 3 Form C relays, 2 A @ 32 VDC	N.A.	15 mA	37 mA
4100-6046	Dual Port RS-232 standard interface (single block)	3 maximum RS-232 modules per panel	1 Block	60 mA	60 mA
4100-6038	Dual Port RS-232 with 2120 interface (slot module)		1 Slot	132 mA	132 mA
4100-6079	SafeLINC Internet Interface (refer to data sheet S4100-0062 for details)	2 Blocks	145 mA	145 mA	
4190-6104	TrueInsight Remote Monitoring Module (refer to data sheet S4100-0063 for details)	Side Mt.	62 mA	73 mA	
4100-6101	Physical Bridge, Class B, includes 1 modem module and 2 wired modules	1 Slot	210 mA	210 mA	
4100-6102	Physical Bridge, Class X, includes 2 modem and 2 wired modules	2 Slots	300 mA	300 mA	
4100-6048	VESDA Aspiration System Interface	1 Slot	132 mA	132 mA	
4100-6080	DACT, Point or Event Reporting; 1 shipped unless 4100-7908 is selected; 2 max. per system; includes 2, 2080-9047 cables, 14 ft (4.3 m) long, RJ45 plug and spade lugs	Side Mt.	30 mA	40 mA	

Additional Enhanced Power Supplies, Expansion and Remote Power Supplies, and Accessories

Model	Voltage/Listing	Description	Size	Supv.	Alarm
4100-5311	120 VAC	Additional Enhanced Power Supply (EPS+); 9 A Enhanced Power Supply/battery charger with 250 point IDNet 1+ interface, 3 Class B IDNAC SLCs, RUI+ isolated output communications interface, and auxiliary relay; 120 VAC model has selectable low battery cutout	4 Blocks Right Side	217 mA	480 mA with 200 IDNet devices and 20 device LEDs in alarm
4100-5313	220-240 VAC				
4100-5325	120 VAC	Enhanced Power Supply (EPS); 9 A Enhanced Power Supply/battery charger with 3 Class B IDNAC SLCs, RUI+ isolated output communications interface, and auxiliary relay; 120 VAC model has selectable low battery cutout	4 Blocks Right Side	125 mA	220 mA
4100-5327	220-240 VAC				
4100-6103		Dual Class A IDNAC Isolator (DCAI), converts a single Class B IDNAC SLC input to two Class A or two Class B SLC outputs; provides short circuit isolation between each Class A or B output circuit; connect up to two DCAI modules per IDNAC SLC input up to a maximum of 6 DCAI modules per EPS; each isolated output SLC used requires one IDNAC address; the total current remains controlled by the Class B input source SLC at 3 A maximum	1 Block	6.5 mA	6.5 mA
4100-5152	12 VDC Power Option, 2 A maximum		1 Block	1.5 A maximum	
4100-0156	8 VDC Converter, required for multiple Physical Bridge Modules, 3 A maximum		1 Block	included w/loads	
4100-0636	Box Interconnection Harness Kit (non-audio); order one for each close-nipped cabinet				
4100-0638	4100 Slot Module Additional 24 VDC Harness; need when 4100 Slot module requirements exceed 2 A from EPS				

Module Selection is continued on next page

Additional 4100ES Data Sheet and Related Product Reference

Subject	Data Sheet	Subject	Data Sheet
Introducing the 4100ES	S4100-0060	Fire Alarm Network Overview	S4100-0055
4100ES Enclosures	S4100-0037	Network Communications	S4100-0056
4100ES Audio and Firefighter Phone Modules	S4100-0034	Network Display Unit (NDU)	S4100-0102
LED/Switch Modules & Printer	S4100-0032	Addressable Device Compatibility	S4090-0011
Remote Annunciators	S4100-0038	4009 IDNAC Repeater	S4009-0004
MINIPLEX Transponders	S4100-0103	IDNet+ Module w/Quad Isolator	S4100-0046
Building Network Interface (BNIC)	S4100-0061	Remote Battery Charger	S4081-0002
InfoAlarm Command Center	S4100-0101	TFX Interface Module	S4100-0042
Graphic I/O Modules	S4100-0005	SafeLINC Internet Interface	S4100-0062
TrueInsight Remote Service	S4100-0063	4100ES Panels for Conventional Notification	S4100-0031
Agent Release Applications	S4100-0040	TrueAlarm Sensors	S4098-0019
TrueAlert ES Audible Only Appliances	S49AO-0001	TrueAlert ES Audible/Visible Appliances	S49AV-0001
TrueAlert ES Visible Only Appliances	S49VO-0001	TrueAlert ES Weatherproof Appliances, UL Listed	S49WP-0001
TrueAlert Appliance/IDNAC SLC Isolator	S4905-0001	TrueAlert ES Weatherproof Appliances, ULC Listed	S49WP-0002

Module Selection Information (Continued)

Addressable Interface Modules (refer to location reference on pages 9 and 10)

Model	Description	Supv.	Alarm	
4100-3108	IDNet 1+ Module, 250 point capacity with isolated output, 1 block	With 250 IDNet devices, and 20 device LEDs in alarm	292 mA	510 mA
		Module without devices	92 mA	115 mA
		Loading per IDNet device (no LEDs on)	0.8 mA	1 mA
4100-3107	Quad IDNet Isolator Module; converts a single connected SLC into four isolated outputs selectable as Class A or Class B, provides advanced diagnostics for use with retrofit wiring; dual horizontal block module; (see data sheet S4100-0046 for additional details) NOTE: This module is compatible with IDNet Remote Isolators	75 mA	115 mA	

Relay Modules; Nonpower-limited (for mounting in expansion bay only, refer to location reference on pages 9 and 10)

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

Current Calculation Notes:

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

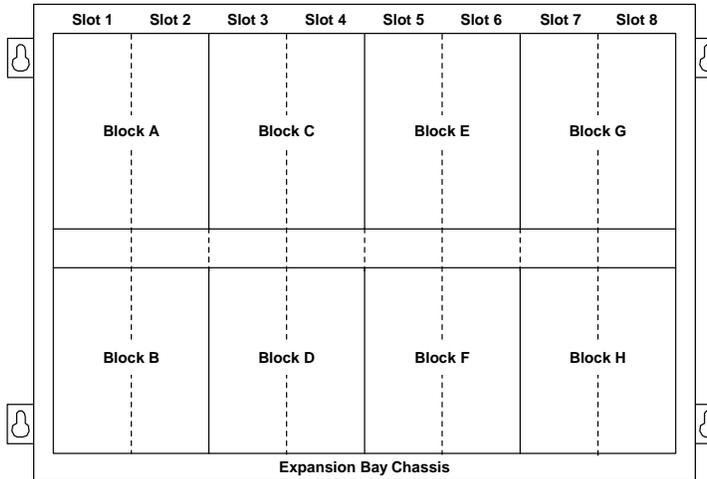
Miscellaneous Accessories

Model	Description
4100-1279	Single blank 2" display cover; 4100-2302 provides a single plate for a full bay
4100-9835	Termination and Address Label Kit (for module marking); provides additional labels for field installed modules
4100-6029	Smoke Management Application Guide; required for UUKL listing
4100-6034	Tamper Switch, one per cabinet assembly if required; monitors solid door for panels with solid door; monitors the internal retainer panel for panels with glass door (not the glass door); has a built-in addressable IDNet IAM
2081-9031	Series resistor for WSO, IDCs (N.O. water flow and tamper on same circuit, wires after water flow and before tamper) 470 Ω, 1 W, encapsulated, two 18 AWG leads (0.82 mm ²), 2-1/2" L x 1-3/8" W x 1" H (64 mm x 35 mm x 25 mm)

General Specifications

Input Power	Enhanced Power Supplies, EPS/EPS+	120 VAC Models	4.6 A maximum @ 102 to 132 VAC, 50/60 Hz
		220-240 VAC Models	2.3 A maximum @ 204 to 264 VAC, 50/60 Hz; separate taps for 220/230/240 VAC
Power Supply Output Ratings for EPS/EPS+	Total Power Supply Output Rating	Including module currents and auxiliary power outputs; 9 A total for "Special Application" appliances	
	IDNAC SLC Ratings	3 A, regulated 29 VRMS, 63 addresses, 75 unit loads	
	Auxiliary Power Tap	2 A maximum, 24 VDC nominal (19.5 to 31.1 VDC)	
Compatible Special Application Appliances		Simplex TrueAlert ES and TrueAlert addressable notification appliances; contact your Simplex product representative for compatible appliances	
Battery Charger Ratings for EPS/EPS+ (sealed lead-acid batteries)	Battery capacity range	UL listed for battery charging of 6.2 Ah up to 115 Ah (batteries larger than 50 Ah require a remote battery cabinet); ULC listed for charging up to 50 Ah batteries	
	Charger characteristics and performance	Temperature compensated, dual rate, recharges depleted batteries within 48 hours per UL Standard 864; to 70% capacity in 12 hours per ULC Standard S527	
Environmental	Operating Temperature	32° to 120°F (0° to 49° C)	
	Operating Humidity	Up to 93% RH, non-condensing @ 90° F (32° C) maximum	
Additional Technical Reference	Description	Document	
	ES Installation Instructions	574-848	
	ES Operating Instructions	579-197	
	IDNet 1+ Module Installation Instructions	579-1014	
	EPS/EPS+ Installation Instructions	579-1015	
	DCAI Module Installation Instructions	579-1029	

Expansion Bay Module Loading Reference

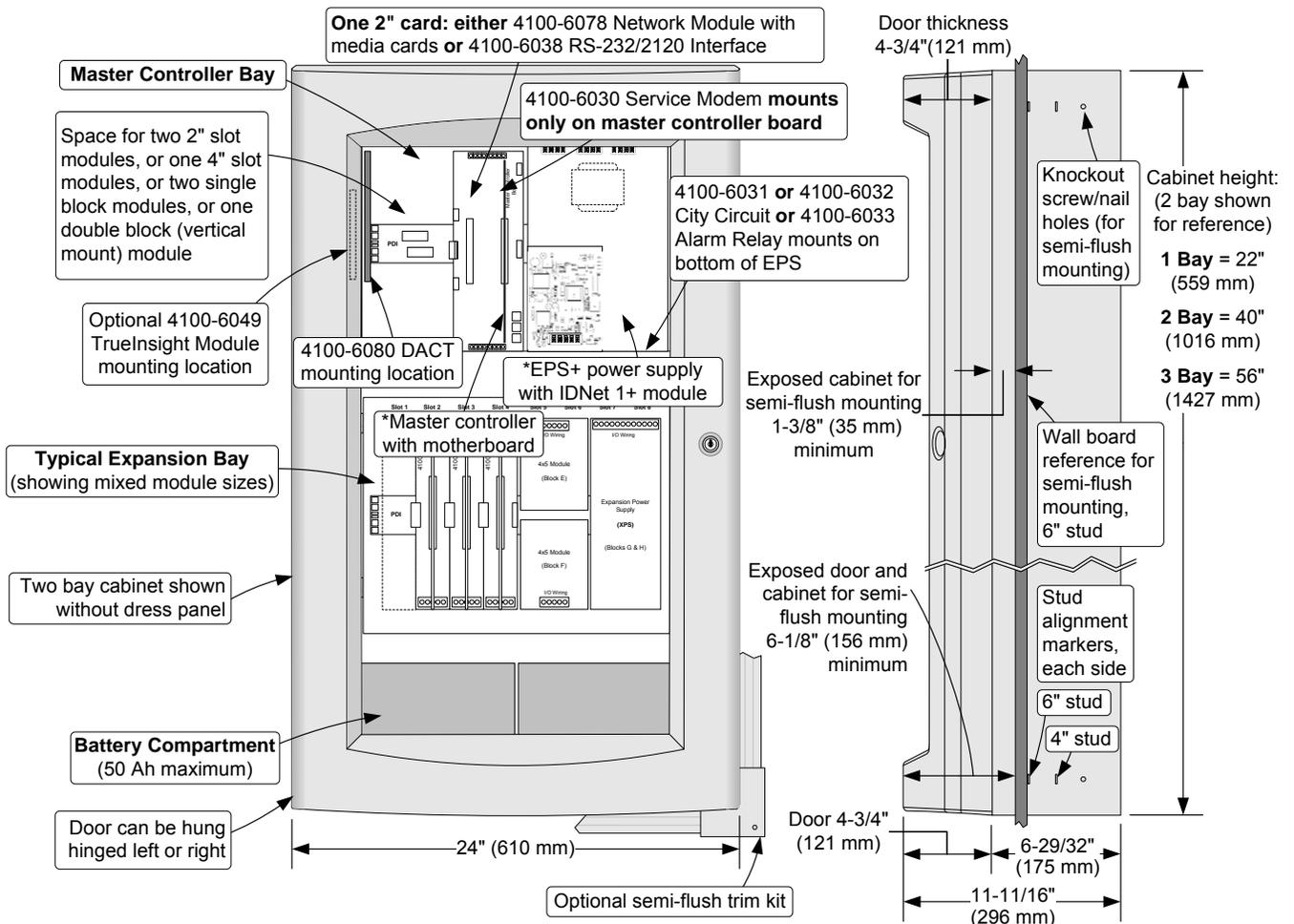


Size Definitions:

1 **Block** = 4" W x 5.65" H (102 mm x 144 mm); (often called x 5 modules)

1 **Slot** = 2" W x 11.3" H (51 mm x 287 mm), typically a motherboard with daughter card

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



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

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www.simplexgrinnell.com

S4100-0100 5/2013

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Features

Auto-aligning reflective beam smoke detector system with on-board IDNet addressable communications:

- Compatible with Simplex® 4100ES and 4010ES fire alarm control panels
- Simplex addressable beam smoke detectors add IDNet communications to the proven FireRay 5000 Series beam smoke detection system
- Communicates status information, and receives commands and sensitivity threshold selection from the host fire alarm control panel

Photoelectric transmitter and receiver are combined in a single, compact housing:

- Connect up to two remote detector heads to one ground level controller
- An infrared beam is reflected from a matching prism with the reflected light analyzed by an on-board microprocessor
- Operating range covers 26 ft, 3 inches to 330 ft (8 m to 100 m)
- Modular design with *easyfit* mounting system and LASER assisted prism mounting provides convenient mounting and adjustment
- *Auto-Align* beam alignment operation conveniently rotates beam to align to the prism center during installation
- *AutoOptimize* operation automatically maintains alignment for reliable operation
- Listed to UL 268 and ULC-S529

On-board microprocessor controlled operation includes:

- Ground level system controller with LCD
- Operating voltage range of 14 to 36 VDC
- Easy setup and alignment with built-in electronic UL/ULC obscuration acceptance test selectable from host control panel
- Automatic gain control; contamination compensation, building shift compensation with control and monitoring of alignment motors, and ability to change delay to Fire and delay to Fault timings

Host fire alarm control panel operations include:

- Sensitivity selection from 10% to 60% (35% default)
- Point type selection (fire, latched supervisory, or utility) and set Almost Dirty threshold
- Initiate obscuration test, Reset latched conditions, Enable/Disable, and control of beam head LED

Host fire alarm control panel information received includes:

- Smoke status, controller-to-detector communications status, rapid obscuration status (beam blocked), self-alignment status, almost dirty, excessively dirty, and summary (general) trouble status
- Analog values for signal strength and compensation level (see page 2 for more information)



Addressable Beam Detector Head



Addressable Beam Control Station

Applications:

- Large open areas such as warehouses, hotel atriums, industrial plants, and school gymnasiums
- Public areas where cosmetics are of prime importance and detector heads need to be small and unobtrusive (shopping malls, libraries, theaters, and churches)

Optional Accessories:

- Detector: adjustment bracket, back box, and cover plate
- Controller back box
- Extended prism mounting options

Description

Convenient Installation and Alignment. Simplex addressable beam smoke detection provides the proven FireRay 5000 system features of auto-aligning infrared beam smoke detection combined with IDNet addressable communications. Once the detector head is installed using the *easyfit* mounting system, an integral laser can be activated that is aligned along the optical path of the infrared beam, allowing the reflective prism to be quickly located. The *Auto-Align* beam alignment feature then allows the reflective prism to be located quickly and accurately.

* 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 7260-0026:377 for allowable values and/or conditions concerning material presented in this document. 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.

Description (Continued)

AutoOptimise Beam Alignment. The *AutoOptimise* beam alignment system automatically steers and maintains the beam in the optimum position for reliable performance. The signal is generated in the transmitter element and reflected by the prism back to the receiver element, then analyzed for the presence of smoke. The beam control station determines an alarm condition when the predetermined level is reached. Alarm threshold levels are set from the host fire alarm control panel. Time to Fire and time to Fault are set at the beam control station.

Mounting Reference. The maximum distance of the Detector and Reflector from the ceiling must be 10% of the distance between floor and ceiling. Lateral detection may be up to 30 ft (9.144 m) on either side of the beam, providing a maximum total coverage area of up to 19,800 square feet (60 ft x 330 ft or 18.29 m x 100 m).

Refer to the Installation Instructions supplied with the product and to NFPA 72, the *National Fire and Signaling Code* for additional installation guidance.

Communications to the host control panel. The host fire alarm control panel receives status and numerical information from the beam controller to allow remote investigation of the beam head(s). The beam controller receives commands and the Smoke and Almost Dirty threshold levels are set from the host control panel.

Numerical information received includes: Signal Strength in % (to compare to alarm threshold level set by host control panel) and Compensation Level (indication of beam status and dirt accumulation).

Application Note. Reflective beam smoke detectors may not be suitable for areas with highly reflective surfaces. Separate transmitter/receiver models may be required. Refer to NFPA 72 and contact your Simplex product representative for additional applications guidance.

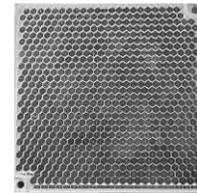
Accessory Reference (not shown to scale)



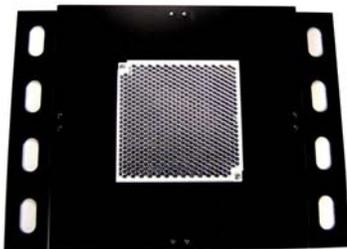
Beam Detector on
5000-005 Alignment Bracket



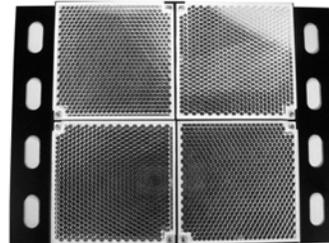
Beam Detector on 5000-011 Uni-Box



23901 Prism Reflector



One Prism on
5000-006 Mounting Bracket



Four Prisms on
5000-006 Mounting Bracket



5000-008 Single Prism Adapter
on a 5000-005 Alignment Bracket



5000-201 Adjustment Bracket



5000-007 Four Prism Adapter
on 5000-005 Alignment Bracket

Product Selection and Ordering Information

Addressable Beam Detector Selection

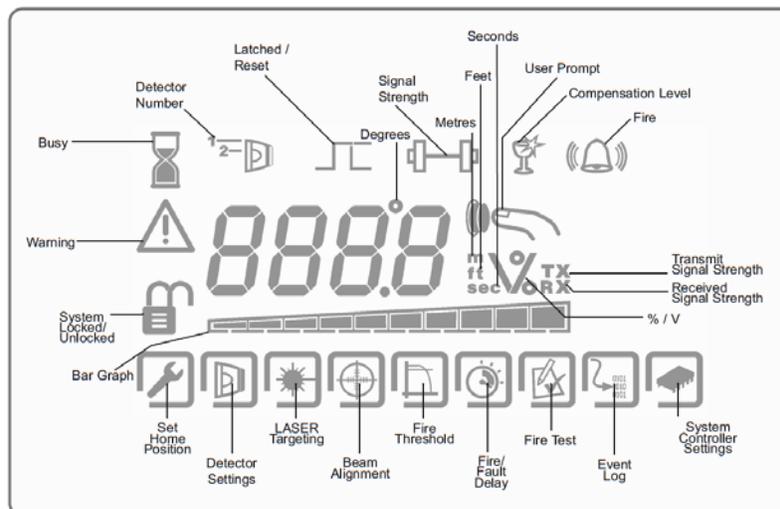
Model	Description	Dimensions
4098-9019	IDNet Communications Addressable Reflective Auto Align Beam Smoke Detector System; Includes: one 4098-9020 controller, one 5000-031 detector head, and one 23901 prism reflector; For control of up to two detector heads	Controller 9 1/4" H x 7 7/8" W x 2 13/16" D (235 mm x 200 mm x 71 mm)
		Head 5 9/32" H x 5 5/16" W x 5 9/32" D (135 mm x 134 mm x 132 mm)
		Prism 4 1/8" x 3 15/16" x 9/8" D (105 mm x 100 mm x 9.5 mm)
4098-9020	IDNet Communications Addressable Reflective Auto Align Beam Smoke Detector Controller only, for upgrade or replacement; select detector head(s) and prism reflector(s) separately as required;	9 1/4" H x 7 7/8" W x 2 13/16" D (235 mm x 200 mm x 71 mm)

Beam Detector Heads, Prisms, and Accessories

Ordering Number*	Description	Dimensions
5000-031	Additional Detector Head and Prism, select up to 1 additional head per 4098-9019 System	5 9/32" H x 5 5/16" W x 5 9/32" D (135 mm x 134 mm x 132 mm)
5000-011	5000 Series Detector Uni-Box back box includes: hinged cover plate, conduit knock-outs on all sides, captive screw lock on cover plate, universal back plate mounting holes, and cover plate mounting holes for optional 1000-018 wire cage; box may be surface or flush mounted	7 1/8" square x 2 1/16" D (181 mm x 52 mm) (including cover plate)
5000-012	Detector Cover Plate for mounting 5000 Series Detector to a double gang electrical box, surface or flush mount	6 7/16" square (164 mm) with 3/16" lip (5 mm)
5000-005	Alignment Bracket for detector or prism, surface mount; pivots for accurate alignment, order detector and prism parts separately	5 1/4" square footprint x 2 13/16" D (134 mm x 71 mm)
5000-201	Alignment Bracket for detector or prism, surface mount; provides 360° rotation plus 130° adjustment for accurate alignment, order detector and prism parts separately	3 27/32" H x 3 29/32" W (98 mm x 99.5 mm)
5000-009	Controller Back Box, surface or flush mount; mounts to single gang, double gang, or 4" square box for surface mounting	8 7/16" H x 7 7/16" W x 1 3/4" D (214 mm x 189 mm x 45 mm)
5000-010	Controller Back Box Semi-Flush Mount Trim Plate (for 5000-009 box)	10 5/16" H x 8 3/4" W (263 mm x 222 mm)
5000-006	Prism Wall Mount Bracket; mounts a single prism, for up to 160 ft (49 m); or four prisms, for 160 ft to 330 ft (49 m to 100 m); prisms are ordered separately	11 3/16" x 8 5/16" x 1/2" D (284 mm x 211 mm x 13 mm)
5000-008	Single Prism Alignment Adapter, mounts on 5000-005 Alignment Bracket; order Prism and Alignment Bracket separately	4" square (102 mm)
5000-007	Four Prism Alignment Adapter, mounts on 5000-005 Alignment Bracket; order Prisms and 5000-005 Alignment Bracket separately	8" square (204 mm)
23901.01	Replacement Prism Reflector	
5000-004	Long Range Prism Kit; provides three, 23901 Prisms for distances between 160 ft and 330 ft (50 m to 100 m)	
5000-014	Ceiling Pendant Mounting Bracket	
1000-018	Protective Wire Cage for 5000 Series Detector Heads	
1000-019	Protective Wire Cage for 5000 Series Controllers	

* Internal Ordering Note: These products can be found in Job Design under Fire Fighting Enterprises, OP category OPFFE.

Controller Display Detail Reference



Specifications

Mechanical and General Reference

Housing	Flame Retardant ABS; IP rating = IP54
Finish	Light Grey/Black
Simplex Addressable Interface and Host Control Panel Programming Instructions	579-1039; (Additional Operating and Installation Instructions are shipped with the product)
Head and accessories reference	Fire Fighting Enterprises (A Halma Group Company); website: www.ffeuk.com/

Electrical

Input Voltage	14 to 36 VDC, supplied from agency listed fire alarm power supply
Input Current	50 mA
Power Wiring to Controller	Terminal block connections; 18 to 14 AWG (0.82 mm ² to 2.08 mm ²)
Wiring, Controller to Head	328 ft (100 m) maximum distance; use twisted wire pair; 18 to 16 AWG (1 mm ² to 1.5 mm ²)
Beam Optical Wavelength	850 nm

	Details	IDNet addressable communications; communications circuit is isolated from input power, and controller-to-head communications	
Communications Reference	Compatibility Reference (review for addition to installed systems)	IDNet Communications Source	Firmware/Revision
		4100ES and 4010ES Control Panels	System Firmware 2.02 or higher
		4100ES System Power Supplies (SPS)	Firmware 3.12.05 or higher
		4010ES Main System Supply (MSS)	Firmware 3.12.05 or higher
		Separate IDNet/IDNet+/IDNet 1+ modules	Firmware 3.12.05 or higher
		IDNet communications PCC Chip 746-146	Revision 2.02.03 or higher
Addressing	On-board DIP switch selects a base address to communicate with the local controller and the first beam detector head; <i>for systems with two heads per controller, the next sequential address is automatically assigned</i>		

Operating Specifications

Sensitivity Threshold	Selectable from 10% to 60%; with 35% as default (this is % of beam obscuration drop from 100%); desired value is selected at host fire alarm control panel and communicated via IDNet communications
Operating Distance Range	26 ft, 3 inches to 330 ft (8 m to 100 m)
Beam Status Indicators	Multi-color LED on bottom front of beam detector head: Normal = Green; Alarm = Red; Fault (Trouble) = Yellow; LED flash is every 10 seconds
Service Status Indicators	One LED per detector, located under beam controller cover, indicates status of beam detector channel communications
Point Types	Fire, Latched Supervisory, or Utility, selected at host fire alarm control panel
Trouble Conditions	Communications fault, rapid obscuration fault (blocked beam), excessively dirty, and summary trouble (other general troubles not detailed)
UL Listed Temperature Range	32° F to 100° F (0° C to 38° C)
Operating Temperature Range	-4° F to 131° F (-20° C to 55° C); for indoor use only
Operating Humidity Range	0 to 93% RH, non-condensing

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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)

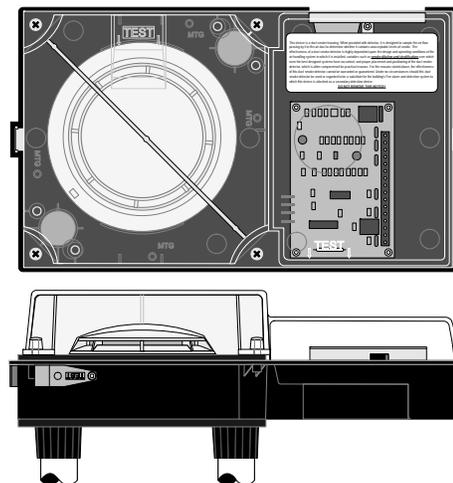
Sampling tubes (ordered separately):

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

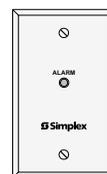
Remote module options (ordered separately):

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

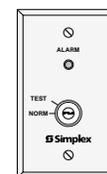
* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 3240-0026.241 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, 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 ²) color coded wire leads	4098-9756 only; connect up to 15	Locate relays within 3 ft (1 m) of device being controlled per NFPA 72
4081-9008	End-of-Line Resistor Harness; 10 kΩ, 1/2 W; (ref. 733-894); required to supervise remote relay coil connection	4098-9756	At last relay location

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

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

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

Photoelectric Sensing (Continued)

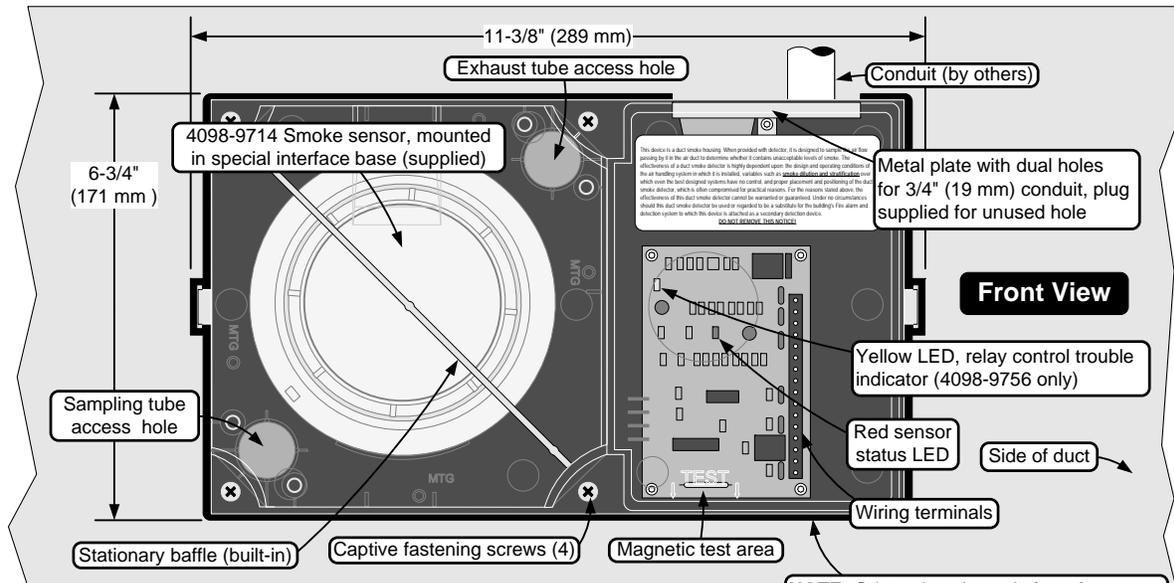
Typically duct sensor applications require less sensitive settings (such as 2.5% per foot obscuration) due to the ducts being a relative dirty environment. However, the standard seven levels of TrueAlarm sensor sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of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

Fire Alarm Control Panel Features

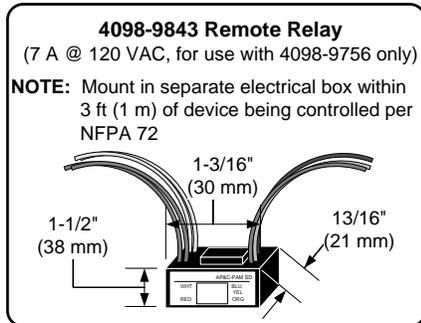
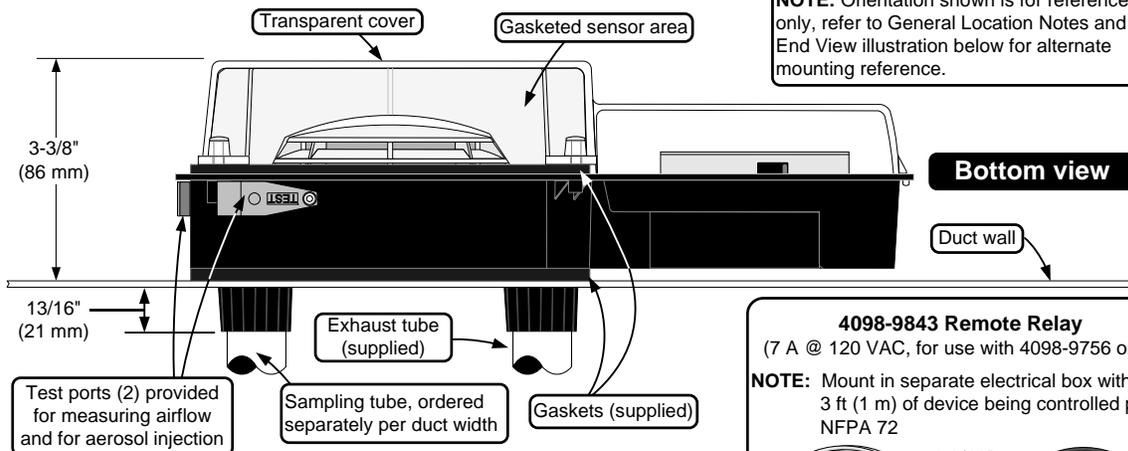
- Individual smoke sensitivity selection
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allows accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check verifies sensor integrity
- Automatic environmental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

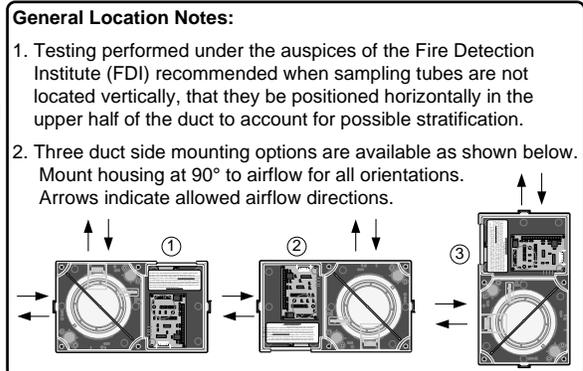
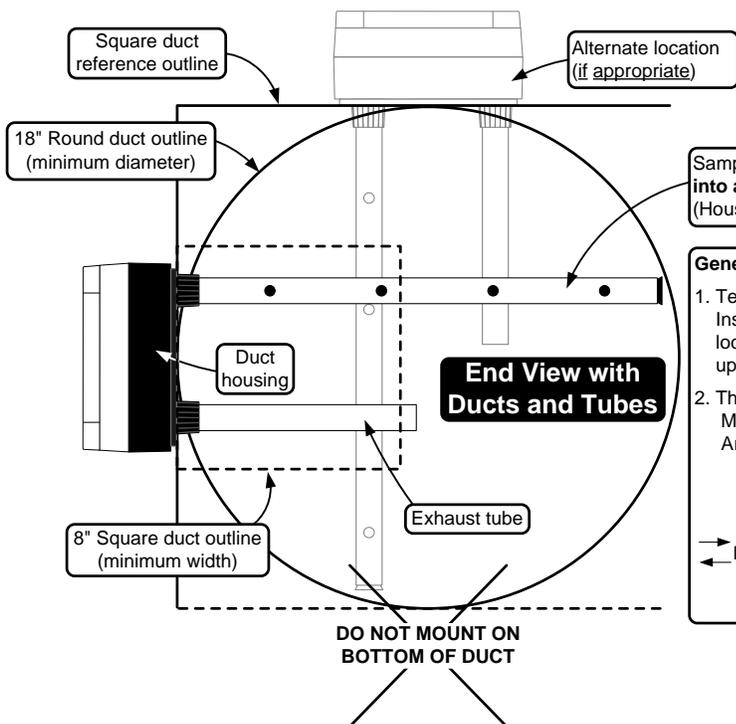
NOTE: Refer to Installation Instructions 574-776 for additional installation detail and maintenance information.



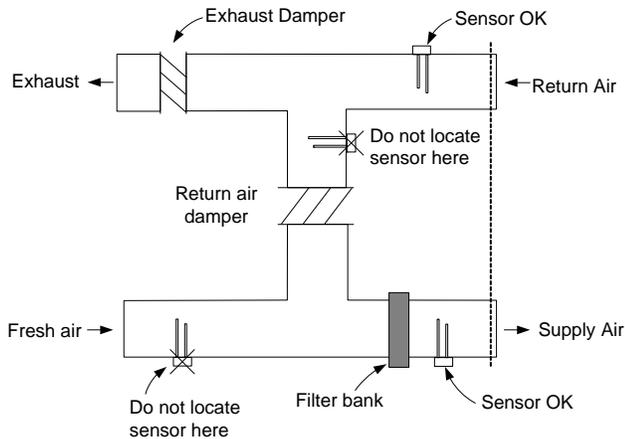
NOTE: Orientation shown is for reference only, refer to General Location Notes and End View illustration below for alternate mounting reference.



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 ² to 3.31 mm ²)
Housing Color	Black base with clear cover

Remote Status/Alarm LED and Test Station with Remote Status/Alarm LED

Remote Alarm LED Current	1.2 mA, no impact to 24 VDC alarm current (2098-9808 or 2098-9806)
Test Station Keyswitch Current	3.3 mA, no impact to 24 VDC alarm current (2098-9806)
Remote Alarm LED and Test Station Distance	250 ft (76 m) maximum

Addressable Operation

Data Communications	IDNet or MAPNET II communications, auto-select, one address per housing; provides operating power to model 4098-9755
---------------------	--

Model 4098-9756 with Supervised Multiple Relay Control, Requires Separate Fused 24 VDC from Fire Alarm Power Supply

Input Voltage	18-32 VDC (24 VDC nominal)
Standby Current	3 mA @ 24 VDC
Alarm Current	15 mA @ 24 VDC; add 15 mA for each 4098-9843 relay
Supervised Remote Relay Control Output	For use with 4098-9843 relay only, quantity of 15 maximum; distance of 500 ft (152 m) maximum; requires 4081-9008 (ref. 733-894) 10 k Ω , 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 μ 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® analog sensing provides digital transmission of analog sensor values via MAPNET II® or IDNet™, two-wire communications**

Fire alarm control panel provides:

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

Photoelectric smoke sensors:

- Seven levels of sensitivity from 0.2% to 3.7%

Heat sensors:

- Fixed temperature sensing
- Rate-of-rise temperature sensing
- Utility temperature sensing

Ionization smoke sensors*:

- Three levels of sensitivity; 0.5%, 0.9% and 1.3%

For use with Simplex®:

- 4010, 4020, 4100, and 4120 Series control panels
- Universal Transponders and 2120 TrueAlarm CDTs equipped for MAPNET II operation

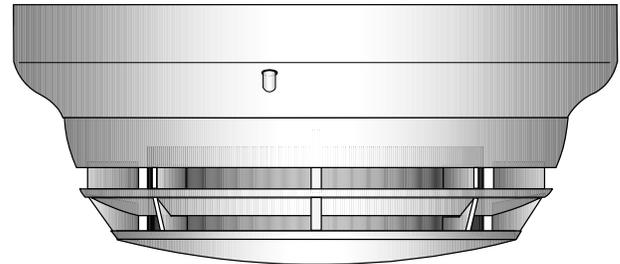
Magnetic test feature

Functional and architecturally styled chamber enclosure:

- Louvered design enhances smoke capture by directing flow to chamber
- Entrance areas are minimally visible when ceiling mounted

Optional accessories include remote LED alarm indicator and output relays

UL listed to Standard 268



4098-9714 TrueAlarm Photoelectric
Sensor Mounted in Base

Description

Digital Communication of Analog Sensing.

TrueAlarm analog sensors provide an analog measurement that is 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 that a sensor is in alarm, or that it is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor base's LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify the alarmed sensors.

* 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. 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 4 for ULC listing status. Additional listings may be applicable, contact your local Simplex product supplier for the latest status.

** TrueAlarm analog sensors and MAPNET II and IDNet communications are protected by one or more of the following U.S. Patents: 5,155,468; 5,173,683; 5,543,777; 5,400,014; 5,552,765; 5,552,763; 4,796,025; DES. 377,460.

TrueAlarm Sensor Bases and Accessories

Sensor Base Features

Base mounted address selection:

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

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

Magnetically operated functional test

Mounts on standard outlet box

Sensor Bases

4098-9792, Standard sensor base

4098-9789, Sensor base with wired connections for:

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

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

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

Sensor Base Options

2098-9737, Remote or local mount supervised relay:

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

4098-9822, LED Annunciation Relay:

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

4098-9832, Adapter plate:

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

2098-9808, Remote red LED Alarm Indicator:

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



Description

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

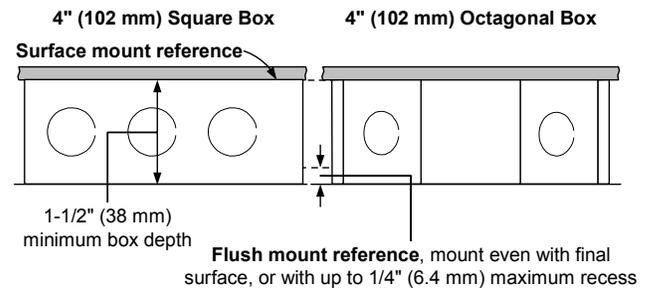
Since TrueAlarm sensors use the same base, different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing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

Mounting Reference

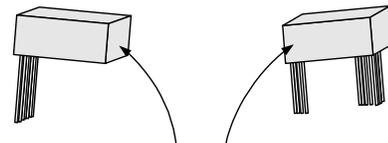
Electrical Box Requirements: (boxes are by others)

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

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

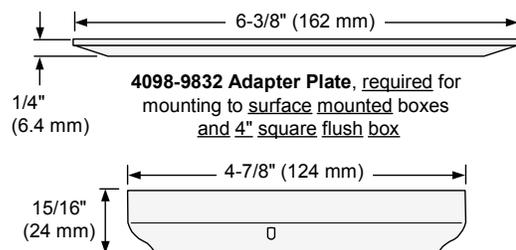


2098-9737 Relay (mounts in base electrical box or remotely) **4098-9822 Relay** (mounts in base electrical box)



Relay Size: 2-1/2" X 1-1/2" X 1" (3.75 cubic inches)
(64 mm X 38 mm X 25.4 mm)

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



TrueAlarm Bases
4098-9789, -9791, & -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
- Listed to UL Standard 521 for 60 ft (18.3 m) spacing for 135° F (57.2° C) alarm, and 40 ft (12.2 m) spacing for 155° F (68° C) alarm

Smoke Sensors:

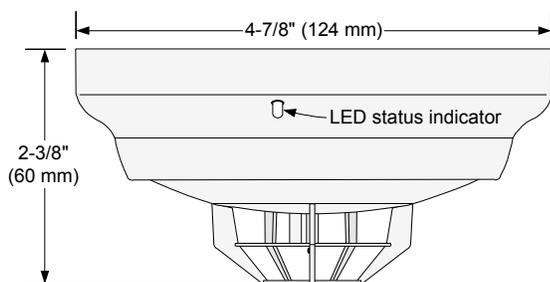
- Photoelectric or ionization technology sensing
- 360° smoke entry for optimum response

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.)



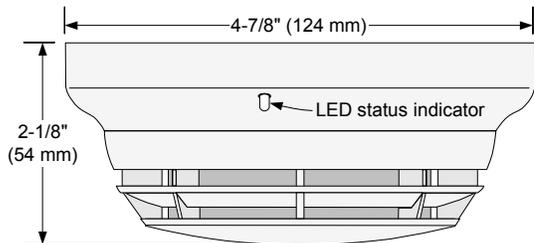
4098-9733 Heat Sensor with Base

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.

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. Sensitivity is selected and monitored at the fire alarm control panel.

The sensor head design provides 360° smoke entry for optimum response to smoke from any direction. A built-in screen keeps insects from entering the smoke chamber. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.

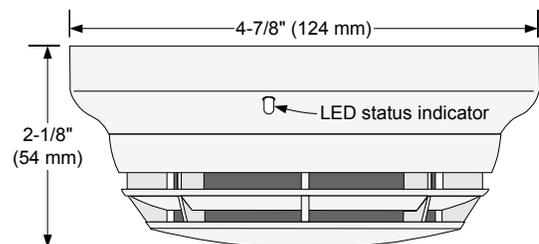


4098-9714 Photoelectric Sensor with Base

4098-9717 Ionization Sensor

TrueAlarm Ionization sensors use a single radioactive source with an outer sampling ionization chamber and an inner reference ionization chamber to provide stable operation under fluctuations in environmental conditions such as temperature and humidity. Smoke and invisible combustion gases can freely penetrate the outer chamber. With both chambers ionized by a small radioactive source [Am 241 (Americium)], a very small current flows in the circuit. The presence of particles of combustion will cause a change in the voltage ratio between chambers. This difference is measured by the electronics in the sensor base and digitally transmitted back to the control panel for processing.

Three levels of sensitivity are available for each ionization sensor: 0.5, 0.9, and 1.3% per foot of smoke obscuration.



4098-9717 Ionization Sensor with Base

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 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 (574-709)*.

TrueAlarm Analog Sensing Product Selection Chart

TrueAlarm Sensor Bases

Model	Description	Compatibility	Mounting Requirements
4098-9792 (C)	Standard Sensor Base, no options	Sensors 4098-9714, -9733, & -9717	4" octagonal or 4" square box, 1-1/2" min. depth; or single gang box, 2" min. depth
4098-9789 (C)	Sensor Base with connections for Remote LED Alarm Indicator or Unsupervised Relay	Sensors 4098-9714, -9733, & -9717 2098-9808 remote LED alarm indicator or 4098-9822 relay	4" octagonal or 4" square box Note: Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference.
4098-9791 (C)	Sensor Base with connections for Supervised Remote Relay and connections for Remote Alarm Indicator or Unsupervised Relay	Sensors 4098-9714, -9733, & -9717 2098-9737 remote relay (supervised) 2098-9808 remote alarm indicator or 4098-9822 relay (unsupervised)	

TrueAlarm Sensors

Model	Description	Compatibility	Mounting Requirements
4098-9714 (C)	Photoelectric Smoke Sensor	Bases 4098-9792, 4098-9789, and 4098-9791	Refer to base requirements
4098-9717 (C)	Ionization Smoke Sensor		
4098-9733 (C)	Heat Sensor		

TrueAlarm Sensor/Base Accessories

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

Refer to publication *4098 Detectors, Sensors, and Bases Application Manual (574-709)* for additional information. ULC listed model numbers are designated by (C) and require a "C" suffix such as 4098-9794C.

Specifications

General Operating Specifications

Communications and Sensor Supervisory Power	MAPNET II or IDNet, auto-select, 24-40 VDC w/data, 400 μ A typical, 1 address per base
Communications Connections	Screw terminals for in/out wiring, 18 to 14 AWG
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
UL Listed Temperature Range	32° to 100° F (0° to 38° C)
Operating Temperature Range	with 4098-9717 or 4098 -9733 32° to 122° F (0° to 50° C)
	with 4098-9714 15° to 122° F (-9° to 50° C)
Humidity Range	10 to 95% RH
Smoke Sensor Ambient Ratings	4098-9714, Photoelectric Sensor Air velocity is 0-2000 ft/min (0-610 m/min)
	4098-9717, Ionization Sensor Air velocity is 0-100 ft/min (0-30 m/min); Altitude is up to 8000 ft (2.4 km)
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 μ A, from 24 VDC supply
Alarm Current with 2098-9737 Relay	28 mA, from 24 VDC supply
4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789 and 4098-9791 (see page 2 for contact ratings)	
Externally Supplied Relay Coil Voltage	18-32 VDC (nominal 24 VDC)
Supervisory Current	Supplied from communications
Alarm Current	13 mA from separate 24 VDC supply

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Features

Fire alarm speakers with models for ceiling or wall mount:

- Four inch cone (102 mm) provides high quality tone and voice reproduction
- Multi-tapped design provides output power of ¼, ½, 1, or 2 W with either 25 or 70.7 VRMS input
- In/out wiring terminals for 18 AWG to 12 AWG
- Mounts to 4" square outlet box, 1 ½" deep with 1 ½" deep box extension
- Capacitor input for connection to supervised notification appliance circuits
- Rugged, high impact, flame retardant thermoplastic housings
- UL listed to Standard 1480
- ULC listed to Standard S541, refer to page 4 for required minimum wattage tap per housing type
- Compliant with NFPA 72, 520 Hz Low Frequency Signal Requirements for Sleeping Areas

Rectangular housing models feature:

- Appearance that complements TrueAlert strobes and speaker/strobes
- Red or white housings with "FIRE" lettering for surface or semi-flush wall mount
- Optional matching adapter skirts for covering surface mounted electrical boxes*
- Optional red wire guard

Round housing models feature:

- Off-white color (no lettering) for flush mount on ceiling or wall
- Compatible with optional tile bridge 2905-9946

Introduction

Simplex® 4902 Series speakers provide high quality sound for emergency fire alarm use as well as for background music. The moisture-repellent speaker is designed for smooth frequency response with minimal distortion.

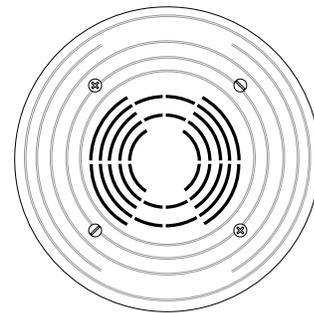
The multi-tapped speaker transformer accommodates either 25 or 70.7 VRMS and provides an output of from ¼ to 2 W to provide flexibility for satisfying the requirements of the installed conditions.

Rectangular housing models are for surface or semi-flush wall mount applications. Round housing models are typically for ceiling applications but can be wall mounted if desired. The rectangular housing speakers are designed to compliment the TrueAlert family of strobes and speaker/strobes, providing conventional, non-addressable speaker operation.

* Refer to page 2 for guard and adapter skirt 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 7320-0026:242 for allowable values and/or conditions concerning material presented in this document. 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.



Rectangular Wall Mount Speakers are Available as Red with White "Fire" Lettering and White with Red "Fire" Lettering



Round Speakers are Available in Off-White (no lettering)

Specifications

Dimensions, Rectangular Wall Mount Housings		
Housing Dimensions	5 ⅞" H x 5" W x 1 ½" D (130 mm x 127 mm x 38 mm)	
Depth into Box	2 ¾" (70 mm)	
Dimensions, Round Housings		
Housing Dimensions	7 ½" Diameter, ½" D (191 mm x 13 mm)	
Depth into Box	2 ¾" (70 mm)	
General Specifications		
Input Voltage	25 or 70.7 VRMS	
Power Taps	¼, ½, 1, and 2 W	
Input Terminal Ratings	18 to 12 AWG (0.82 mm ² to 3.31 mm ²)	
Frequency Response	Fire Alarm	400 to 4000 Hz
	General Signaling	125 to 12 kHz
Sound Output	See information on page 4	
Temperature Range	32° to 100° F (0° to 38° C)	
Humidity Range	10% to 95% RH from 32° to 122° F (0° to 50° C)	

Product Selection

Speakers

Model*	Description		Dimensions
4902-9716 (CA)	Rectangular housing, wall mount speaker	Red with white "FIRE" lettering	5 1/8" H x 5" W x 1 1/2" D (130 mm x 127 mm x 38 mm)
4902-9717 (CA)		White with red "FIRE" lettering	
4902-9721 (CA)	Round housing speaker, ceiling or wall mount	Off-white (no lettering)	7 1/2" Diameter x 1 1/2" D (191 mm x 13 mm)

* ULC listed model are designated with a CA suffix (4902-9716CA). Refer to Installation Instructions 574-765 for non-suffix model numbers and to Installation Instructions 579-324 for CA suffix model numbers.

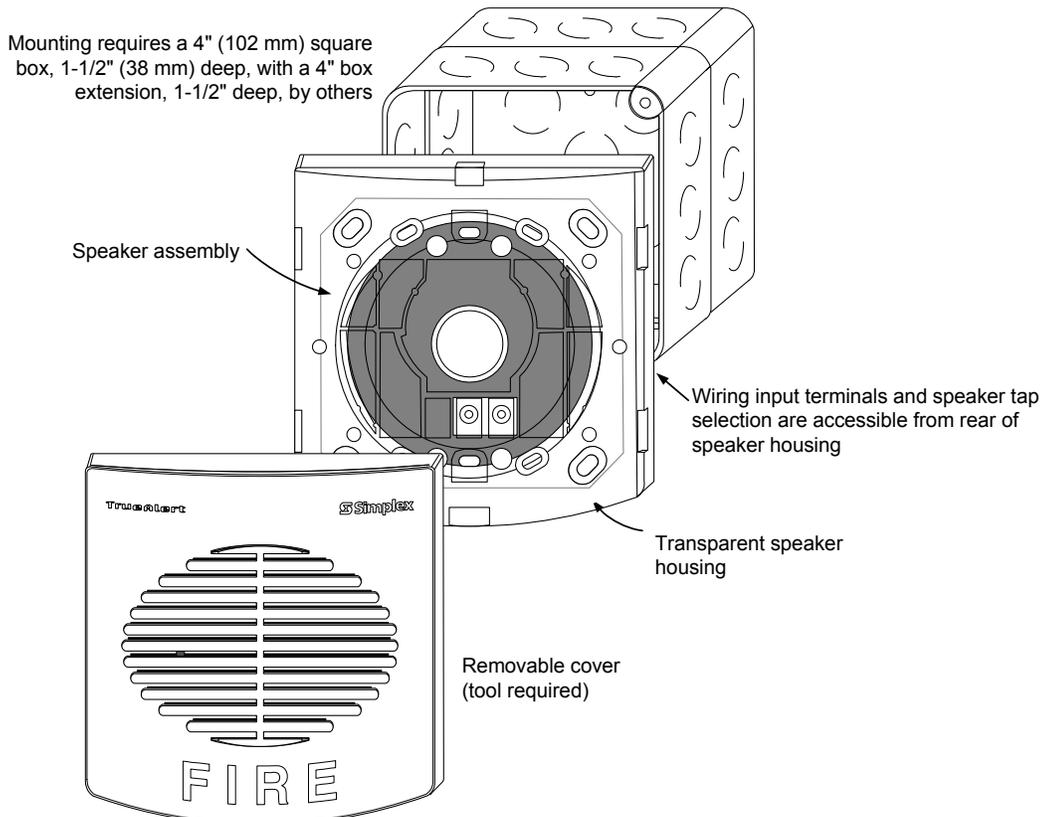
Mounting Adapters

Model	Description		Dimensions
4905-9941	Red	Surface mount adapter skirt; (not ULC listed)	Use to cover surface mounted 1-1/2" deep box with 1-1/2" deep extension external to wall (see diagram on page 3)
4905-9942	White		
2905-9946	Tile bridge for 4902-9721 Speaker		See diagram on page 3
4905-9931	Adapter Plate, red, for mounting to 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)

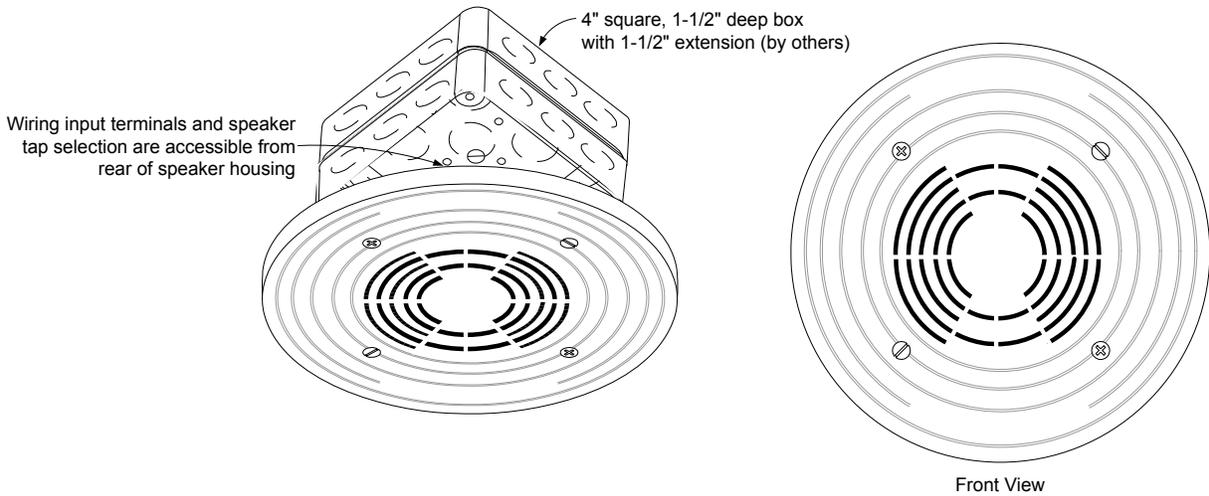
Covers and Guard

Model	Description		Dimensions
4905-9988	Red speaker cover with white "FIRE" lettering	Interchangeable with TrueAlert horns	5 1/8" H x 5" W x 1 1/2" D (130 mm x 127 mm x 38 mm)
4905-9989	White speaker cover with red "FIRE" lettering		
4905-9999	Red wire guard with mounting plate; compatible with semi-flush or surface mounted boxes; for use with 4" square electrical box mounting hole patterns only (UL listed by Space Age Electronics Inc.)		6 1/16" H x 6 1/16" W x 3 1/8" D (154 mm x 154 mm x 79 mm)

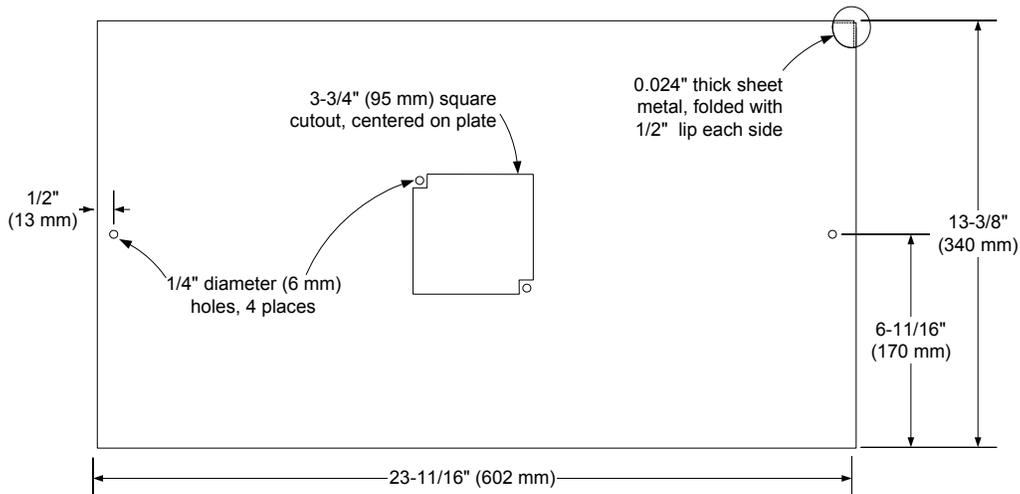
Wall Mount Speakers, Installation Reference



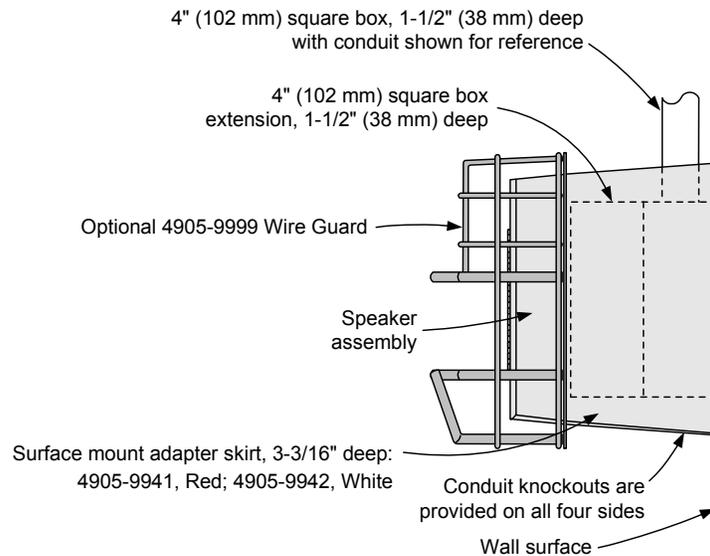
Round Speaker Installation Reference (typically ceiling mount, can be wall mounted)



2905-9946 Tile Bridge Dimensions



Surface Mounted Speaker Reference (Adapter Skirts are *Not ULC listed*)



Speaker Sound Output Specifications

Sound Output Ratings @ 10 ft (~3 m) per UL 1480 Reverberant Chamber Testing

Model	Type	Input Voltage	Selected Tap			
			¼ W	½ W	1 W	2 W
4902-9716 4902-9717	Rectangular Housing	25 VRMS	80 dBA	83 dBA	85 dBA	88 dBA
		70.7 VRMS	79 dBA	82 dBA	85 dBA	88 dBA
4902-9721	Round Housing	25 or 70.7 VRMS	79 dBA	82 dBA	85 dBA	88 dBA

Sound Output Ratings @ 3 m (~10 ft) per ULC S541 Anechoic Chamber Testing

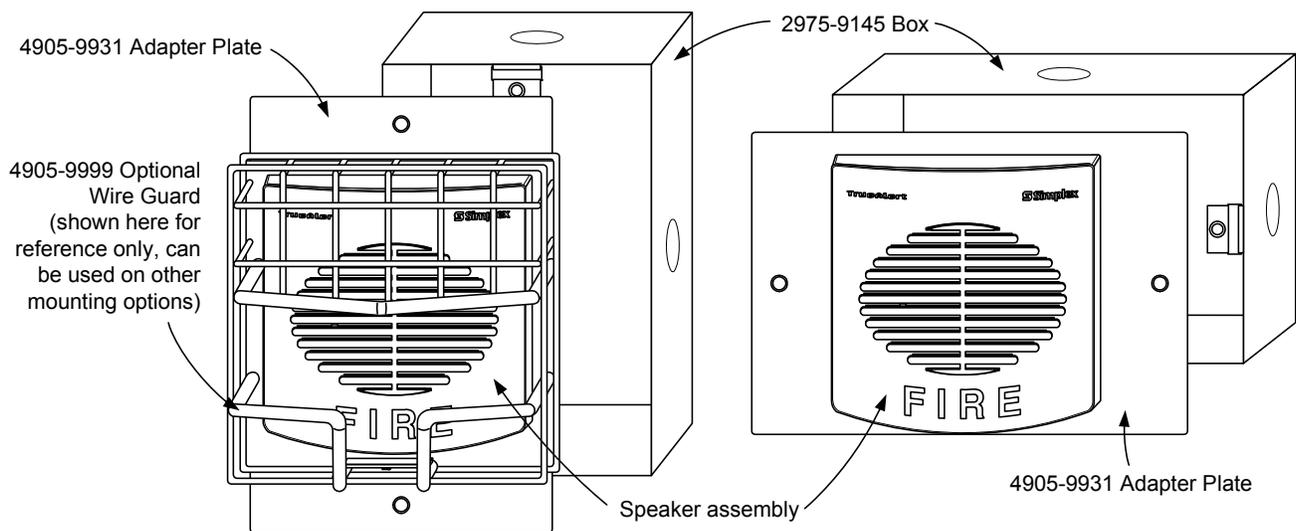
Model	Type	Input Voltage	Selected Tap			
			¼ W	½ W	1 W* (see note)	2 W* (see note)
4902-9716CA 4902-9717CA	Rectangular Housing*	25 VRMS or 70.7 VRMS	77 dBA	80 dBA	83 dBA	86 dBA
4902-9721CA	Round Housing*	25 VRMS or 70.7 VRMS	79 dBA	82 dBA	85 dBA	89 dBA

* NOTE: ULC Fire Alarm applications require use of 1 W or 2 W tap for Round Housing speakers; and 2 W tap for Rectangular Housing speakers.

Speaker Polar Dispersion Reference (per ULC S541 Anechoic Chamber Testing)

Attenuation	Angle
-3 dB	30° off-axis
-6 dB	55° off-axis

4905-9931 Adapter Plate Installation Reference



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S4902-0003-7 5/2014

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Features**Speaker/visible (S/V) notification appliances with multi-tapped speaker and multi-tapped high intensity xenon strobe with synchronized flash:**

- Rugged, high impact, flame retardant thermoplastic housings are available for wall or ceiling mount
- Operation is compatible with ADA requirements (refer to important wall mount installation information on page 4)

Wall mount S/V features:

- Housings are available in red or white with clear lens with contrasting white or red “FIRE” lettering
- Covers are available separately to convert housing color

Ceiling mount S/V features:

- Housing is white with clear lens
- Red “FIRE” lettering is printed on two sides

Audible notification appliance (speaker):

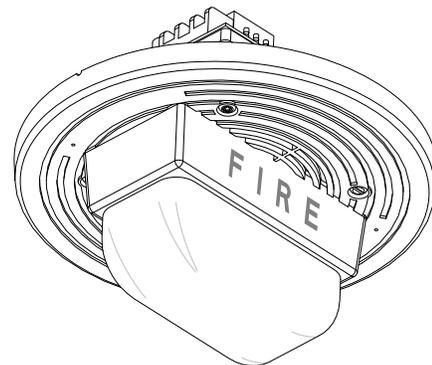
- High quality voice and tone reproduction with taps for ¼, ½, 1, or 2 W, at 25 or 70.7 VRMS
- Capacitor input for connection to supervised notification appliance circuits
- Speakers are wired separately from strobe wiring
- UL listed to Standard 1480 and ULC-S541*
- Compliant with NFPA 72, 520 Hz Low Frequency Signal Requirements for Sleeping Areas

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
- Strobes are activated from NACs selected to provide Simplex® strobe synchronization signals or from separate strobe Synchronization Modules that are available for Class B or Class A operation
- Regulated circuit design ensures consistent flash output and provides controlled inrush current
- UL listed to Standard 1971 and ULC-S526*

Options for wall mounted S/Vs:

- Red or white adapters to cover surface mounted electrical boxes
- Red adapter for mounting to Simplex 2975-9145 boxes
- Red wire guard



Wall and Ceiling Mount S/Vs

Description

Multi-Candela TrueAlert S/Vs with speaker and synchronized strobe provide convenient installation to standard electrical boxes with extensions. 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 S/V housings are a one-piece assembly (including lens) that mounts to a 4” square electrical box with extension (see details on page 4). The cover can be quickly removed (a tool is required) and covers are available separately for color conversion.

Ceiling mount S/Vs also install using 4” electrical boxes with an extension (see details on page 4).

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.

* See page 2 for additional listing details and wire guard 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 7320-0026:247 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.

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 S/Vs are activated by NACs that provide the Simplex synchronization format. For additional information, refer to data sheet S4905-0003.

Strobe Application Selection

Proper selection of visible notification is dependent on occupancy, location, local codes, and proper applications of: the *National Fire Alarm and Signaling 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).

Product Selection

Wall Mount Multi-Candela S/Vs

Model	Housing Color	"FIRE" Lettering	Listings	Description	Housing Dimensions with Lens
4906-9151	Red	White	UL & ULC	Multi-tapped Speaker with Multi-Candela Synchronized Strobe; strobe intensity selectable as: 15, 30, 75, or 110 candela	7 ¼" H x 5" W x 2 ⅝" D (184 mm x 127 mm x 67 mm)
4906-9153	White	Red			

Ceiling Mount Multi-Candela S/V

Model	Housing Color	"FIRE" Lettering	Listings	Description	Dimensions
4906-9154	White	Red	UL	Multi-tapped Speaker with Multi-Candela Synchronized Strobe; strobe intensity selectable as: 15, 30, 75, or 110 candela	Housing = 7 ½" (191 mm) diameter, ½" (13 mm) deep Strobe lens protrusion = 2 ⅝" (67 mm) above speaker housing Depth into box = 2 ¼" (70 mm)
4906-9157	White	Red	ULC		

Wall Mount S/V Adapters

Model	Description	Dimensions
4905-9946	Surface mount red adapter skirt	7 ¾" H x 5 ⅝" W x 3 ⅜" D (197 mm x 137 mm x 81 mm) depth with S/V = 5 ⅞" (149 mm)
4905-9947	Surface mount white adapter skirt	
4905-9903	Adapter Plate, red, required to mount S/V on 2975-9145	8 ⅝" H x 5 ¾" W x 0.060" Thick (211 mm x 146 mm x 1.5 mm)
2975-9145	Mounting box, red, for surface or flush mount, requires adapter plate 4905-9903 (this box may be available for retrofit applications)	7 ⅞" H x 5 ⅞" W x 2 ¼" D (200 mm x 130 mm x 70 mm)

Wall Mount S/V Replacement Covers

Model	Description	Dimensions
4905-9996	Red S/V cover with white "FIRE" lettering	7 ¼" H x 5" W x 1 ⅝" D (184 mm x 127 mm x 35 mm)
4905-9997	White S/V cover with red "FIRE" lettering	

Synchronized Flash Control Modules

Model	Description	Dimensions
4905-9914*	Synchronized Flash Module, Class B operation	1 ⅝" W x 2 ⅞" L x 1 ⅜" H (35 mm x 62 mm x 20 mm)
4905-9922*	Synchronized Flash Module, Class A operation	

Wall Mount S/V Wire Guard

Model	Description	Dimensions
4905-9998	Wire guard with mounting plate, red, compatible with surface and semi-flush boxes (UL listed by Space Age Electronics Inc.)	8 ⅝" H x 6 ⅝" W x 3 ¼" D (213 mm x 154 mm x 79 mm)

Ceiling Mount Tile Bridge

Model	Description	Dimensions
2905-9946	Tile Bridge	See diagram on page 4

* Refer to data sheet S4905-0003 for additional flash control module information

S/V Specifications

Common Specifications	Environmental	32° to 122° F (0° to 50° C); 10% to 93%, non-condensing at 100° F (38° C)
	Connections	Terminal blocks for 18 AWG to 12 AWG (0.82 mm ² to 3.31 mm ²); two wires per terminal for in/out wiring

Speaker Specifications

Input Voltage	25 or 70.7 VRMS, see Note 1 below	
Power Taps	¼, ½, 1, and 2 W	
Frequency Response	Fire Alarm	400 to 4000 Hz
	General Signaling	125 to 12 kHz

		Wattage Tap	¼ W	½ W	1 W	2 W
Speaker Output Ratings @ 10 ft (3 m) (see Note 1 below)	UL Listed Models, Reverberant Chamber Test, per UL 1480		76 dBA	79 dBA	82 dBA	85 dBA
	Wall Mount Models 4906-9151 and 4906-9153 , Anechoic Chamber Test, per ULC-S541		77 dBA	80 dBA	83 dBA	86 dBA*
	Ceiling Mount Model 4906-9157 , per ULC-S541	25 VRMS Input	81.6 dBA	84.3 dBA	87.1 dBA*	89.7 dBA*
70.7 VRMS Input		80.9 dBA	84.1 dBA	87.3 dBA*	90.2 dBA*	

* NOTE: Select taps as indicated to satisfy the ULC fire alarm applications requirement of 85 dBA minimum

Polar Dispersion Reference (per ULC-S541 Anechoic Chamber Testing)	Attenuation	Angle	Attenuation	Angle
		-3 dB	+/- 30° off-axis	-6 dB

Strobe Specifications

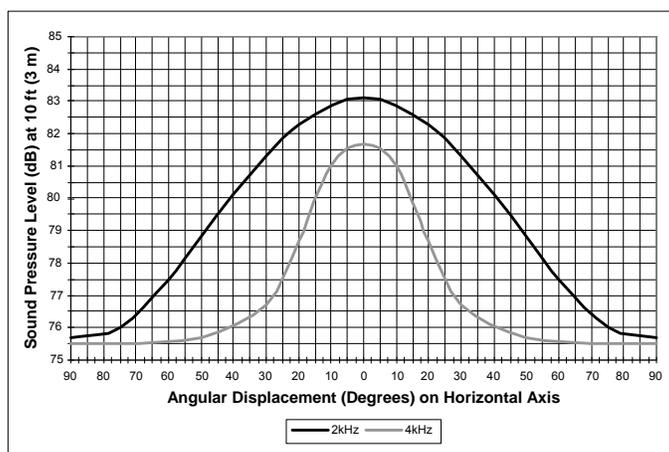
Rated Voltage Range	Regulated 24 VDC; 16 VDC to 33 VDC, see Note 2 below
Flash Rate and Synchronized NAC Loading	1 Hz; with up to 35 synchronized strobes maximum per NAC

Wall Mount	Housing Dimensions (with lens)	7 ¼" H x 5" W x 2 ⅝" D (184 mm x 127 mm x 67 mm)				
	Maximum RMS Current Rating per Strobe Setting		15 cd	30 cd	75 cd	110 cd
			60 mA	94 mA	186 mA	252 mA
Reference RMS Currents at other voltages	18 VDC	53 mA	84 mA	165 mA	224 mA	
	24 VDC	40 mA	63 mA	124 mA	168 mA	
Ceiling Mount	Housing Dimensions	Speaker housing = 7 ½" (191 mm) diameter, ½" deep (13 mm); lens protrusion above speaker housing = 2 ⅝" (67 mm); depth into box = 2 ¾" (70 mm)				
	Maximum RMS Current Rating per Strobe Setting		15 cd	30 cd	75 cd	110 cd
			75 mA	125 mA	233 mA	316 mA
Reference RMS Currents at other voltages	18 VDC	67 mA	111 mA	207 mA	281 mA	
	24 VDC	50 mA	83 mA	155 mA	211 mA	

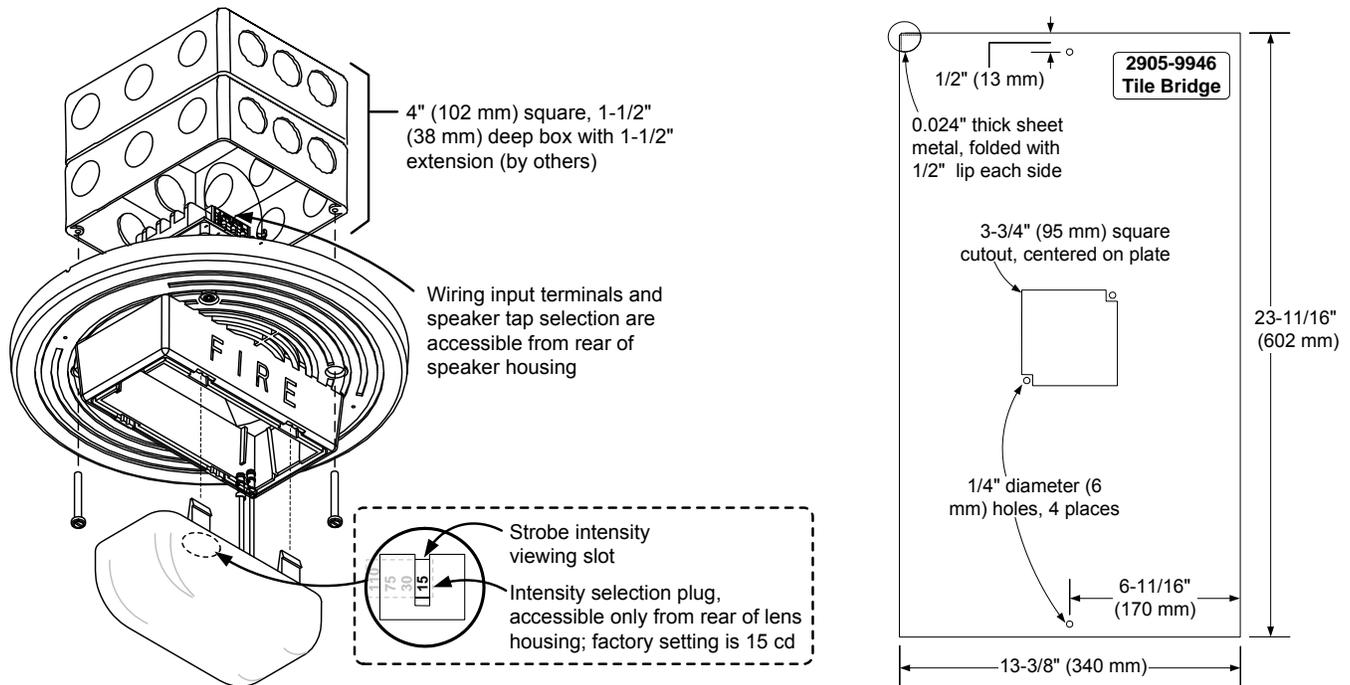
NOTES:

- Speakers are for connection to conventional fire alarm audio circuits. Anechoic speaker output ratings are typically more representative of actual installed sound output.
- The maximum RMS strobe 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.)

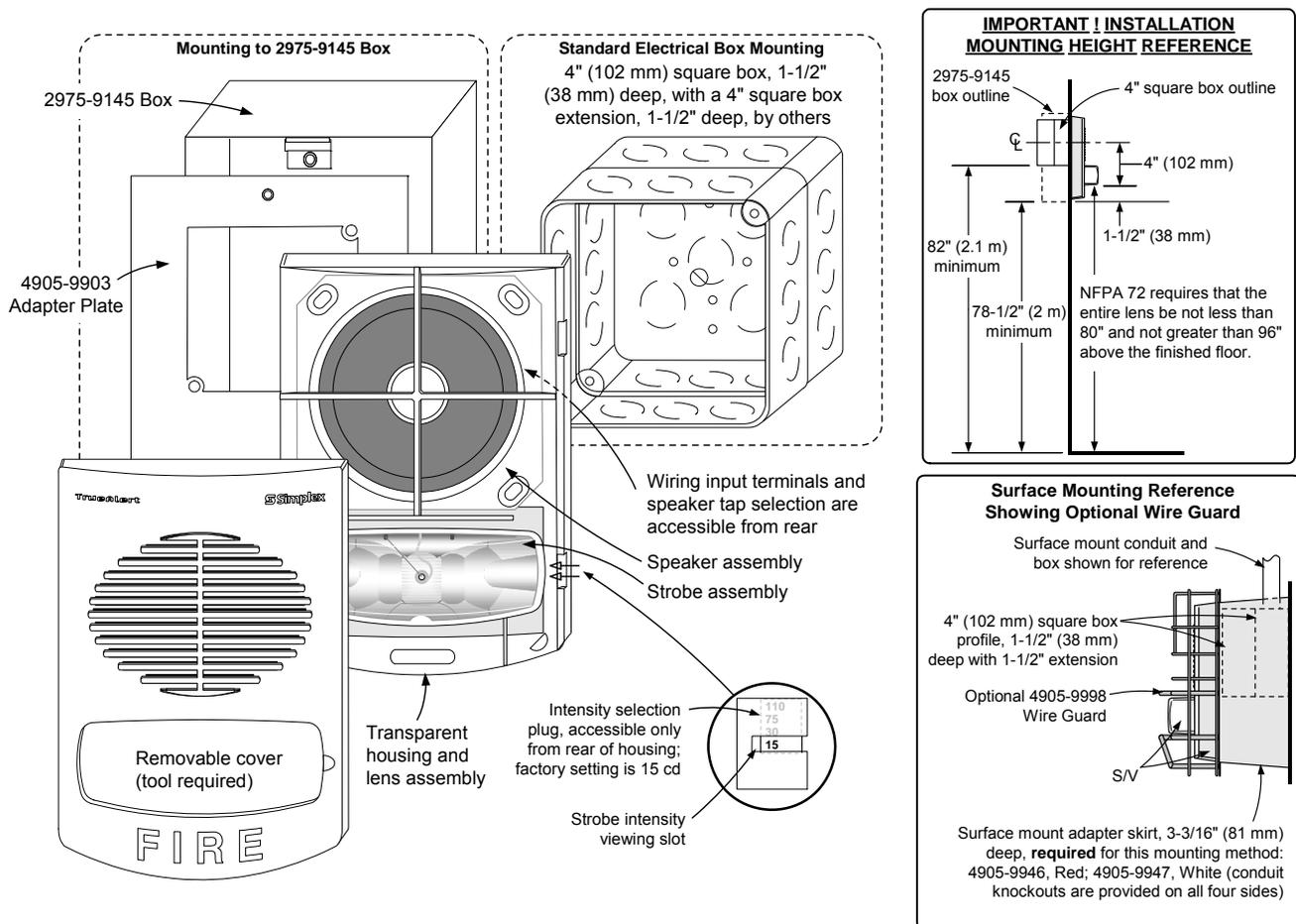
Speaker Directional Characteristics Reference



Ceiling Mount S/V Installation Reference and Tile Bridge Dimensions



Wall Mount Installation Reference



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