

**OSU KERR ADMINISTRATION
FIRE ALARM**

2019-0680

Material Data Sheets

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Features



Figure 1: 4100ES Cabinets are available with one, two or three bays (two bay cabinet shown)

Master Controller (top) bay:

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

Network compatibility:

Compatible with Simplex ES Net or 4120 Fire Alarm Networks

Standard addressable interfaces include:

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

Optional modules include:

- Building Network Interface Module (BNIC) for Ethernet connectivity options, refer to data sheet *S4100-0061*
- Electrically isolated output IDNet 2 (two loop) and IDNet 2+2 (four loop) modules with short circuit isolation output loops allowing use with either shielded or unshielded, twisted or untwisted single pair wiring

- Fire Alarm Network Interfaces, DACTs, city connections, and up to five RS-232 ports for printers and terminals
- IP communicator compatibility
- MAPNET II addressable device modules and MAPNET II quad isolator modules
- Alarm relays, auxiliary relays, additional power supplies, IDC modules, NAC expansion modules
- Service modems, VESDA Air Aspiration Systems interface, ASHRAE BACnet Interface, TCP/IP Bridges
- LED/switch modules and panel mount printers
- Emergency communications systems (ECS) equipment; 8 channel digital audio or 2 channel analog audio
- Battery brackets for seismic area protection
- 8-point zone/relay module, each point is selectable as an IDC input or relay output. Class A IDCs require two points (one out and one return). Relays rated for 2 A @ 30 VDC (resistive) and configurable as either normally open or normally closed.
- Compatible with Simplex remotely located 4009 IDNet NAC Extenders, up to ten per IDNet SLC

Listings information

- UL 864, Fire Detection and Control (UOJZ), Smoke Control Service (UUKL), Releasing Device Service (SYZV)
- UL 1076, Proprietary Alarm Units - Burglar (APOU)
- UL 2017, Process Management Equipment (QVAX), Emergency Alarm System Control Units (FSZI)
- UL 1730, Smoke Detector Monitor (UULH)
- UL 2572, Mass Notification Systems (PGWM)
- CAN/ULC-S527 Control Units for Fire Alarm Systems (UOJZ7), Releasing Device Service (SYZV7)
- ULC/ORD-C1076 Proprietary Burglar Alarm Units and Systems (APOU7)
- ULC/ORD-C100 Smoke Control System Equipment (UUKL7)

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
- Firmware enhancements are made through software downloads to the on-board flash memory

Operator interface features

- TrueAlarm individual analog sensing with front panel information and selection access
- "Dirty" TrueAlarm sensor maintenance alerts, service and status reports including "almost dirty"
- TrueAlarm magnet test indication appears as distinct "test abnormal" message on display when in test mode
- TrueAlarm sensor peak value performance report
- **Install Mode** allows grouping of multiple troubles for uninstalled modules and devices into a single trouble condition, typical with future

* See module information sections for product that is UL or ULC listed and additional listing information. This product has been listed by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7165-0026:251(4100ES) for allowable values and/or conditions concerning material presented in this document. Accepted for use - City of New York Department of Buildings - MEA35-93E. At the time of publication only UL and ULC listings are applicable to ES Net network products. 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.

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

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.

Modular design

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

Module Bay Description

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

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

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

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

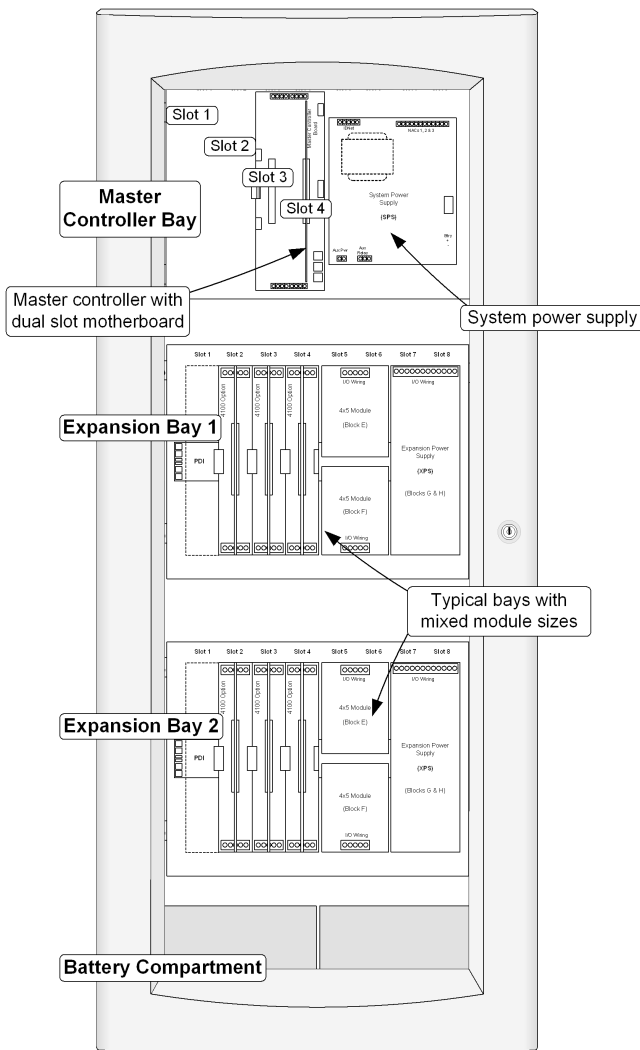


Figure 2: 4100ES Module Bay Reference

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 categories A through F, requires 4100-7912 option for additional legacy card stabilizer brackets and battery brackets as detailed on data sheet **S2081-0019**
- The latching dress panel (retainer) assembly easily lifts off for internal access
- NACs are mounted directly on power supply assemblies providing minimized wiring loss, compact size, and readily accessible terminations
- Packaging supports traditional 4100-style motherboard with daughter cards
- Modules are power-limited (except as noted, such as relay modules)
- The NEMA 1/IP30 box is ordered separately and available for early installation
- Doors are available with tempered glass inserts or solid; boxes and doors are available in platinum or red
- Boxes and door/retainer assemblies are ordered separately per system requirements; refer to data sheet **S4100-0037** for details

Operator Interface Detail Reference

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

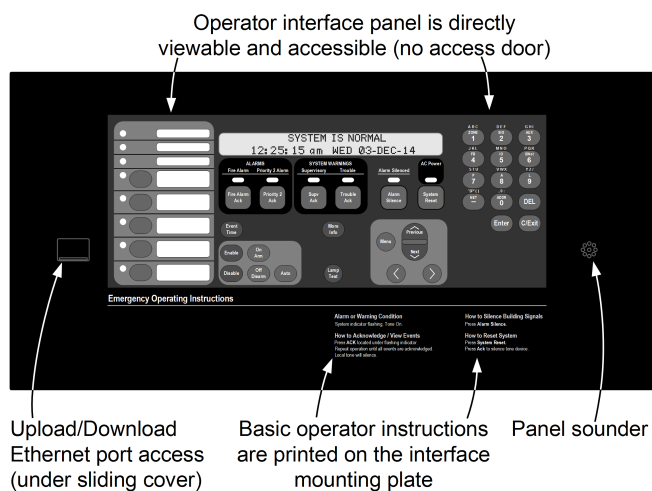


Figure 3: Operator Interface Detail Reference

Compatible Peripheral Devices

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

Addressable Device Control

Overview

The 4100ES provides standard addressable device communications for IDNet compatible devices and accepts optional modules for communications with MAPNET II compatible devices. Using a two wire communications circuit, individual devices such as manual fire alarm stations, TrueAlarm sensors, conventional IDC zones, and sprinkler

waterflow switches can be interfaced to the addressable controller to communicate their identity and status.

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

Addressable Operation

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

IDNet Channel Capacity

The CPU bay system power supply (SPS) provides an IDNet signaling line circuit (SLC) that supports up to 250 addressable monitor and control points intermixed on the same pair of wires. Additional 250 point IDNet circuit modules are available, see Table 16.

Table 1: IDNet, MAPNET II, IDNet 2, and IDNet 2+2 SLC Wiring Common Specifications

Specification	Description
Maximum Distance from Control Panel per Device Load	1 to 125 126 to 250
Connections	4000 ft (1219 m); 50 ohms 2500 ft (762 m); 35 ohms Terminals for 18 to 12 AWG (0.82 mm ² to 3.31 mm ²)

Table 2: IDNet and MAPNET II Specifications

Specification	Description
Wire Type	Preferred: Shielded twisted pair (STP) Acceptable: Unshielded twisted pair (UTP)
IDNet and MAPNET II Wiring, Total Wire Length Allowed With "T" Taps for Class B Wiring	Up to 10,000 ft (3 km); 0.58 μF

Table 3: IDNet 2 and IDNet 2+2 Wiring Specifications

Specification	Description
Wire Type	Shielded or unshielded, twisted or untwisted wire
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 2 Channels	1 μF
IDNet 2 and IDNet 2+2 Module Compatibility: IDNet communicating devices and TrueAlarm sensors including QuickConnect and QuickConnect2 sensors	

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

TrueAlarm System Operation

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

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

CO sensor bases combine an electrolytic CO sensing module with a TrueAlarm analog sensor to provide a single multiple sensing assembly using one system address. The CO sensor can be enabled/disabled, used in LED/Switch modes and custom control, and can be made public for communication across a fire alarm Network. For more details, refer to data sheet [S4098-0052](#).

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 10 year active life status providing indicators to assist with service planning. Indicators occur at: 1 year, 6 months, and when end of life is reached.

Modular TrueAlarm sensors

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

CPU Bay Module Details

Master Controller and Motherboard

- Mounts in Slot 4 of a two slot motherboard (Slots 3 and 4 of the Master Controller Bay) and provides one Class B or Class A, RUI+ communications channel configurable for isolated or un-isolated operation
- Slot 3 of the motherboard is primarily for a modular network interface card, or secondarily for the 4100-6038 dual RS-232 board
- RUI communications controls up to 31 devices per master controller (on one or multiple RUI+ and RUI channels); devices include: MINIPLEX transponders, 4603-9101 LCD Annunciators, 4602-9101 Status Command Units (SCU), 4602-9102 Remote Command Units (RCU), 4602 Series LED Annunciator Panels, and 4100 Series 24 I/O and LED/Switch modules.

Note: 4602 series annunciators require un-isolated communications

- Up to four RUI channels (combination of built-in RUI+ and optional RUI modules) are supported per master controller
- Optional Service Modem 4100-6030 mounts onto the master controller board with its own on-board connections

System Power Supply

- Rating is 9 A total with "Special Application" appliances; 4 A total for "Regulated 24 DC" appliance power
- Outputs are power-limited, except for the battery charger

- Provides system power, battery charging, auxiliary power, auxiliary relay, earth detection, on-board IDNet communications channel for 250 points, three on-board NACs, and provisions for either an optional City Connect Module or an optional Alarm Relay Module
- **IDNet SLC Output** provides Class B or Class A communications for up to 250 addressable devices, as described in [Addressable Device Control](#)
- Three, 3 A On-Board NACs, conventional reverse polarity operation; rated 3 A for Special Application appliances and 2 A for Regulated 24 DC power, with electronic control and overcurrent protection; selectable as Class B or Class A, and for synchronized strobe or SmartSync horn/strobe operation over two wires
- NACs are selectable as auxiliary power outputs derated to 2 A for continuous duty; total auxiliary power output per SPS is limited to 5 A
- **Battery Charger** is dual rate, temperature compensated, and charges up to 50 Ah sealed lead-acid batteries mounted in the battery compartment (33 Ah for single bay cabinets); also is UL listed for charging up to 110 Ah batteries mounted in an external cabinet, refer to data sheet [S2081-0012](#) for details
- **Battery and Charger Monitoring** includes battery charger status and low or depleted battery conditions; status information provided to the master controller includes analog values for: battery voltage, charger voltage and current, actual system voltage and current, and individual NAC currents
- **2 A Auxiliary Power Output** is selectable for detector reset, door holder, or coded output operation
- **Auxiliary Relay** is selectable as N.O. or N.C., rated 2 A @ 32 VDC, and is programmable as a trouble relay, either normally energized or normally de-energized, or as an auxiliary control
- **Optional City Connect Module** (4100-6031, with disconnect switches, or 4100-6032, without disconnect switches) can be selected for conventional dual circuit city connections
- **Optional Alarm Relay Module** (4100-6033) provides three Form C relays that are used for Alarm, Trouble, and Supervisory, rated 2 A resistive @ 32 VDC

8-Point Zone/Relay Module Details

- Select as IDC or Relay; configure up to eight Class B IDCs, or up to four Class A IDCs; or up to eight Relay outputs rated 2 A resistive @ 30 VDC (N.O. or N.C.); or combinations of IDCs and Relays; each zone is separately configurable as an IDC or Relay output
- IDC Support: each IDC supports up to 30, two-wire devices. Zone relay modules may be powered directly from the control unit power supply or through the optional 25 VDC regulator module where required for two-wire detector compatibility. Refer to 2-Wire Detector Compatibility document 579-832 for additional details.
- IDC EOL resistor values are selectable as: 3.3 k Ω , 2 k Ω , 2.2 k Ω , 3.4 k Ω , 3.9 k Ω , 4.7 k Ω , 5.1 k Ω , 5.6 k Ω , 6.34/6.8 k Ω , and 3.6 k Ω + 1.1 k Ω ; see instructions for more details

Operator Interface

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 Figure 4.

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.

- 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 1000 entries for each, 2000 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

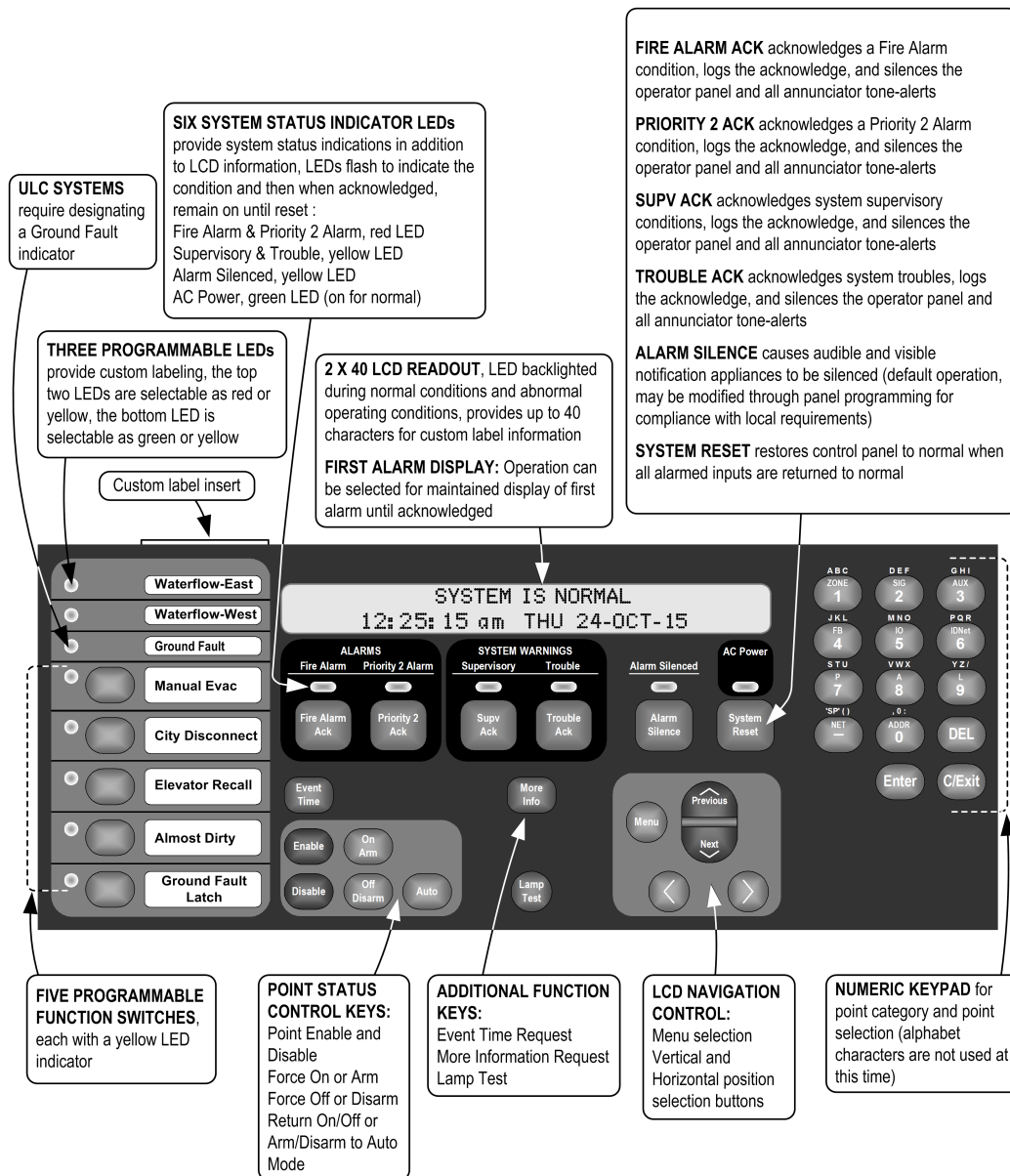
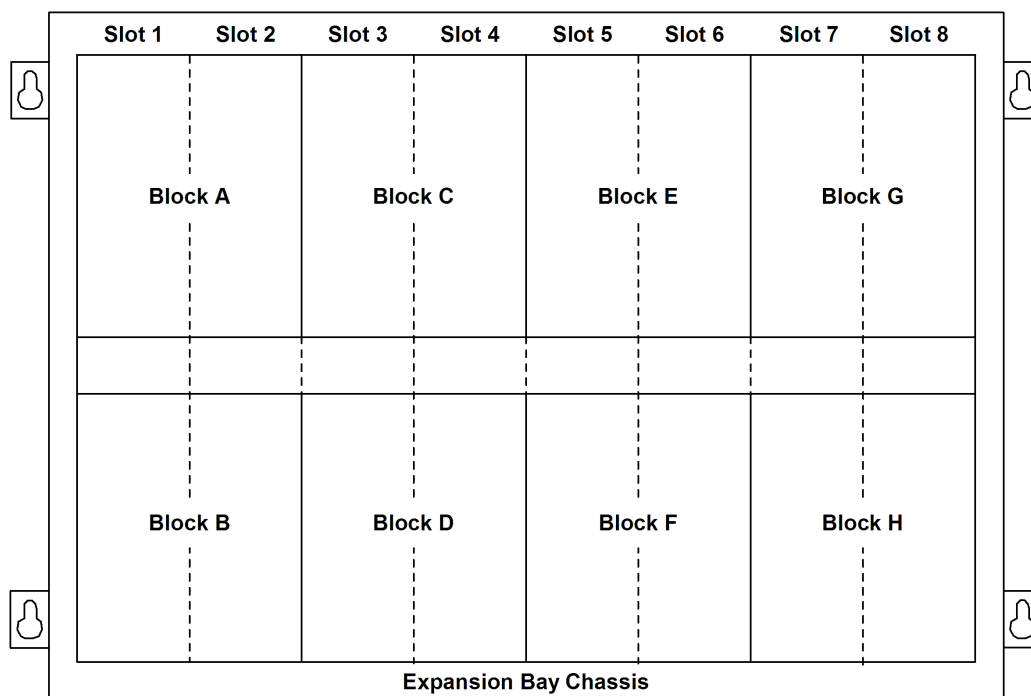


Figure 4: Operator Interface

Expansion Bay Module Loading Reference


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

Table 4: Expansion bay loading reference

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

Mounting and CPU Bay Module Reference

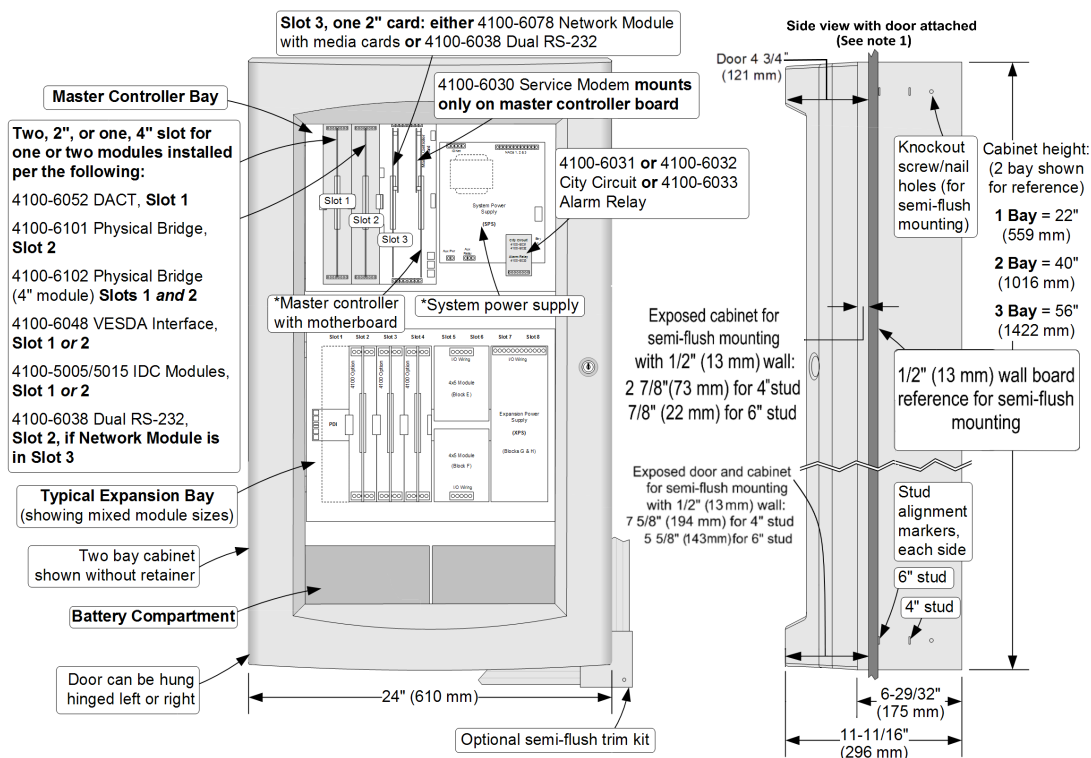


Figure 5: Mounting and CPU Bay Module Reference

Note:

1. Side view dimensions are shown with minimal cabinet and door protrusion from the exterior wall. For 6 in. stud construction with minimum protrusion shown, the door will open 90 degrees. To allow the door to open 180 degrees, the exposed cabinet dimension from the exterior wall must be a minimum of 3 in. (76 mm) for both 4 in. and 6 in. stud construction.
2. Asterisks (*) in Figure 5 indicate supplied modules.
3. 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.

General Specifications

Table 5: General Specifications

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

Master Controller Selection Information

Notes for Table 6 and Table 7

1. Refer to data sheet *S4100-0045* for InfoAlarm Command Center expanded content display products.
2. Master Controller current does not subtract from 9 A output rating.
3. Supervisory and alarm currents are without IDNet devices. Add IDNet device currents separately.

Table 6: 4100ES Master Controller and Expansion Bay Selection (Canadian models have low battery cutout)

Model	Model Type and Listing	Description	Supv.	Alarm
4100-9111	120 VAC Input	UL		
4100-9112	English	4100ES Master Controller Assembly with LCD and operator interface, 9 A system power supply/battery charger (SPS), 250 point IDNet interface, three NACs, auxiliary relay, and external RUI + (isolated or un-isolated) communications interface	373 mA	470 mA
4100-9113	French			
4100-9211	220-240 VAC Input	UL		
4100-9131	120 VAC Input	UL		
4100-9132	English, 120 VAC, Canadian	ULC	363 mA	425 mA
4100-9230	220 to 240 VAC Input	UL		
4100-9121 (not ULC listed)	Redundant Master Controller with a two bay assembly, one for each of the primary and backup master controllers. Both bays have an LCD and operator interface, CPU card assembly, and 9 A system power supply (SPS) 120 VAC, 60 Hz input. Active SPS battery charger in Bay 1 only. External RUI connections require 4100-1291 RUI expansion modules. Do not use circuit connections (IDNet, NACs, etc.) on primary and secondary SPS power supplies. Not compatible with ES Net network panels		718 mA	937 mA

Table 7: 4100ES Master Controller Upgrades for Existing 4100 Series Fire Alarm Control Panels

Model	Panel Type	Includes
4100-7150	1000 pt 4100 (4100+)	New Master Controller CPU card, 4100ES door assembly with LCD and user interface, and Ethernet connection
4100-7152	512 pt 4100	Same as 4100-7150 plus a Universal Power Supply
4100-7158	4100U or 1000 pt 4100 (4100+) previously upgraded to 4100U	New Master Controller CPU card with Ethernet Connection Upgrade Kit (door assembly with LCD and user interface are not included) for: 4100U with or without LCD and operator interface, or 4100+ without LCD and operator interface, or an existing 4100 (512 pt) or 4100+ (1000 pt) panel that was previously upgraded to a 4100U Master Controller and Display

Table 8: Master Controller Accessories

Model	Description
4100-2300	Expansion Bay Assembly; order for each required expansion bay (not required for 4100-9121)
4100-2303	Legacy Module Stabilizer Bracket, used when expansion bays have legacy slot style modules
4100-2301	Expansion Bay Upgrade Kit for mounting 4100ES style (4 in. x 5 in. modules) in existing 4100 style panels; Note: When using this kit to upgrade a 4100+ transponder, a 4100-0620 Transponder Interface Card (TIC) is also required for communications to the 4100ES module

Table 9: Master Controller Upgrades for Existing 4020 Series Fire Alarm Control Panel

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

Module Selection Information

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 NAC loads and all external loads powered from panel power supplies.

Table 10: Communication Modules

Model	Description	Size	Supv.	Alarm		
4100-1291	Un-isolated remote unit interface module (RUI); up to three maximum per control panel	1 Slot	85 mA	85 mA		
4100-6030	Service Port Modem, local panel access only, mounts to Master Controller Module, requires telephone line connection, accesses same information as front panel port	N.A.	70 mA	70 mA		
4100-6031	Select one per SPS (fits on SPS)	City Circuit, with disconnect switches	For use with SPS only, N.A.	20 mA	36 mA	
4100-6032		City Circuit, w/o disconnect switches	not RPS	N.A.	20 mA	36 mA
4100-6033		Alarm Relay, 3 Form C relays, 2 A @ 32 VDC; for SPS or RPS	N.A.	15 mA	37 mA	
4100-6038	Dual Port RS-232 with 2120 interface (slot module)	3 maximum of RS-232 type modules per panel	1 Slot	132 mA	132 mA	
4100-6046	Dual Port RS-232 standard interface (4 in. x 5 in. module)		1 Block	60 mA	60 mA	
4100-6045	Decoder Module	3 Slots	85 mA	163 mA		
4100-6048	VESDA Aspiration System Interface	1 Slot	132 mA	132 mA		
4100-6052	DACT, Point or Event Reporting; one shipped unless 4100-7908 is selected; two max. per system; includes two 2080-9047 cables, 14 ft (4.3 m) long, RJ45 plug and spade lugs	1 Slot	30 mA	40 mA		

Table 11: Expansion, System and Remote Power Supplies (Canadian models have low battery cutout)

Model	Voltage/Listing	Description	Size	Supv.	Alarm
4100-5101	120 VAC	UL Expansion Power Supply (XPS); 9 A output, three built-in Class A/B NACs; NAC operation is same as SPS, see Operator Interface for details	2 Blocks	50 mA	50 mA
4100-5103	120 VAC, Canadian	ULC Expansion Power Supply (XPS); 9 A output, three built-in Class A/B NACs; NAC operation is same as SPS, see Operator Interface for details	2 Blocks	50 mA	50 mA
4100-5102	220 to 240 VAC	UL Expansion Power Supply (XPS); 9 A output, three built-in Class A/B NACs; NAC operation is same as SPS, see Operator Interface for details	2 Blocks	50 mA	50 mA
4100-5115	NAC Expansion Module, three NACs, Class A/B, mounts on XPS only		N.A.	25 mA	25 mA
4100-5111	120 VAC	UL Additional System Power Supply (SPS); 9 A power supply/charger with 250 point IDNet channel, three Class A/B NACs, add IDNet device currents separately	4 Blocks	175 mA	185 mA
4100-5112	120 VAC, Canadian	ULC Additional System Power Supply (SPS); 9 A power supply/charger with 250 point IDNet channel, three Class A/B NACs, add IDNet device currents separately	4 Blocks	175 mA	185 mA
4100-5113	220 to 240 VAC	UL Additional System Power Supply (SPS); 9 A power supply/charger with 250 point IDNet channel, three Class A/B NACs, add IDNet device currents separately	4 Blocks	175 mA	185 mA
4100-5125	120 VAC	UL Remote Power Supply (RPS); 9 A power supply/charger similar to SPS except no IDNet channel or City Circuits; will accept one 4100-6033	4 Blocks	150 mA	185 mA

Table 11: Expansion, System and Remote Power Supplies (Canadian models have low battery cutout)

Model	Voltage/Listing	Description	Size	Supv.	Alarm
4100-5126	120 VAC, Canadian	ULC Remote Power Supply (RPS); 9 A power supply/charger similar to SPS except no IDNet channel or City Circuits; will accept one 4100-6033	4 Blocks	150 mA	185 mA
4100-5127	220 to 240 VAC	UL Remote Power Supply (RPS); 9 A power supply/charger similar to SPS except no IDNet channel or City Circuits; will accept one 4100-6033	4 Blocks	150 mA	185 mA

Table 12: Power supply accessories

Model	Description	Size	Current
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
4100-5130	Voltage Regulator Module, 22.8 to 26.4 VDC (25VDC nominal); isolated and resettable output; includes earth detection circuit and trouble relay for status monitoring.	1 Block	3 A maximum with 2.5 A load, 4.9 A maximum with 4 A load
4100-0636	Box Interconnection Harness Kit (non-audio); order one for each close-nipped cabinet		
4100-0638	4100 Slot Module Additional 24 VDC Harness; needed when 4100 Slot module requirements exceed 2 A from SPS		

Table 13: Expansion Signal Module and Options (1.5 A Class B except as noted)

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

Table 14: 8 Zone Initiating Device Circuits

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

Note: Modules listed in Table 14 are for use with all 4100U systems and 4100ES systems version 3.03.05 or earlier. IDC Modules are 1 slot size.

Table 15: 8-Point Zone/Relay Card

Model	Description	Size	Supv.	Alarm
4100-5013	8 point zone/relay 4 in. x 5 in. flat module. Supports eight Class B or four Class A IDCs. Mounts in any open block in a master controller or expansion bay. Alarm current shown is for eight Class B IDCs using 3.3K end-of-line-resistors with four in alarm and four in standby. Standby current shown is for all eight IDCs in standby. Refer to 579-1236 Zone/Relay Module Installation Instructions for additional information.	1 block	83 mA	295 mA
4100-6305	25 V regulator harness for 8 point zone/relay module. One required for each 8 point zone/relay module to be powered by the 4100-5130 25 V regulator module. A maximum of five 8 point zone/relay modules may be powered from the 4100-5130 per bay.	N/A	N/A	N/A

Note: Modules in Table 15 requires 4100ES Version 3.04.01 or later.

Table 16: IDNet Addressable Interface Modules

Model	Description	Supv.	Alarm	
4100-3109	IDNet 2 Module, 250 point capacity; electrically isolated output with two short circuit isolating Class B or Class A output loops, one block; standard on EPS with IDNet 2 Module; alarm currents for 50 and above devices includes 20 device LEDs in alarm	no devices	50 mA	60 mA
		50 devices	90 mA	150 mA
		125 devices	150 mA	225 mA
		250 devices	250 mA	350 mA
4100-3110	IDNet 2+2 Module, 250 point capacity; electrically isolated output with four short circuit isolating Class B or Class A output loops, one block; alarm currents for 50 and above devices includes 20 device LEDs in alarm	no devices	50 mA	60 mA
		50 devices	90 mA	150 mA
		125 devices	150 mA	225 mA
4100-3111	IDNet Short Circuit Isolating Loop Output Module; mount up to two on a 4100-3109 module; for use with 4100-3109 modules; this option is for aftermarket field installation only	250 devices	250 mA	350 mA

Note: Loading per IDNet device (no LEDs on) = 0.8 mA supervisory and 1 mA alarm. Each IDNet 2 and IDNet 2+2 Short Circuit Isolating Loop Output can be individually controlled for system diagnostics and can be assigned a public point for Fire Alarm Network annunciation.

Table 17: MAPNET Addressable Interface Modules

Model	Description	Supv.	Alarm
4100-3102	MAPNET II Module, 127 point capacity, add devices separately; Module size = 2 Slots; Loading per MAPNET II device = 1.7 mA	Module without devices	275 mA
		Fully loaded module, total	471 mA
4100-3103	Isolator Module for MAPNET II communications; converts a single connected SLC into four isolated outputs selectable as Class A or Class B; up to two Isolator Modules can be connected to one SLC; Module size = 1 Slot; Note: Compatible with MAPNET II Remote Isolators only	50 mA	50 mA

Table 18: Relay Modules; Non power-limited (for mounting in expansion bay only)

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

Table 19: System Option for Seismic Compliance

Model	Description
4100-7912	System option for Seismic compliance, provides additional stabilizer brackets required for legacy style cards

Table 20: End User Programming Software (requires 4100-8802)

Model	Description
4100-8802	Programming Software (select)

Table 21: End User Programming Software Selection (select maximum of one each from below)

Model	Description
4100-0292	Custom Labels Editing; allows editing of 40 Character Custom Labels for non-system user points
4100-0296	Access Level/Passcode Editing; allows user to re-assign Access Levels and Passcodes for each display function; Acknowledge, Alarm Silence, System Reset, Point Enable/Disable, WALKTEST Enable/Disable, Clear History Logs, Change Time & Date, etc.
4100-0295	Port Vectoring Setup and Control; Allows vectoring of events to PC Annunciator, Printers, LCD Annunciators, etc.
4100-0298	WALKTEST Configuration Setup and Control; Allows user to create or edit WALKTEST groups used to test system initiating devices and signals by a single person, these groups allow an inspector to conduct a one-person WALKTEST in a specific area of a building (or different buildings), and limit the activation of the building signals to only the intended area; up to eight WALKTEST groups are supported

Table 22: Miscellaneous Accessories

Model	Description
4100-1279	Single blank 2 in. display cover; 4100-2302 provides a single plate for a full bay
4100-9856*	4100ES Canadian French Appliqué Kit; Simplex, 4100ES, Contrôle Incendie
4100-9857*	4100ES English Appliqué Kit; Simplex, 4100ES, Fire Control
4100-9858*	4100ES InfoAlarm Remote Display English Appliqué Kit; Simplex, Operator Interface, 4100ES
4100-9859*	4100ES InfoAlarm Remote Display Canadian French Appliqué Kit; Simplex, Interface de l'opérateur, 4100ES
4100-9868	Special Purpose Appliqué Kit: Simplex, Elevator Recall Control and Supervisory Control Unit, 4100ES
4100-9869	Special Purpose Appliqué Kit: Simplex, Sprinkler Waterflow and Supervisory Station, 4100ES
4100-9835	Termination and Address Label Kit (for module marking); provides additional labels for field installed modules
4100-6029	Smoke Management Application Guide; required for UUKL listing
4100-6034	Tamper Switch, one per cabinet assembly if required; monitors solid door for panels with solid door; monitors the internal retainer panel for panels with glass door (not the glass door); has a built-in addressable IDNet IAM
2081-9031	Series resistor for WSO, IDCs (N.O. water flow and tamper on same circuit, wires after water flow and before tamper) 470 Ω, 1 W, encapsulated, two 18 AWG leads (0.82 mm ²), 2 1/2 in. L x 1 3/8 in. W x 1 in. H (64 mm x 35 mm x 25 mm)

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

Network Interface and Network Media Card Product Selection

4100ES fire alarm control units are compatible with Simplex ES Net network or 4120 network fire alarm products.

- Refer to datasheet [S4100-0076](#) for additional information on compatible ES Net fire alarm products.
- Refer to datasheet [S4100-0056](#) for additional information on compatible 4120 fire alarm products.

Additional 4100ES and Network Product Reference
Table 23: Additional 4100ES and Network Product Reference

Subject	Data Sheet
Serial DACT (SDACT) for 4100ES, 4010ES, 4007ES	S2080-0009
Battery and Battery Cabinet Reference for 4100ES	S2081-0006
110 Ah Batteries and Cabinets for 4100ES	S2081-0012
Seismic Battery Brackets Reference	S2081-0019
4009 IDNet NAC Extender	S4009-0002
4009 IDNAC Repeater	S4009-0004
External 110 Ah Battery Charger for 4100ES, 4010ES	S4081-0002
Graphic I/O Modules for 4100ES, 4010ES, 4007ES	S4100-0005
Interface to VESDA Air Aspiration Detection Systems	S4100-0026
4100ES LED/Switch Modules & Printer	S4100-0032
Master Clock Interface	S4100-0033
4100ES Emergency Voice/Alarm Equipment	S4100-0034
MINIPLEX Transponders with SPS Power Supplies	S4100-0035
NDU with SPS Power Supplies for 4120 Network	S4100-0036
4100ES Enclosures	S4100-0037
4100ES Remote Annunciator Panels	S4100-0038
4100ES Extinguishing Release Applications	S4100-0040
TFX Interface Module	S4100-0042
InfoAlarm Command Center with SPS Power Supplies	S4100-0045
2120 BMUX Module	S4100-0048
Multiple Signal Fiber Optic Modems for 4120 Networks	S4100-0049
BACpac Ethernet Module	S4100-0051
4120 Network Products and Specifications	S4100-0056
Building Network Interface Card (BNIC)	S4100-0061
SafeLINC Internet Interface	S4100-0062
TrueInsight Remote Gateway	S4100-0063
ES Net Network Products and Specifications	S4100-0076
NDU with SPS Power Supplies for ES Net	S4100-0077
4100ES Basic Panels with EPS Power Supplies	S4100-0100
InfoAlarm Command Center with EPS Power Supplies	S4100-0101
NDU with EPS Power Supplies for 4120 Network	S4100-0102
MINIPLEX Transponders with EPS Power Supplies	S4100-0103
NDU with EPS Power Supplies for ES Net	S4100-0104
PC Annunciator	S4190-0013
TrueSite Workstation	S4190-0016
Network System Integrator (NSI) for 4120 Networks	S4190-0017
TrueSite Incident Commander	S4190-0020
24-Pin Dot Matrix Fire Alarm System Remote Printer	S4190-0027
SCU/RCU Annunciators for 4007ES, 4010ES, 4100ES	S4602-0001
LCD Annunciator for 4100ES	S4603-0001

Features

4009 IDNAC Repeaters provide enhanced power delivery to TrueAlert/TrueAlert ES addressable notification appliances controlled by IDNAC SLCs:

- Output voltage in alarm is maintained by an efficient switching regulator at 29 VDC during both AC input and battery backup conditions allowing strobes to operate at lower current
- With lower current strobes and regulated output voltage, wiring distance can be extended 2 to 3 times that of conventional notification, appliance loading can be increased, or smaller wire gauge can be used, all resulting in *installation savings* with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions

4009 IDNAC Repeaters receive an IDNAC SLC input and provide a repeated 3 A SLC output to extend SLC distance and power:

- Appliance control and address limit remains with the host IDNAC control panel. Repeater status is communicated to the control panel for system diagnostics and also locally indicated
- Repeater output extends supervisory capacity by up to 139 additional unit loads or 3 A
- Input SLC connection can be Class B or Class A
- Repeater output can be a Class A loop or a Class B output with internal connections for up to four (4) T-tapped output branches (Class A output requires 4009-9814 Class A Adapter)
- Operation requires one IDNAC SLC address; Repeaters can be connected as one in series, or up to five (5) in parallel
- AC power input is 120 VAC or 220-240 VAC, 50/60 Hz, auto-select
- An on-board battery charger is provided with low AC battery disconnect selectable per Repeater (required for ULC listed applications)
- Operation is compatible with TrueAlert ES and TrueAlert addressable notification appliances and accessories
- Available with platinum or red cabinet
- Listed to UL 864 and ULC S527

Multiple wiring options are available:

- Wiring options include Class B multiple branch (up to 4) output, Class A loop extension, and Class A riser to Class B branches or a Class A loop output
- When the Repeater is part of a Class A loop from the IDNAC SLC source panel, up to twice the distance for the loop is available; (Class A loop repeating requires 4009-9814 Class A Adapter)

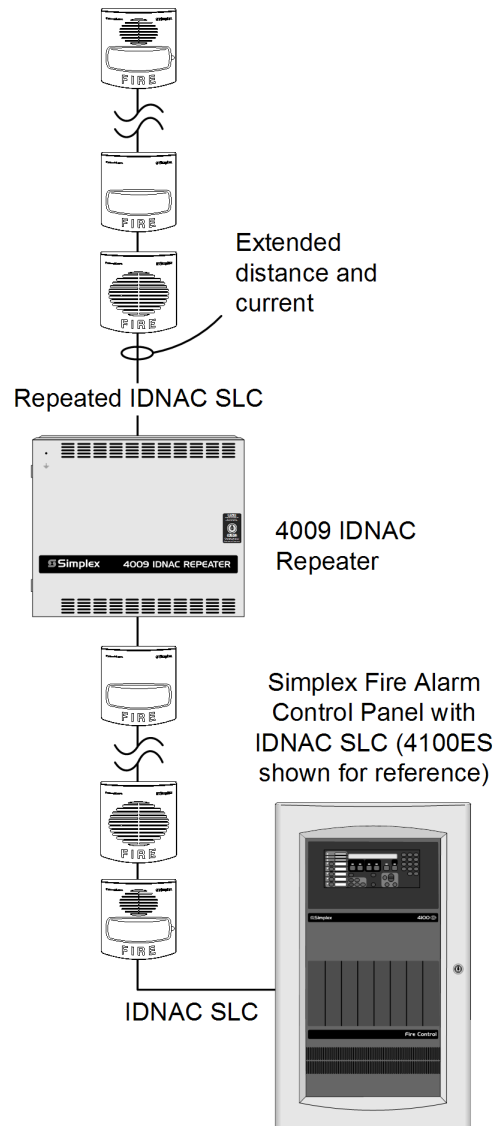


Figure 1: 4009 IDNAC Repeater Extends Distance and Current of IDNAC SLC

Class A Adapter 4009-9814:

- Required when extending a Class A loop or to provide a Class A local loop SLC output
- Operation provides short circuit isolation between input and output terminals for improved IDNAC SLC survivability

Built-in battery Charger

- Power supply charges up to 12.7 Ah batteries for in cabinet mounting and up to 25 Ah batteries with model 4009-9801 external battery cabinet

Available auxiliary output:

- A 200 mA, 29 VDC constant auxiliary output is available; operation is maintained during battery backup

* 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 7165 0026:0378 for allowable values and/or conditions concerning material presented in this document. NYC Fire Dept COA #6151. 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

Repeating IDNAC SLCs

Simplex fire alarm control panels with IDNAC SLC outputs provide individual address and control of TrueAlert and TrueAlert ES addressable notification appliances. When an IDNAC SLC reaches the current limit or the distance limit of the source IDNAC SLC, use of 4009 IDNAC Repeaters extends the IDNAC SLC with an additional 3 A of SLC current and up to 139 unit loads of additional supervisory capacity.

With IDNAC SLCs, a constant 29 VDC source voltage is maintained in alarm, 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 wiring distances up to 2 to 3 times farther than with conventional notification, or support for more appliances per IDNAC SLC, or use of smaller gauge wiring, or combinations of these benefits, all providing installation and maintenance savings with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions.

Description

Three wiring configurations

Three wiring configurations are available to provide a variety of system solutions: Class B branch extension, Class A loop extension, and Class A riser to Class B branch extension or Class A loop output.

Class B branch input wiring

Class B branch input wiring allows T-tapped connections to up to five (5) parallel connected 4009 IDNAC Repeaters. Each Repeater has on-board output terminal connections for up to four (4) output branch circuits, and additional branch circuits can be externally T-tapped as required. (Refer to [Wiring Reference, Class B Input with Class B Branch Circuit Outputs](#) for additional details.)

Class A loop extensions use a single 4009 IDNAC Repeater to extend the current and distance of a single Class A loop allowing the loop distance to be doubled.

The Repeater communicates and repeats bi-directionally allowing Class A loop operation to be maintained in the event of an open circuit. This wiring connection requires use of the 4009-9814 Class A adapter. (Refer to [Wiring Reference, Class A Loop Extension](#) for additional details.)

Class A Riser to Class B Branches or Class A Loops

For applications requiring a combination of wiring types, a Class A riser can drive up to five (5) 4009 IDNAC Repeaters with each Repeater capable of driving either single or multiple Class B branch output(s) or a Class A loop output. In this wiring application, the Repeater does not repeat in the Class A riser loop, it is connected as an appliance with Class A in/out wiring. To create a Class A loop output, the Repeater must be equipped with a 4009-9814 Class A Adapter. (Refer to [Wiring Reference, Class A Riser Input with Class A Loop and Class B Branch Outputs](#) for additional details.)

Product Selection

Table 1: IDNAC Repeater Selection

Model*	Cabinet Color	Description
4009-9601(BA)	Platinum	4009 IDNAC Repeater with cabinet; provides a single 3 A IDNAC SLC output, 200 mA auxiliary power output,
4009-9602(BA)	Red	and battery charger; 120/240 VAC, 50/60 Hz input, auto-select

* Model numbers ending with BA suffix are assembled in the USA.

Table 2: Aftermarket Accessories (installed on-site, select per system requirements)

Model	Description
4009-9814	Class A Adapter Module, mounts on repeater controller board; required for Class A output
2975-9813	Platinum semi-flush box trim
2975-9812	Red semi-flush box trim

1 7/16" (37 mm) wide, four corners and trim pieces for top, bottom, and sides; (will need to be cut to fit 4009 IDNAC Repeater cabinet)

Table 3: External Accessories (select per system requirements)

Model	Description	Comments
4905-9929	Remote TrueAlert Communications Isolator	Refer to data sheet <i>S4905-0001</i> for details
4009-9801	External Battery Cabinet for 25 Ah batteries	16 1/4" W x 13 1/2" H x 5 3/4" D (413 mm x 343 mm x 146 mm); refer to data sheet <i>S2081-0006</i> for details

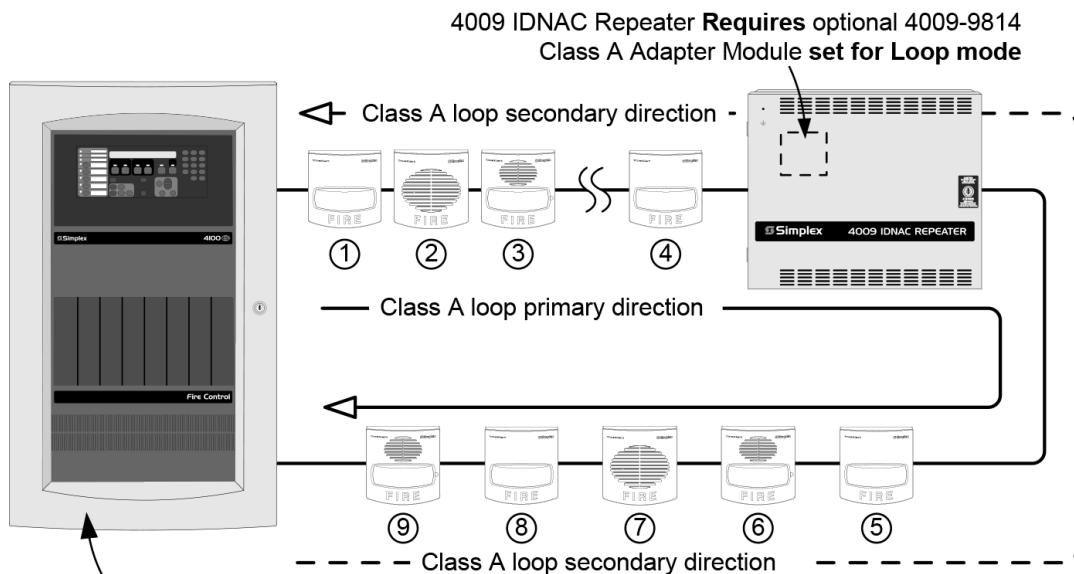
Table 4: Battery Selection (select battery size per system requirements; two batteries are required for 24 VDC operation)

Model	Description
2081-9272	6.2 Ah Battery, 12 VDC
2081-9274	10 Ah Battery, 12 VDC
2081-9288	12.7 Ah Battery, 12 VDC
2081-9275	18 Ah Battery, 12 VDC
2081-9287	25 Ah Battery, 12 VDC

Requires 4009-9801 External Battery Cabinet

Wiring Reference, Class A Loop Extension

Class A IDNAC SLC Loop with 4009 IDNAC Repeater Extending Loop Range and Power



Simplex Fire Alarm Control Panel with IDNAC SLC; **requires** optional Dual Class A IDNAC Isolator (DCAI), refer to individual panel documentation for details (4100ES with EPS shown for reference)

Notes:

1. Only one 4009 IDNAC Repeater can be wired in a Class A loop. (IDNAC SLC communications can be repeated **only once** between the source and the addressable appliance.)
2. The 4009 IDNAC Repeater extends distance and current of the Class A IDNAC SLC loop; it requires one address and consumes four (4) unit loads.
3. Under normal operating conditions (no open circuit wiring), appliances 1 through 4 are powered by the Panel Power Supply and appliances 5 through 9 are powered from the 4009 IDNAC Repeater.
4. Under open circuit conditions, an open circuit in the panel side of the primary path will result in the Panel Power Supply powering appliances 5 through 9 and the 4009 IDNAC Repeater will receive IDNAC SLC input from the return path and then power appliances 1 through 4, or as many as remain connected.

Figure 3: Wiring Reference

Wiring Reference, Class A Riser Input with Class A Loop and Class B Branch Outputs

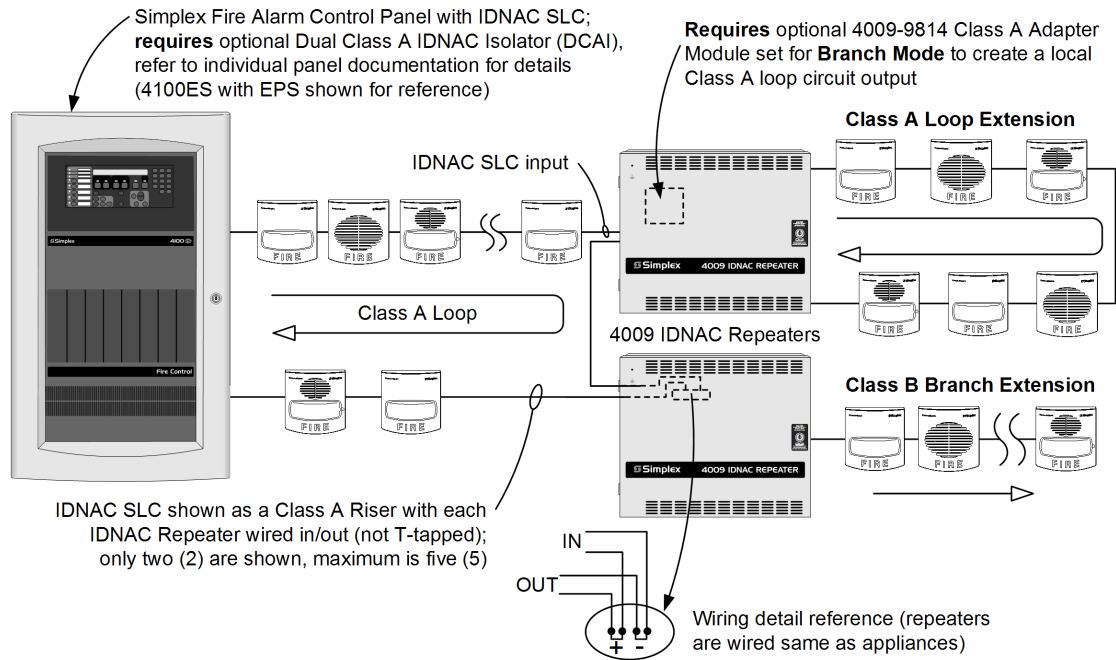


Figure 4: Wiring Reference

4009 IDNAC Repeater Mounting and Module Placement Reference

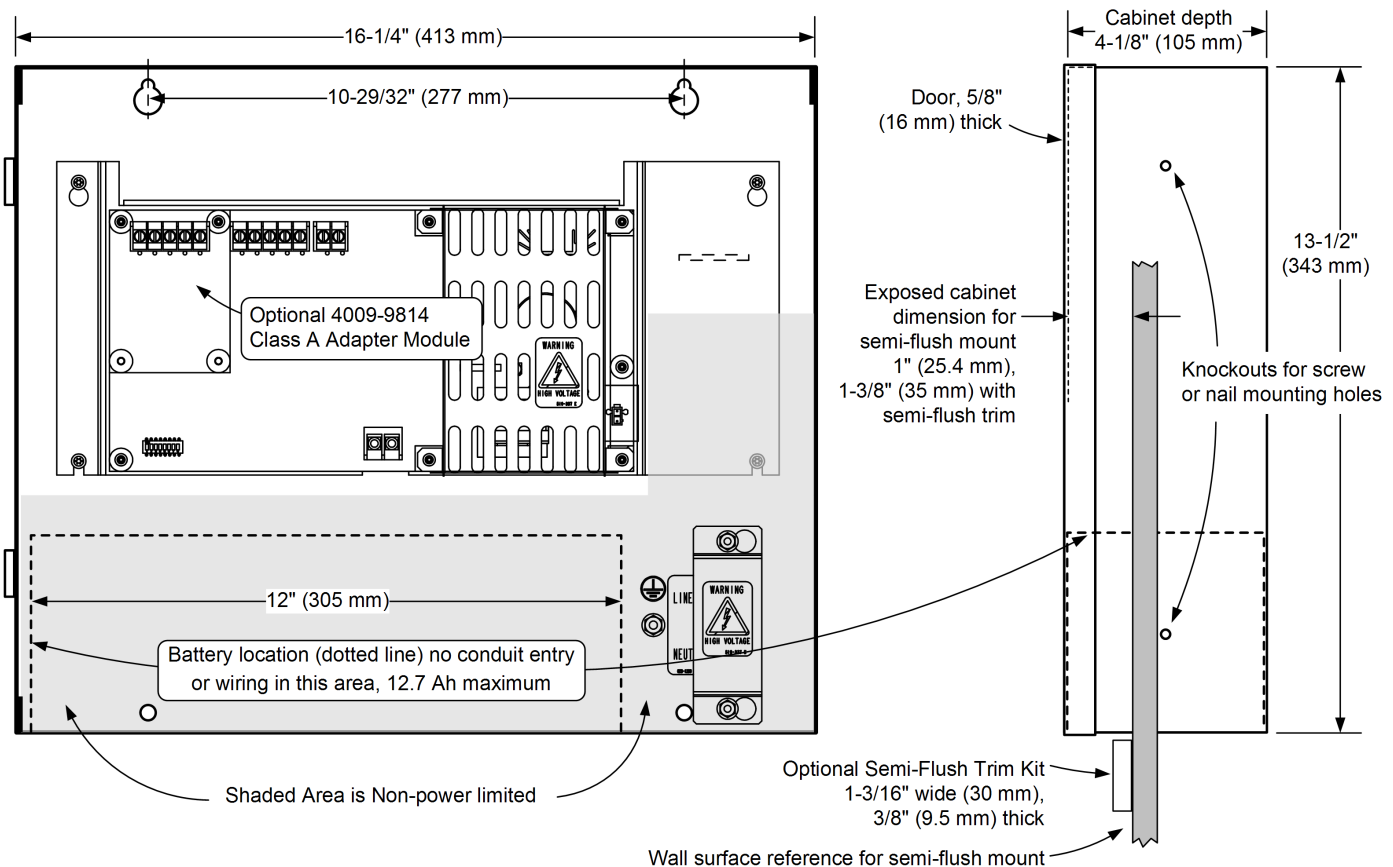


Figure 5: Placement Reference

4009 IDNAC Repeater Specifications

Table 5: Input Ratings

Specification	Rating
Voltage Range	120 VAC, 50/60 Hz, or 220/230/240 VAC, 50/60 Hz, +10%, -15%, auto-select
120 VAC Current	2.5 A
220/230/240 VAC Current	1.25 A
IDNAC Input Ratings	17 VDC minimum
	1 address, 4 unit loads

Table 6: 24 VDC Requirements for Battery Calculations

Specification	Panel	IDNAC Appliances	Auxiliary Load
Standby Currents	70 mA	0.8 mA each	Output current (voltage is from battery)
Alarm Currents	96 mA	4.5 A maximum with 3 A IDNAC SLC load and 200 mA Auxiliary output load (actual alarm current depends on connected and activated appliances and devices)	1.37 x output current (voltage converter is on when in Alarm)

Table 7: Output Ratings

Specification	Rating	
IDNAC SLC Output	3 A maximum @ 29 VDC for Special Application appliances	
Compatible Special Application Appliances	Simplex TrueAlert ES and TrueAlert addressable notification appliances; contact your Simplex product representative for compatible appliances	
IDNAC Repeater Loading and SLC Address Usage	Each repeater uses four unit loads on the IDNAC channel it receives power from and supports up to 139 additional unit loads. Most appliances are 1 unit load; Multi-Tone appliances are 2 unit loads; Repeaters and Isolators are 4 unit loads. Refer to individual appliance and device specifications for unit load requirements and rated SLC loading specifications.	
	Each repeater uses one IDNAC SLC device address - the IDNAC Repeater does not increase the IDNAC channel device address capacity. Refer to the Host IDNAC SLC specifications for the device address capacity specifications on the IDNAC channel.	
Auxiliary Output	Current	200 mA maximum
	Voltage	29 VDC nominal with AC present or when Repeater is on battery standby and in Alarm
		24 VDC nominal when on battery standby and not in Alarm

Table 8: IDNAC SLC Wiring Specifications (refer to installation instructions for more information)

Specification	Rating
Recommended wire type	UTP, unshielded twisted pair
Maximum wire length allowed with "T-Taps" for class B wiring	10,000 ft (3048 m)
Maximum wire length to any appliance	4000 ft (1219 m)
Wiring Connections	Terminal blocks for 18 to 12 AWG

Table 9: Repeater Status Indicators

Specification	Rating
Green AC Power LED	On with AC present, off during brownout or no AC condition
Red Communications LED (COMM)	Blinks when Repeater is communicating with the host control panel
Yellow System Status LEDs	4 LEDs provide up to 16 different trouble status indications; an on-board trouble scroll button allows review should multiple troubles occur

Table 10: 4009-9814 Class A Adapter Module Option (required for Class A loop extension or for Class A output)

Specifications	Rating
IDNAC SLC Output Voltage	3 A maximum @ 29 VDC for Special Applications appliances
Status LEDs	Two connections, Port A and Port B, function varies by application (loop extension or local loop), Port A and Port B are isolated from each other
	Two yellow trouble LED indicators, one for each port

Table 11: Environmental and Technical Publications Reference

Specification	Rating	
Operating Temperature	32 °F to 120 °F (0 °C to 49 °C)	
Operating Humidity Range	Up to 93% RH at 90 °F (32 °C)	
Installation Instructions	4009 IDNAC Repeater	579-1019
	Class A Adapter Module	579-1080

Features**Remote LCD annunciator for use with Simplex® model:**

- 4100ES and 4100U fire alarm control panels
- Legacy products 4100, 4120, and 4020 fire alarm control panels, and 4100/4120 Universal Transponders

Information display features:

- Maintained display of first alarm is available with 4100ES and with 4100U at software revision 11.11 or higher
- Wide viewing angle, super-twist LCD technology with green LED backlighting
- Two lines of 40 characters each
- LED status indicators
- During battery backup, backlighting is disabled until there is switch activity

Controls include:

- Switches for system acknowledge, alarm silence, and system reset
- Four programmable control switches
- Lamp/LCD test

Wiring information:

- RUI (Remote Unit Interface) communications require a single twisted wire pair (see p. 3 for more information)
- Separate wiring is required for 24 VDC control panel power

Flush mount on standard electrical boxes**Options:**

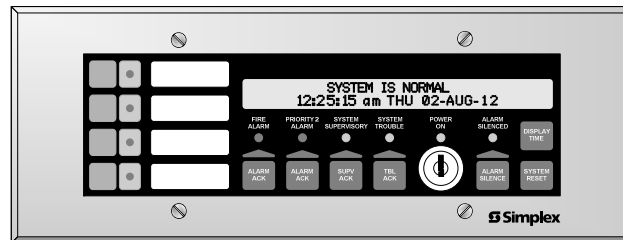
- 2975-9206, Surface mount box
- 4603-9111, Brushed stainless steel trim

UL Listed to Standard 864**Description**

Remote Control and Annunciation is provided using an 80 character, back-lit, alphanumeric display. Information is presented in clear, descriptive English language and includes: **Point Status** (alarm, trouble, etc.); **Alarm Type** (smoke detector, manual station, etc.); **Number of System Alarms, Supervisory Conditions, and Trouble Conditions**; and a **Custom Location Label**.

Wiring. A single twisted wire pair provides serial RUI communications that also supports other Simplex serial annunciators on the same wire pair.

Multiple Indications. Alarm, Supervisory, and Trouble conditions are also indicated by dedicated LEDs and a tone-alert audible sounder. Each condition has a dedicated acknowledge push-button switch that silences the tone-alert but leaves the LED on until all conditions in that category are restored to normal. Switch operation is either globally or individually acknowledgeable, determined by the control panel operation.



4603-9101 LCD Annunciator

Description (Continued)

Repeated operation of the appropriate acknowledge switch will scroll the LCD display showing activity in the sequence of occurrence. The tone-alert also pulses to indicate the operation of any of the push-button switches.

Consult local code requirements for guidance in determining applications and location of the 4603-9101 LCD annunciator.

Operation

System Controls. Notification appliances can be deactivated by pressing the “ALARM SILENCE” switch. (Exact operation is determined by the host control panel such as visible appliances remaining on until system is reset.) Pressing the “SYSTEM RESET” switch restores the system to normal operation. When system activity is normal, the LCD displays the time, date, and “SYSTEM IS NORMAL.”

Control Switches. Four programmable “CONTROL” switches and associated LEDs are included. Typical applications include manual evacuation, door holder release bypass, and elevator capture bypass.

Keyswitch Enable. All switches on the annunciator are controlled by the “ENABLE” keyswitch with a key that is removable only in the disabled position. A brief lamp/LCD test is performed whenever the keyswitch is changed from enabled to disabled.

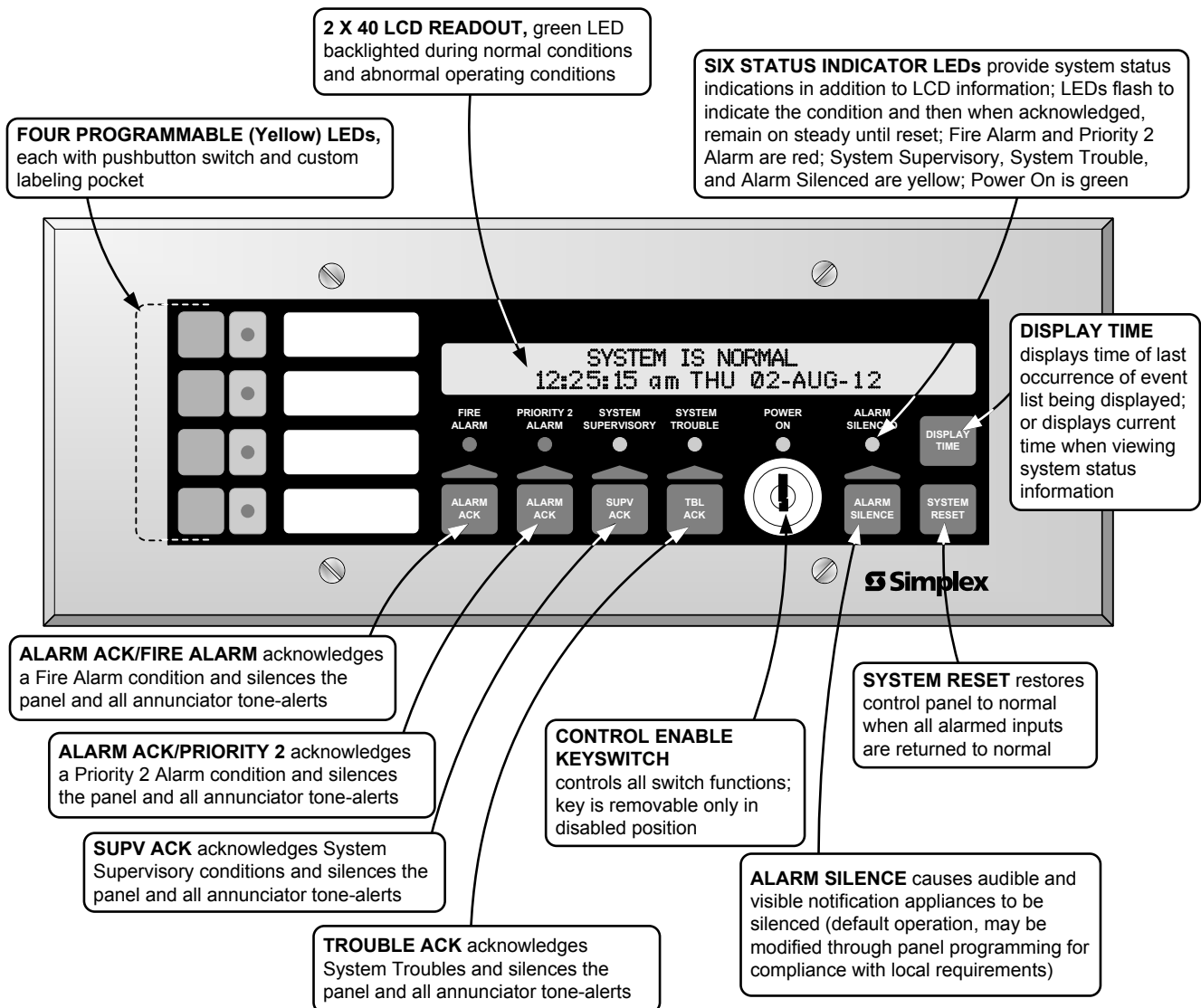
Battery Backup Operation. During battery backup, the LED backlighting is disabled to conserve battery power. When an annunciator switch is activated, the backlighting is automatically enabled. After approximately 30 seconds of inactivity, the backlighting will again be disabled.

* 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 7120-0026:0179 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.

Product Selection

Model	Description	
4603-9101	Remote LCD Annunciator with beige trim	Refer to specifications on page 3 for additional details
4603-9101CF	Remote LCD Annunciator with beige trim, with French keypad for Canada	
4603-9111	Brushed stainless steel trim option	
2975-9206	Matching surface mount box; ivory finish	
2081-9044	Overvoltage protector; required where annunciator communications and power wiring exits and enters a building; refer to data sheet S2081-0016 for details	

4603-9101 Operator Information



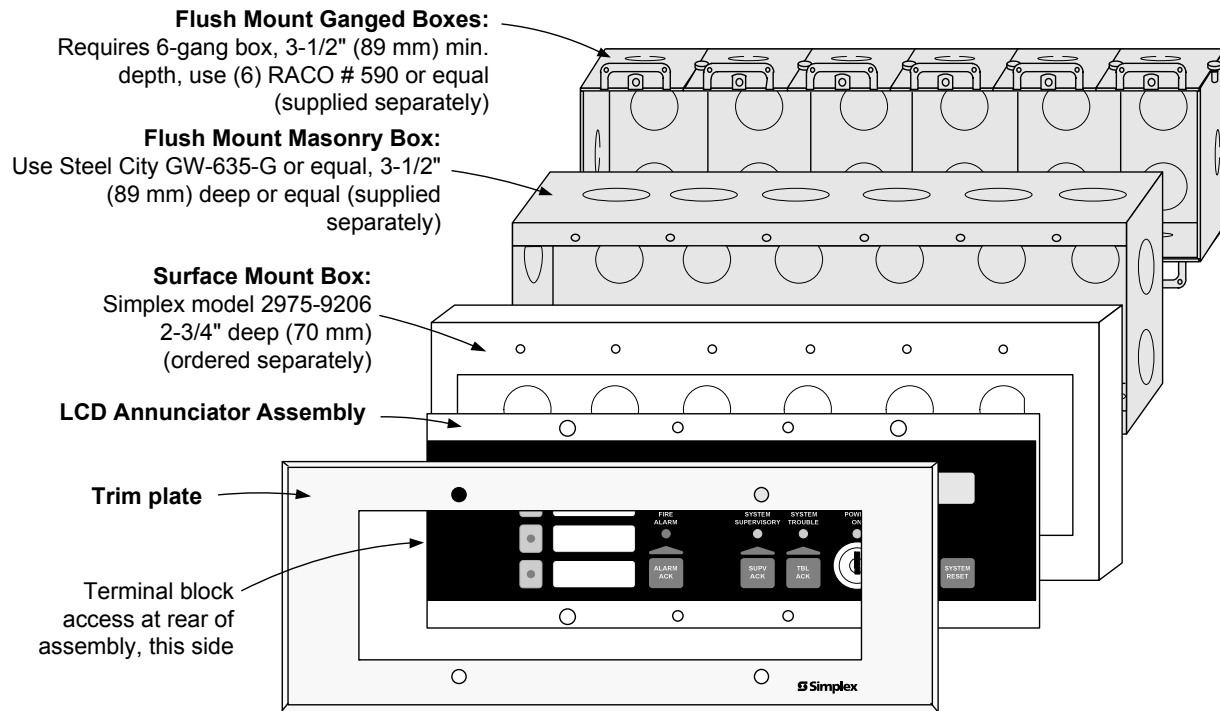
4603-9101 LCD Annunciator Specifications

For additional information, refer to Installation Instructions 579-979.

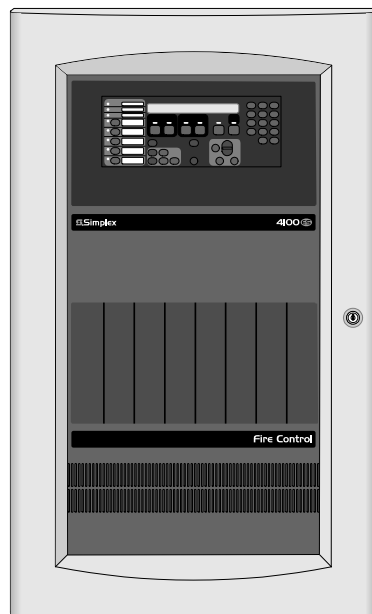
General Operating Specifications		
Voltage	18 to 32 VDC, system supplied	
Normal Operating Current	110 mA (with LED backlighting on)	
Battery Standby Current	65 mA (during battery backup, LED backlighting is turned off after 30 seconds without switch activity)	
Alarm Current	140 mA maximum (LED backlighting is on and tone-alert is sounding)	
Operating Temperature Range	32° to 120° F (0° to 49° C)	
Operating Humidity Range	Up to 93% RH, non-condensing at 100° F (38° C)	
Communications		
4100ES/4100U Capacity, Per RUI Output	Type	RUI (Remote Unit Interface) external annunciator communications line SLC (signaling line circuit)
	Capacity	Up to 31 remote annunciators/MINIPLEX transponders per channel including the 4603-9101 LCD Annunciator, the 4602-9101 Status Command Unit (SCU), and 4602-9102 Remote Command Unit (RCU); refer to data sheet S4100-0031 for additional 4100ES information
Wiring Requirements		
RUI Data	Standard Wiring Type	Unshielded twisted pair (UTP), 18 AWG (0.82 mm ²) for most applications, see below
	Wiring Characteristics	0.58 µF (580 nF) maximum capacitance between conductors; 35 Ω maximum total line resistance
	Wiring Applications Requiring Shielded, Twisted Pair (STP)	<ol style="list-style-type: none"> 1. Wiring that leaves the building. Also requires Isolated Loop Circuit Protectors on each end, refer to data sheet S2081-0007 for 2081-9027 (200 mA), or S2081-0008 for 2081-9028 (5 A) 2. Wiring run in 500 ft (152 m) or more of conduit. 3. Wiring closely bundled with standard IDNet communications or TrueAlert addressable communications (not required when run with IDNet+ communications).
	Class B "T-Tap" wiring distance	Up to 10,000 ft (3048 m) total wiring; up to 2500 ft (762 m) to farthest device
	Class X wiring distance	Up to 2500 ft (762 m)
	Power Wiring	18 to 12 AWG (0.82 mm ² to 3.31 mm ²) wires for 24 VDC system power
Earth Wiring	A dedicated earth ground connection to the electrical box is required for proper ESD and EMI protection; wire in accordance with NFPA 70 (<i>National Electrical Code</i>) Article 250	
Mounting Information		
NOTE: General Conduit Entrance Requirement	Conduit entrance must be located a minimum of 2 3/4" (70 mm) from the front of the box to clear assembly	
Trim Dimensions	4 1/2" H x 11 13/16" W (114 mm x 300 mm)	
Standard Trim Finish	Steel, painted beige	
4603-9111, Optional Trim	Brushed stainless steel (ordered separately); supplied with both slotted and tamper resistant screws	
Boxes for Flush Mounting (supplied by others)	6-Gang, 3 1/2" (89 mm) deep: Steel City GW-635-G, 6-gang masonry box; RACO 590, gangable switch box, 6 required; or equal	
2975-9206, Surface Mount Box Option (ordered separately)		
Dimensions	11 31/32" W x 4 5/8" H x 2 3/4" D (304 mm x 117 mm x 70 mm)	
Finish	Painted steel, ivory finish	

Mounting Information

Note: Review box choice with assembly layout before selecting conduit entrance location to allow easy access to terminals



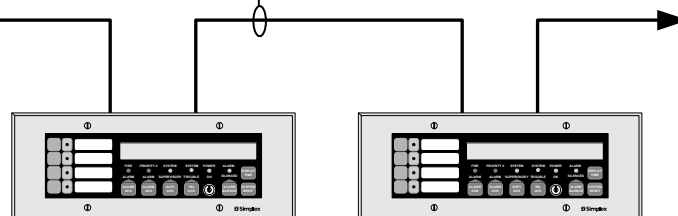
Wiring Reference



Fire Alarm Control Panel
(4100ES shown)

Wiring Notes:

1. Communications require a single 18 AWG twisted pair.
2. Power requires two, 18 to 12 AWG wires for 24 VDC system power, plus Earth Ground to each electrical box.
3. Refer to Installation Instructions 579-979 for additional wiring specifications.



4603-9101 LCD Annunciators

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S4603-0001-14 8/2016

www.simplexgrinnell.com

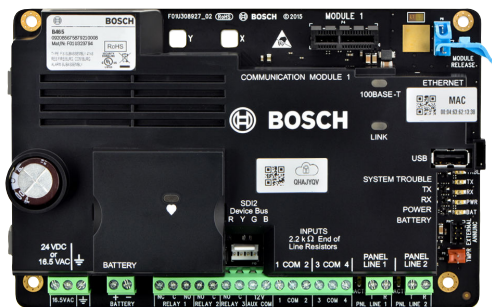
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B465 Universal Dual Path Communicator

www.boschsecurity.com



BOSCH
Invented for life



- ▶ Compatible with control panels using Contact ID, SIA, Pulse 3/1 or Pulse 4/2 communication formats, Modem II, Modem IIe, and Modem IIIa² (auto detecting)
- ▶ No control panel reprogramming required to install
- ▶ Supports Ethernet directly and optional plug-in cellular communication technologies in single, or multi-path configurations
- ▶ Supports four configurable inputs and three configurable outputs
- ▶ Approved for Commercial Fire/Burglary applications as sole, primary, or secondary communication path

The B465 Conettix Universal Dual Path Communicator converts the Public Switch Telephone Network (PSTN) digital dialer, or dry contact outputs from an intrusion/fire control panel to an IP signal for transmission over the Ethernet or cellular network. The B465 Conettix Universal Dual Path Communicator is UL 864 10th Edition approved per NFPA 72 version 2013.

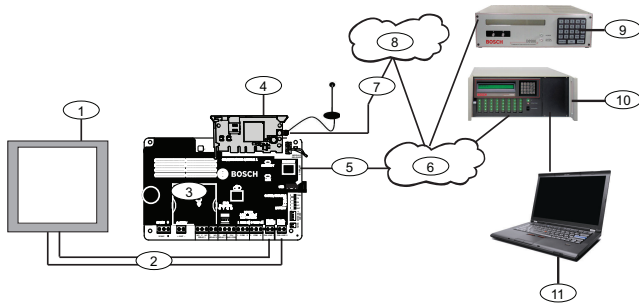
The module can use its built-in Ethernet connection, and/or an optional Conettix plug-in cellular module (B440/B441/B442/B443) /B444 to send reports to the central station receiver.

Configuration of the automation software for the supported control panel remains unchanged with the installation of the B465 module, simplifying the installation process. This allows for a smooth transition from the PSTN realm into IP. All messages generated internally by the B465 are shown in Contact ID format at the central station.

The module can be powered from a 16.5 VAC transformer or 24 VDC power supply.

System overview

The B465 simulates dial tone and line voltages when the digital dialer has a report to send. The module simulates a PSTN connection to the central station. The module decodes the control panel's PSTN dialer report and sends the decoded reports by IP connection using Bosch's Conettix Protocol to the Conettix D6600, D6100IPv6, or D6100i Communication Gateway/Receiver (referred to as the receiver). When the receiver acknowledges receipt of the message, it sends an acknowledgement report to the module which in turn sends an acknowledgement to the connected control panel. This process maintains true end-to-end security.



Callout — Description

1	Intrusion/fire control panel
2	Control panel phone line connections
3	B465 Conettix Universal Dual Path Communicator
4	B44x plug-in cellular communicator
5	Ethernet connection (LAN/WAN)
6	Internet
7	Cellular communication to cellular carrier
8	Cellular carrier network
9	Conettix receiver/gateway
10	Conettix receiver/gateway
11	Monitoring center automation

Functions

PSTN inputs (2)

When the control panel's PSTN dialer sends a message, the module simulates a PSTN connection to the central station. The module connects to the host control panel through either one or both of the Phone Line inputs. Both Panel Line 1 and Panel Line 2 of the module run 28 VDC and support Contact ID (4 and 10 digit account codes), Pulse 3/1, Pulse 4/2, and SIA communication formats. The B465 is setup to auto detect the communication format which eliminates programming steps.

IP Communication options

The module uses the on-board Ethernet connector, and/or optional B440 Conettix Plug-in Cellular Communicator, B441 Conettix Plug-in CDMA Cellular Communicator, B442 Conettix Plug-in GPRS Cellular Communicator, B443 Conettix Plug-in HSPA+ Cellular Communicator or B444 Conettix Plug-in 4G VZW LTE Cellular Communicator to communicate with a Conettix D6600, Conettix D6100i or a Conettix D6100IPv6 Communications Receiver/Gateway. Using Conettix IP communication protocol offers a secure path that includes anti-replay/anti-substitution features and provides enhanced security with up to AES 256-bit encryption.

The module supports Domain Name System (DNS) for central station communication. DNS provides ease of use, eliminating the need to use static IP addresses as your reporting destination, and accommodates a simple solution for central station disaster recovery.

Remote Connect Service Support (North America only)

Remote Connect Service enables a secure control panel connection to Bosch's remote programming software (RPS) using Bosch Cloud services. The service allows a secure TLS connection to a control panel without specific port and router settings and without a static IP or DNS. You can connect using an Ethernet or Cellular connection.

Remote Programming Software (RPS)

Use this option for remote module configuration when using Remote Programming Software (RPS). Remote configuration occurs through USB, Ethernet, or Cellular IP connection.

Direct wire inputs

The B465 provides four on-board inputs. Each input functions independently and does not interfere with the operation of the others. The module monitors the input loops for normal, shorted, or open conditions between an input terminal and any of the input common terminals. Inputs are disabled by default so no EOL resistors are required until activated.

These four inputs on the B465 connect to dry contact outputs on the control panel and generate Contact ID reports instead of using a phone line connection/or in addition to using the control panel phone connection. The available functions are:

- Panel System Trouble
- Panel AC Fail
- Panel Battery Trouble
- Fire Alarm
- Fire Trouble
- Burg Alarm
- Burg Trouble
- Fire Supervisory

Each input allows the use of dry contacts or powered outputs up to 30 VDC if needed. The inputs use 2.2K EOLs to monitor the dry contact outputs when connected to dry contacts. The inputs recognize the following thresholds when using dry contacts: 2.0 to 3.0 VDC = Normal, 3.7 to 5.0 VDC = Open, 0.0 to 1.3 VDC = Short.

Outputs

Includes three programmable output relays rated at 30 VDC, 0.1 A. These outputs can be used to show the status of the B465 or they can be connected to the control panel zone inputs for reporting B465 system faults. The three outputs consist of RELAY 1, RELAY 2, and RELAY 3.

- RELAY 1 is active (energized) once the B465 is running. If the B465 detect a problem or loses power, RELAY 1 de-energizes, which can be used to indicate a system trouble on the local control panel's zone

inputs, if required. Depending on the configuration required to create a system trouble on the control panel, the installer needs to use either the NO and COM or the NC and COM connections. Refer to the control panel manual for the required zone configuration to obtain the proper input response.

- RELAY 2 is a normally open (NO) relay with contacts that close when the desired function programmed is detected.
- RELAY 3 is a normally open (NO) relay with contacts that close when the desired function programmed is detected.

Account Number Substitution

The B465 can optionally replace the account number in all received phone events from either phone line with the account number configured in Alternate Account Number:

- Substitute Account Number. Use this option to enable or disable the feature.
- Alternate Account Number. Use this option to set up an alternate account number.

Input power supply

The B465 uses a 16.5 VAC transformer or 24 VDC voltage for its primary power source. The approved transformers are the D1640 plug-in transformer, D1640-CA plug-in transformer, or D1640-120WI transformer. The B465 can optionally be powered from 24 VDC power source applied to the AC terminals.

B465 modular connections

The B465 module has three modular connections.

- **Cellular plug-in connector.** Connects to a cellular communication module.
- **Tamper connector.** Connects the ICP-EZTS Dual Tamper Switch for monitoring the enclosure cover.
- **External Annunciator connector.** Connects to the optional B46 module.

On-board LED Indicators

The B465 has a total of ten on-board LEDs that indicate the module's status (SYSTEM TROUBLE, TX, RX, POWER, BATTERY, HEARTBEAT, Panel Line 1 (ACT), Panel Line 2 (ACT), 100BASE-T and ETHERNET LINK).

B46 External Annunciator (Optional)

The B46 is an optional module that provides external module LED and sounder status when installed in a supported enclosure. The module has 3 LEDs (System Trouble, Power, and Battery) which illuminate through the B46 LED cover. The LED cover snaps into a knockout in the enclosure door.

The B46 is compatible with the B10, B10R, B11, B11R, and D8103 enclosures.

Region	Regulatory compliance/quality marks	
USA	UL	
	UL	UL 365 - Police Station Connected Burglar Alarm Units
	UL	UL 609 - Standard for Local Burglar Alarm Units and Systems
	UL	UL 636 - Holdup Alarm Units and Systems
	UL	UL 864 - Standard for Control Units and Accessories for Fire Alarm Systems
	UL	UL 985 - Household Fire Warning System Units
	UL	UL 1023 - Household Burglar Alarm System Units
	UL	UL 1076 - Proprietary Burglar Alarm Units and Systems
	UL	UL 1610 - Central Station Burglar Alarm Units
	CSFM	7300-1615:0253
CSFM	California Office of The State Fire Marshall	
FCC	Part 15 Class B	
FDNY-CoA	6214	
Canada	ULC	CAN/ULC S303 - Local Burglar Alarm Units and Systems
	ULC	CAN/ULC S304 - Standard for Signal Receiving Center and Premise Burglar Alarm
	ULC	CAN/ULC S545 - Residential Fire Warning System Control Units
	ULC	ULC-ORD C1023 - Household Burglar Alarm System Units
	ULC	ULC-ORD C1076 - Proprietary Burglar Alarm Units and Systems
	ULC	CAN/ULC S559 - Fire Signal Receiving Centres and Systems
IC	ICES-003 - Information Technology Equipment (ITE)	

Certifications and approvals

Region	FCC Details
USA	NIST FIPS 197 AES Certification (IP Communications)

Installation/configuration notes

Compatibility

Compatible PSTN input formats	Modem II Modem IIe Modem IIIa ² Ademco Contact ID (SIA DC-05) +10 digit account codes Pulse 3/1, 3/1 Checksum (2300 Hz ACK Tone) Pulse 3/1, 3/1 Checksum (1400 Hz ACK Tone) Pulse 4/2 (2300 Hz ACK Tone) Pulse 4/2 (1400 Hz ACK Tone) SIA (SIA8, SIA20) - 110 and 300 baud
Receivers	D6600 D6100i D6100IPv6
Cellular	B440 Conettix Plug-in Cellular Communicator B441 Conettix Plug-in CDMA Cellular Communicator B442 Conettix Plug-in GPRS Cellular Communicator B443 Conettix Plug-in HSPA+ Cellular Communicator B444 Conettix Plug-in 4G VZW LTE Cellular Communicator
Modules	B46 External Annunciator
Enclosures	B10 Medium Control Panel Enclosure B10R Medium Control Panel Enclosure (Red) B11 Small Control Panel Enclosure B11R Small Control Panel Enclosure (Red) D8103 Universal Enclosure D8108A Attack Resistant Enclosure
Transformers	D1640 transformer 120 VAC input, 16.5 VAC, 40 VA output plug-in D1640-CA transformer 120 VAC input, 16.5 VAC, 40 VA output plug-in D1640-120WI transformer 120 VAC input, 16.5 VAC, 40 VA output wired in

Parts included

Quantity	Component
1	B465 Conettix Universal Dual Path Communicator
1	Hardware pack
1	Quick Start Guide (hardcopy)
1	Wiring label (hardcopy)
1	Literature (mini-CD)

Technical specifications

Properties

Dimensions	4.40 in x 6.90 in x 1.50 in (111 mm x 175 mm x 38 mm)
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Environmental considerations

Relative humidity	5% to 93% at +32°C (+90°F)
Temperature (operating)	0°C to +49°C (+32°F to +120°F)
Operational use	Indoor use only

Power requirements

Standby battery current	Battery input: B465: Idle 150 mA; Alarm 230 mA
24 VDC input current	24 VDC input: B465: Idle 120 mA; Alarm 160 mA

Wiring

Terminal wire size	12 AWG to 22 AWG (2.0 mm to 0.65 mm)
Transformer secondary wiring length	15 m (50 ft) maximum unshielded wire
Control panel phone line wiring	100 Ω loop resistance, maximum unshielded wire
Input loop wiring	100 Ω loop resistance, maximum unshielded wire
Ethernet wiring	100 m (328 ft) maximum using Cat 5 wire or better

Ordering information

B465 Universal Dual Path Communicator
Compatible with control panels using a standard digital dialer format. Provides end-to-end security. Allows digital dialer control panels to work over an IP network (such as LAN, WAN, or the Internet).
Order number **B465**

Accessories

B46 External annunciator for B465

An optional module that uses audio and LEDs to show System Trouble, Power, and Battery status through a knockout on select enclosure doors
Order number **B46**

B10 Steel enclosure, medium, white

White, steel enclosure. Accepts an optional lock and tamper switch. Measures 35.6 cm x 31.8 cm x 7.6 cm (14 in x 12.5 in x 3 in).
Order number **B10**

B10R Enclosure, medium, red

Red, steel enclosure. Accepts an optional lock and tamper switch.
Order number **B10R**

B11 Steel enclosure, small, white

White, steel enclosure. Accepts an optional lock and tamper switch. Measures 27.8 cm x 25.9 cm x 8.32 cm (10.9 in x 10.2 in x 3.3 in).

Order number **B11**

B11R Enclosure, small, red

Red, steel enclosure. Accepts an optional lock and tamper switch.

Order number **B11R**

D8103 Steel enclosure, large, grey

Grey steel enclosure measuring 41 cm x 41 cm x 9 cm (16 in. x 16 in. x 3.5 in.).

Order number **D8103**

D8108A Attack resistant enclosure, large, grey

Grey steel enclosure measuring 41 cm x 41 cm x 9 cm (16 in. x 16 in. x 3.5 in.). UL Listed. Includes a lock and key set.

Order number **D8108A**

B12 Mounting plate for D8103 enclosure

Required for mounting select control panels and other devices in B8103, D8103, D8108A, D8109, and BATB Battery Box enclosures.

Order number **B12**

D101 Enclosure lock and key set

Short-body lock set with one key supplied. Uses the D102 (#1358) replacement key.

Order number **D101**

ICP-EZTS TAMPER SWITCH-DUAL

Combination tamper switch with a wire loop for additional tamper outputs.

Order number **ICP-EZTS**

D1640 Transformer plug-in, 16V 40VA

System transformer rated at 16.5 VAC, 40 VA.

Order number **D1640**

D1640-CA 16VAC 40VA xfmr Canada

For use in Canada. System transformer rated at 16.5 VAC, 40 VA.

Order number **D1640-CA**

B440 Plug-in cellular module, VZW 3G, hot

The B440 family of communication modules provides secure two-way IP communication on the Verizon Wireless network.

Order number **B440**

B441 Plug-in cellular module, VZW CDMA

The B441 family of communication modules provides secure two-way IP communication on the Verizon Wireless network.

Order number **B441**

B442 Plug-in cellular module, GPRS

Multi-function cellular communicator that provides IP communication over a (GPRS) cellular network

Order number **B442**

B443 Plug-in Cellular, HSPA+ (3G+)

Multi-function 3G/4G cellular communicator providing IP communication over a GPRS/EDGE/UMTS/HSPA+ cellular network

Order number **B443**

Represented by:**Europe, Middle East, Africa:**

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Features

Individually addressable manual fire alarm stations with:

- Power and data supplied via IDNet addressable communications using a single wire pair*
- Operation that complies with ADA requirements
- Pull lever that protrudes when alarmed
- Break-rod supplied (use is optional)

Multiple models are available:

- Single action operation
- Double action operation, Breakglass or Push
- Two stage pull station

For use with Simplex IDNet communications

Compact, sealed construction:

- Allows mounting in standard electrical boxes (with spacer)
- Screw terminals for wiring connections
- Reduces dust infiltration

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

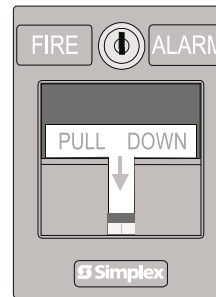
Multiple mounting options:

- Surface or semi-flush with standard or matching Simplex boxes
- Flush mount adapter available
- Adapters are available for retrofitting of existing addressable stations

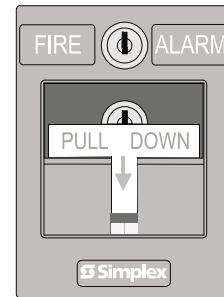
Description

The Simplex 4099 Series addressable stations combine the familiar Simplex manual station housing with a compact communication module that is easily installed to satisfy demanding applications. Its integral individual addressable module (IAM) constantly monitors status and communicates changes to the connected control panel via Simplex IDNet communications wiring.

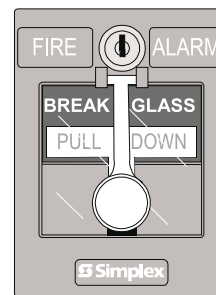
* Simplex IDNet addressable communications are protected by U.S. Patent 4,796,025.



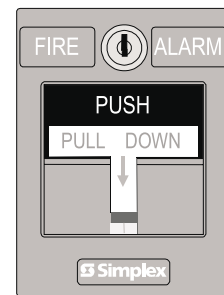
4099-9001 Single Stage



4099-9xxx Two Stage



4099-9002 Breakglass



4099-9003 Push

Operation

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

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

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

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

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

IDNet Addressable Manual Station Product Selection

Addressable Manual Stations

Model	Description	Mounting Options
4099-9001	Single action addressable manual station	
4099-9002	Double action addressable manual station, Breakglass operation	
4099-9003	Double action addressable manual station, Push operation	
4099-9004CA	Two-stage addressable manual station	
4099-9005CA	Two-stage addressable manual station with N/C Contact	
4099-9006CA	Two-stage addressable manual station, Breakglass operation	
4099-9007CA	Two-stage addressable manual station, Breakglass operation with N/C Contact	
4099-9008CA	Single action addressable manual station with N/C Contact	
4099-9009CA	Single action addressable manual station, Breakglass operation with N/C Contact	

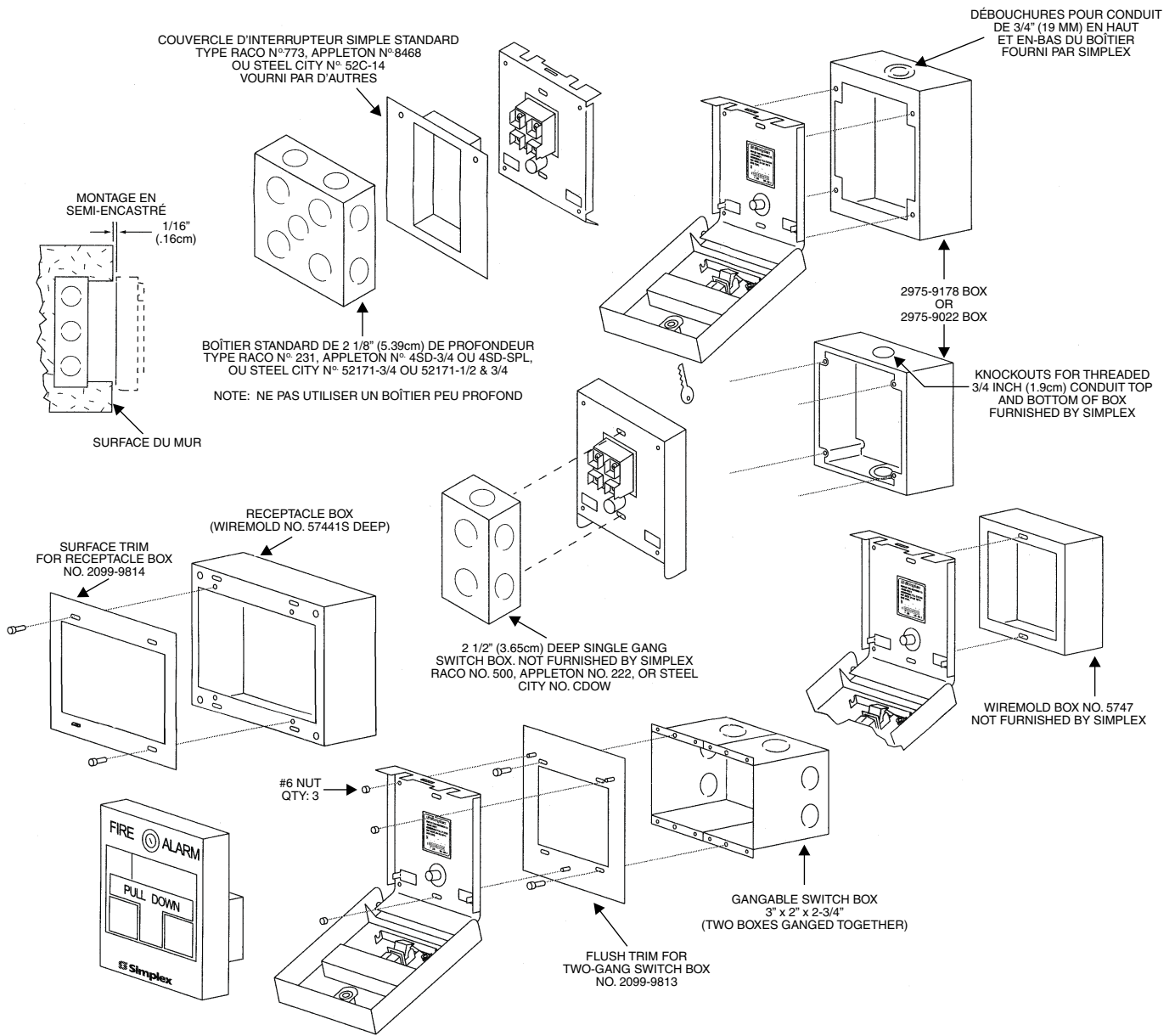
Models shown are English Language.
 For 4099-9001 add 'CF' for French, 'CB' for Bilingual
 e.g. 4099-9001, 4099-9001CF, 4099-9001CB.
 For all other models add 'F' for French, 'B' for Bilingual e.g. 4099-9004CA, 4099-9004CAF, 4099-9004CAB

Mounting Accessories

Model	Description	Reference
2975-9178	Surface mount steel box, red	Refer to page 3 for dimensions
2975-9022	Cast aluminum surface mount box, red	
2099-9810CA	Semi-flush trim plate for single gang box, red	Primarily for retrofit, refer to page 4
2099-9814	Surface trim plate for Wiremold 5744-2, red	
2099-9819	Flush mount adapter kit, black	Refer to page 4 for details
2099-9820	Flush mount adapter kit, beige	
2099-9803	Replacement breakglass	
2099-9804	Replacement break-rod	

Specifications

Power and Communications	IDNet, 1 address per station, up to 2500 ft (762 m) from fire alarm control panel, up to 10,000 ft (3048 m) total wiring distance (including T-Taps)
Address means	Dipswitch, 8 position
Wire Connections	Screw terminal for in/out wiring, for #18 to #14 AWG wire
UL Listed Temperature Range	32° F to 120° F (0° C to 49° C) intended for indoor operation
Humidity Range	Up to 93% RH at 100° F (38° C)
Housing Colour	Red with white raised lettering
Material	Housing and pull lever are Lexan® polycarbonate
Pull Lever Colour	White with red raised lettering
Housing Dimensions	5" H x 3 3/4" W x 1" D (127 mm x 95 mm x 25 mm)



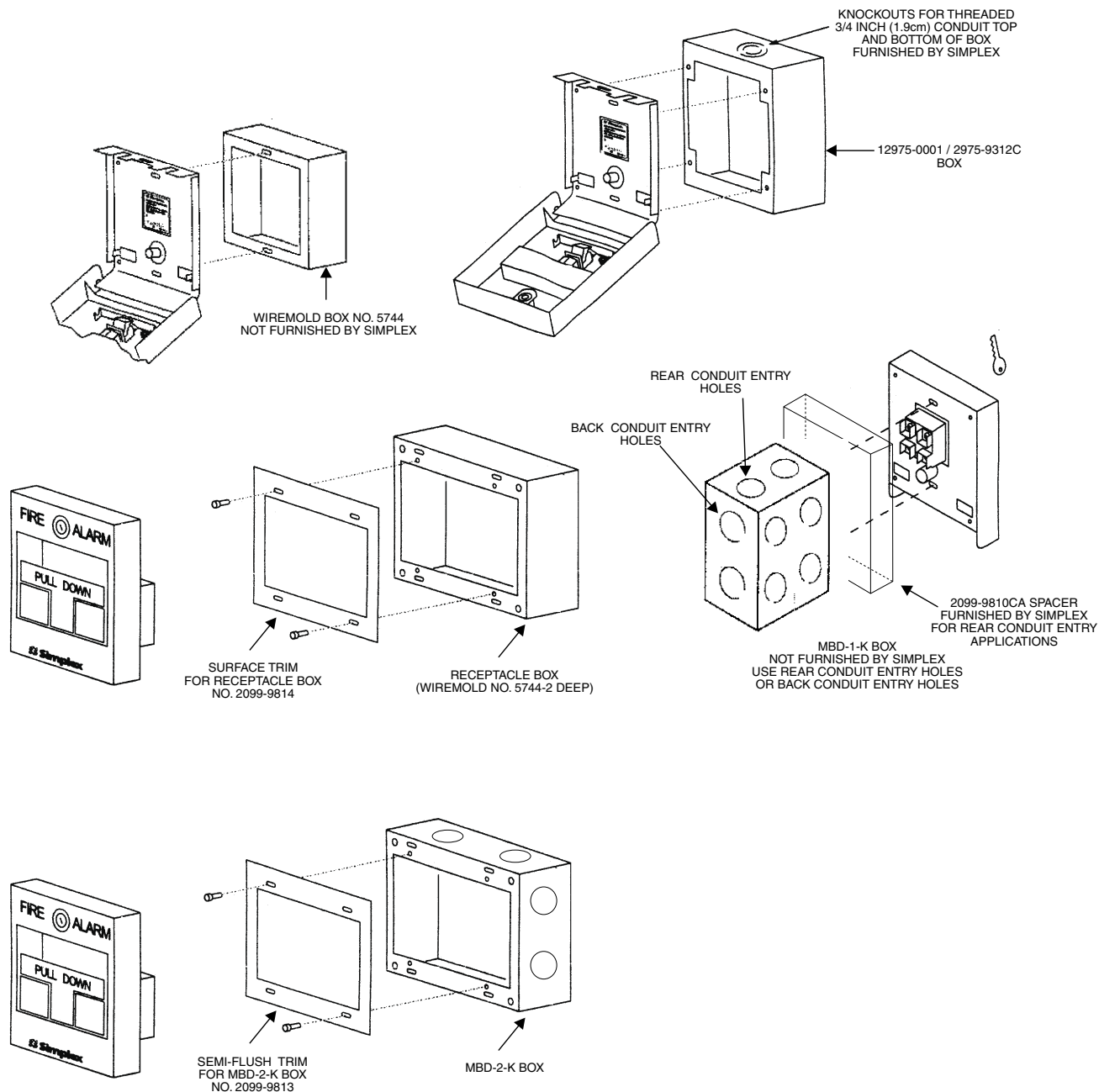
Application Reference

Refer to N.B.C. 3.2.4.12 for requirements on manual pull stations.

Refer to CAN/ULC-S524, Section 5-2 for the requirements on the installation of manual pull stations.

IDNet Manual Station Mounting for 4099-9004, -9005, -9006, -9007, -9008, -9009

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S14099-0001-6 7/01
2400 Skymark Avenue, Mississauga, Ontario L4W 5K5
Offices and Representatives Throughout the World
Visit us on the world wide web at www.simplexnet.com

Features

TrueAlarm analog sensing provides:

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

For use with the following Simplex products:

- 4007ES, 4010, 4010ES, 4100ES, and 4100U Series control panels; and 4008 Series control panels with reduced feature set (refer to data sheet *S4008-0001* for details)
- 4020, 4100, and 4120 Series control panels, Universal Transponders, and 2120 TrueAlarm CDTs equipped for MAPNET II operation

Fire alarm control panel provides:

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

Photoelectric smoke sensors provide:

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

Heat sensors provide:

- Three fixed temperature sensing thresholds: 135° F, 155° F and 190° F
- Rate-of-rise temperature sensing
- Utility temperature sensing
- Listed to UL 521 and ULC-S530

General features:

- Operation is for ceiling or wall mounting
- Listed to UL 268 and ULC-S529
- NEMA 1 rated. See [TrueAlarm Analog Sensing Product Selection Chart](#) for more information.
- Louvered smoke sensor design enhances smoke capture by directing flow to chamber; entrance areas are minimally visible when ceiling mounted
- Designed for EMI compatibility
- Magnetic test feature is provided
- Different bases are available to support a supervised or unsupervised output relay, and/or a remote LED alarm indicator

Additional base reference:

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

Description

Digital Communication of Analog Sensing.

TrueAlarm analog sensors provide an analog measurement digitally communicated to the host control panel using Simplex addressable communications. At the control panel, the data is analyzed and an average value is determined and stored. An alarm or other abnormal

condition is determined by comparing the sensor's present value against its average value and time.

Intelligent Data Evaluation.

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

Control Panel Selection.

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

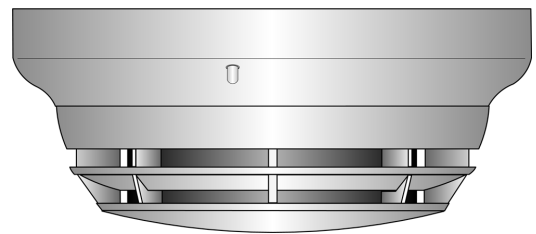


Figure 1: 4098-9714 TrueAlarm Photoelectric Sensor Mounted in Base

Timed/Multi-Stage Selection.

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

Sensor Alarm and Trouble LED Indication.

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

Sensor Base Features

Base mounted address selection:

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

General features:

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

Sensor Bases

4098-9792, Standard Sensor Base

4098-9789, Sensor Base with wired connections for:

- 2098-9808 Remote LED alarm indicator or 4098-9822 relay (relay is unsupervised and requires separate 24 VDC)

Supervised Relay Bases (not compatible with 2120 CDT):

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

Sensor Base Options

2098-9737, Remote or local mount supervised relay:

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

4098-9860, Remote or local mount supervised relay:

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

4098-9822, LED Annunciation Relay:

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

4098-9832, Adapter plate:

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

2098-9808, Remote red led Alarm Indicator:

- Mounts on single gang box (shown in illustration)

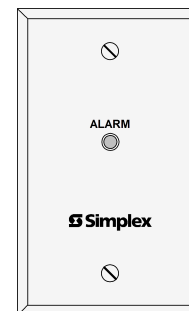


Figure 2: Remote red LED Alarm Indicator

Description

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

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

Features

Sealed against rear air flow entry

Interchangeable mounting

EMI/RFI shielded electronics

Heat sensors:

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

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

Note: *190° F (88° C) ratings apply only to the 4098-9734 sensor.

Smoke Sensors:

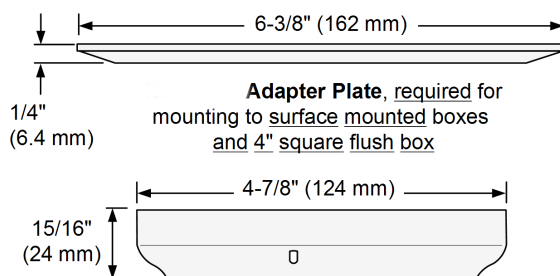
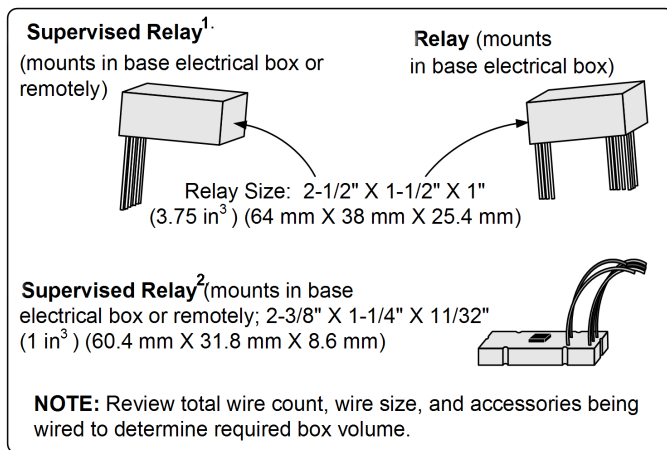
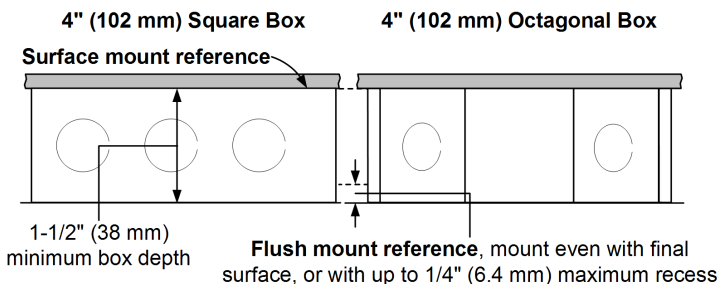
- Photoelectric technology sensing
- 360° smoke entry for optimum response
- Built-in insect screens

Mounting Reference

Electrical Box Requirements: (boxes are by others)

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

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



TrueAlarm Bases

Figure 3: Mounting Reference

Table 1: Product mounting - SKU reference

Product	Model
Relay	4098-9822
Supervised Relay	1. 2098-9739 2. 4098-9860
Adapter plate	4098-9832
TrueAlarm Bases	4098-9780, 4098-9789, 4098-9791, 4098-9792

4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing. Seven levels of sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivities of 0.2%, 0.5%, and 1% are for special applications in clean areas. Standard sensitivities are 1.5%, 2.0%, 2.5%, 3.0%, and 3.7%. Application type and sensitivity are selected and then monitored at the fire alarm control panel.*

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

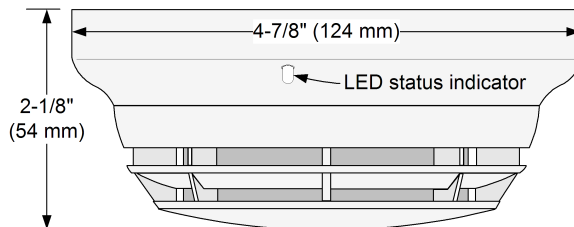


Figure 4: 4098-9714 Photoelectric Sensor with Base

4098-9733 and 4098-9734 Heat Sensors

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.*

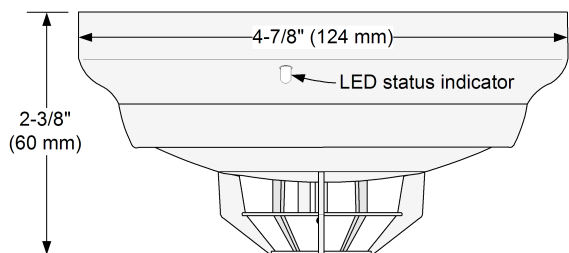


Figure 5: 4098-9733 Heat Sensor with Base

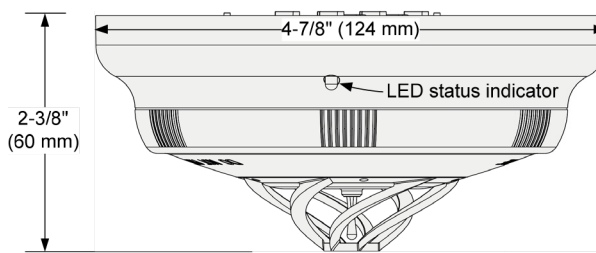


Figure 6: 4098-9734 High Temperature Heat Sensor with Base

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

Application Reference

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

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

TrueAlarm Analog Sensing Product Selection Chart

Table 2: TrueAlarm Sensor Bases (for use with Sensors 4098-9714 and 4098-9733)

SKU	Color	Description	Compatibility	Mounting Requirements
4098-9792	White			4" octagonal or 4" square box,
4098-9776	Black	Standard Sensor Base	No options	1-1/2" min. depth; or single gang box, 2" min. depth

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

Table 2: TrueAlarm Sensor Bases (for use with Sensors 4098-9714 and 4098-9733)

SKU	Color	Description	Compatibility	Mounting Requirements
4098-9789	White	Sensor Base with connections for Remote LED Alarm Indicator or Unsupervised Relay	2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay	4" octagonal or 4" square box Note: Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference.
4098-9789	White			
4098-9789IND				
4098-9789IND				
4098-9775	Black			
4098-9791 **	White	4-Wire Sensor Supervised Relay Base with connections for LED Indicator or Unsupervised Relay	2098-9737 Supervised Remote Relay 2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay	** 4098-9791 and 4098-9780 are NOT compatible with the 2120 CDT
4098-9780**	White	2-Wire Sensor Supervised Relay Base with connections for LED Indicator or Unsupervised Relay	4098-9860 Supervised Remote Relay 2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay	

Note: * Model numbers ending in IND are assembled in India.

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

Table 3: TrueAlarm Sensors

Model	Color	Description	Compatibility	Mounting Requirements
4098-9714 ¹	White	Photoelectric Smoke Sensor	Bases 4098-9775, 4098-9776, 4098-9792, 4098-9789, 4098-9791, and 4098-9780	Refer to base requirements
4098-9714 IND ¹				
4098-9774 ¹	Black			
4098-9733 ¹	White	Heat Sensor		
4098-9778 ¹	Black			
4098-9734 ¹	White	High Temperature Heat Sensor		

¹NEMA 1 rated.

Table 4: 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
4098-9860	Supervised Relay, mounts remote or in base electrical box	For use with 4098-9780 base	Base Mounting requires 4" octagonal box, 2-1/8" deep with 1-1/2" extension ring
2098-9808 ¹	Remote Red LED Alarm Indicator on single gang stainless steel plate	Bases 4098-9789, 4098-9791, and 4098-9780	Single gang box, 1-1/2" minimum depth
4098-9822	Unsupervised Relay, tracks base led status; Note: Mounts only in base electrical box	Bases 4098-9789, 4098-9791, and 4098-9780	4" octagonal box, 2-1/8" deep with 1-1/2" extension ring
4098-9832	Adapter Plate	Bases 4098-9792, 4098-9789, 4098-9791, and 4098-9780	Required for surface or semi-flush mounted 4" square box and for surface mounted 4" octagonal box

¹ NEMA 1 rated.

Specifications

Table 5: General Operating Specifications

Specification	Rating
Communications and Sensor Supervisory Power	IDNet or MAPNET II communications, auto-selected, 1 address per base
Communications Connections	Screw terminals for in/out wiring, 18 to 14 AWG (0.82 mm ² to 2.08 mm ²)
Remote LED Alarm Indicator Current	1 mA typical, no impact to alarm current
Remote LED Alarm Indicator and Relay Connections	Color coded wire leads, 18 AWG (0.82 mm ²)
UL Listed Operating Temperature Range	32° to 100° F (0° to 38° C)
Operating Temperature Range	with 4098-9733 Heat Sensor
	with 4098-9714 Smoke Sensor
	with 4098-9734 Heat Sensor
Storage Temperature Range	0° F to 140° F (-18° C to 60° C)
Humidity Range	10 to 95% RH
4098-9714 Smoke Sensor Air Velocity Rating	0-4000 ft/min (0-1220 m/min)
Housing Color	Frost White or Black

Table 6: 4098-9791 Base With Supervised Remote Relay 2098-9737

Specification	Rating
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

Table 7: 4098-9780 Base With Supervised Remote Relay 4098-9860

Specification	Rating
Power	Supplied from communications

Table 8: 4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789, 4098-9791, and 4098-9780

Specification	Rating
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

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)

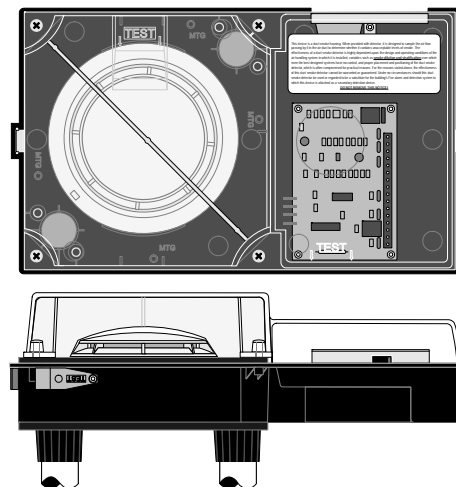
Sampling tubes (ordered separately):

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

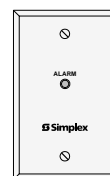
Remote module options (ordered separately):

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

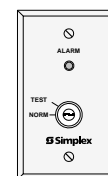
* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 3240-0026.241 for allowable values and/or conditions concerning material presented in this document. Accepted for use – City of New York 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)	4007ES, 4008, 4010, 4010ES, 4020, 4100, 4100ES, 4100E, 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 k Ω , 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)

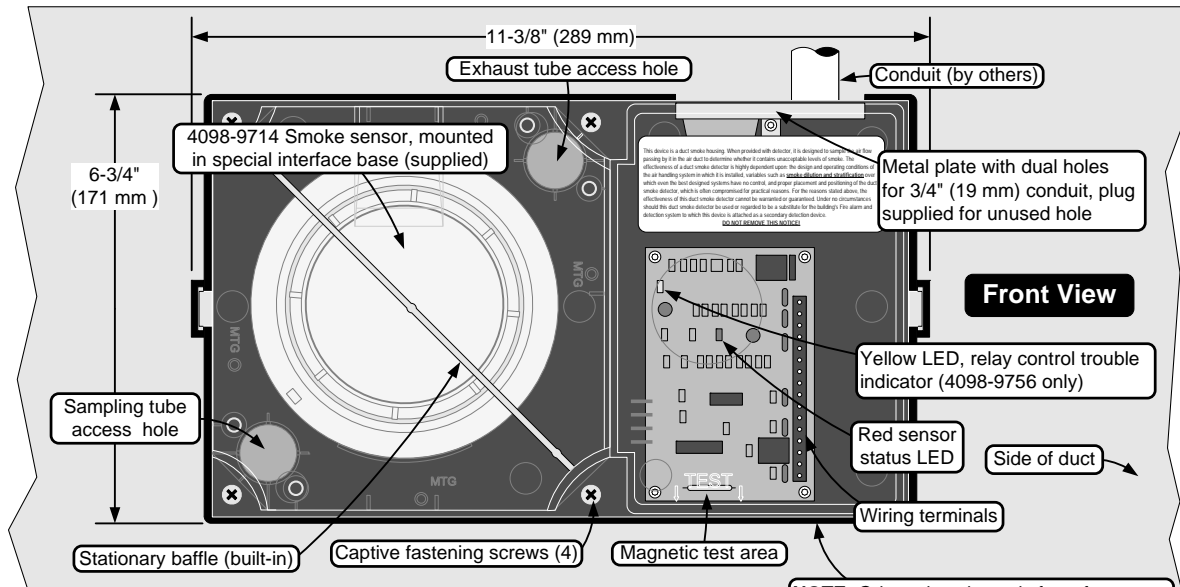
Typically duct sensor applications require less sensitive settings (such as 2.5% per foot obscuration) due to the ducts being a relative dirty environment. However, the standard seven levels of TrueAlarm sensor sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of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

Fire Alarm Control Panel Features

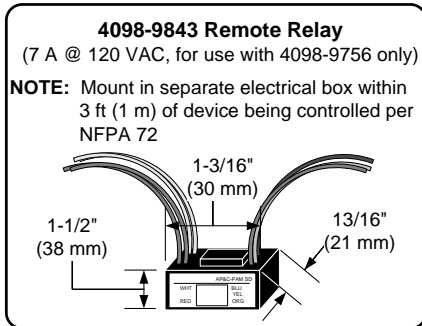
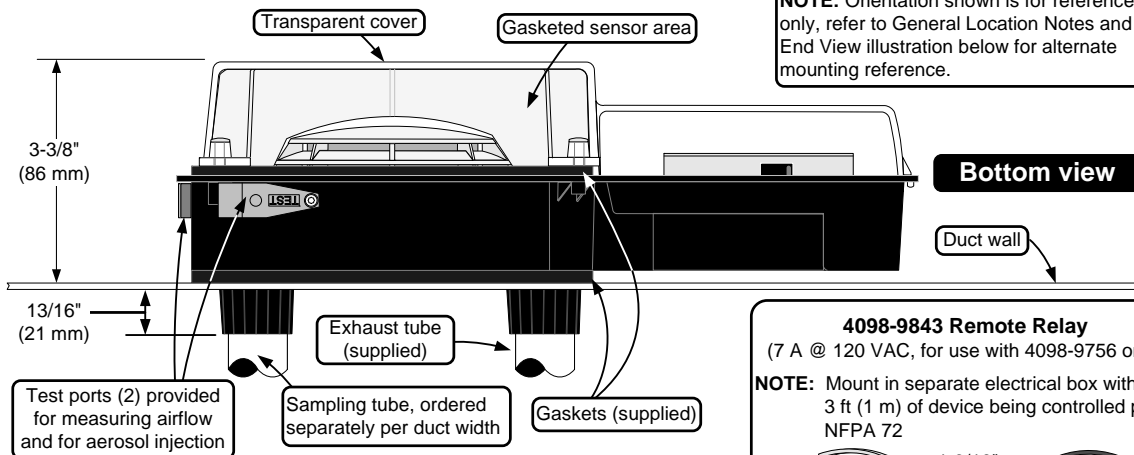
- Individual smoke sensitivity selection
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allows accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check verifies sensor integrity
- Automatic environmental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

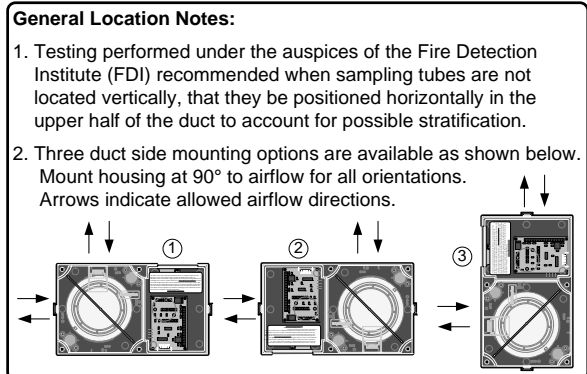
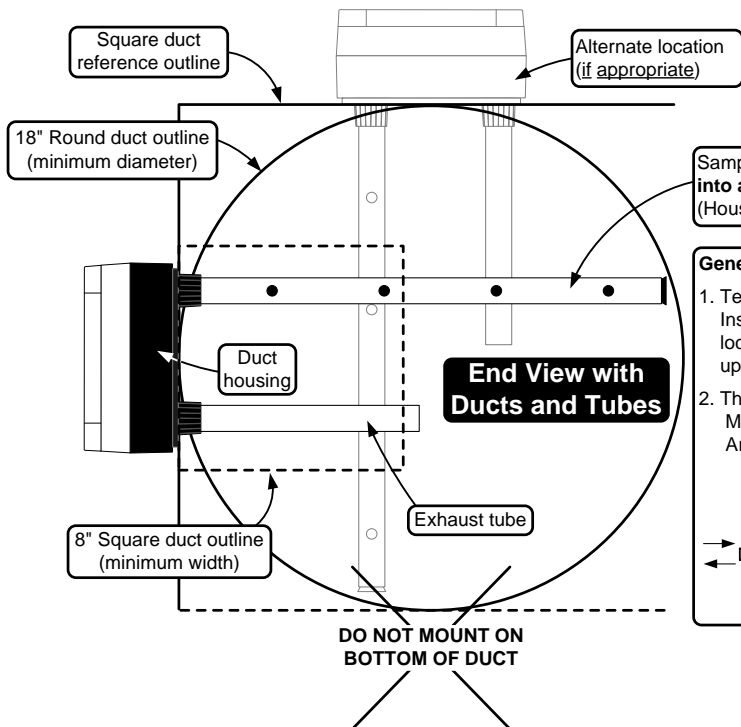
NOTE: Refer to Installation Instructions 574-776 for additional installation detail and maintenance information.



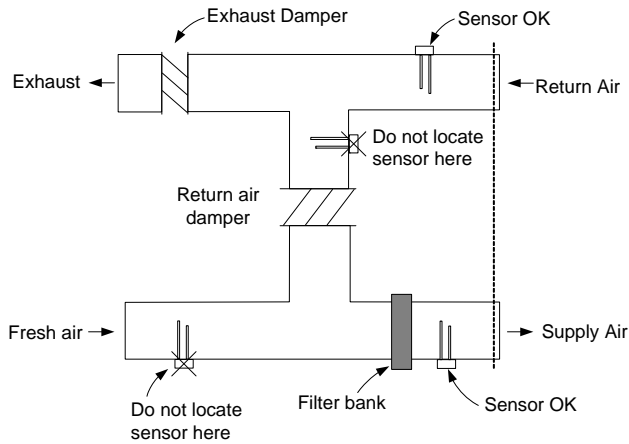
NOTE: Orientation shown is for reference only, refer to General Location Notes and End View illustration below for alternate mounting reference.



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.

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 and Material	Black ABS base with clear polycarbonate cover
Sampling and Exhaust Tube Material	Black CPVC, custom extrusion; sampling tubes are pre-drilled

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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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.

Features

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

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

For use with following Simplex control panels:

- Model Series 4007ES, 4008, 4010, 4010ES, and 4100ES fire alarm control panels for IDNet communications
- Model Series 4100/4100U/4100ES, 4120, 4020, and 2120 Communicating Device Transponders (CDTs) equipped with MAPNET II communications

Model 4090-9001:

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

Model 4090-9051:

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

IDNet communications provides current limited monitoring:

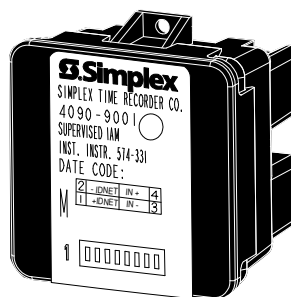
- Provides monitoring of tamper switch (supervisory) and waterflow switch (alarm) on same circuit using one point
- Available with IDNet communications only

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

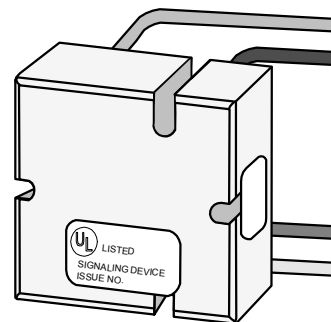
- Contact closure status can be tracked
- Momentary contact closure conditions can be selected at the panel to be latched or tracked (not available with the 2120 CDT)

UL listed to Standard 864

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:223 for allowable values and/or conditions concerning material presented in this document. 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.



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



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

Description

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

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

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

Operation

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

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

Current Limited Operation Applications

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

IAM Product Selection

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

Optional Trim Plates and Mounting Bracket for Model 4090-9001

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

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

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

Use for current limited monitoring applications

Specifications

Electrical

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

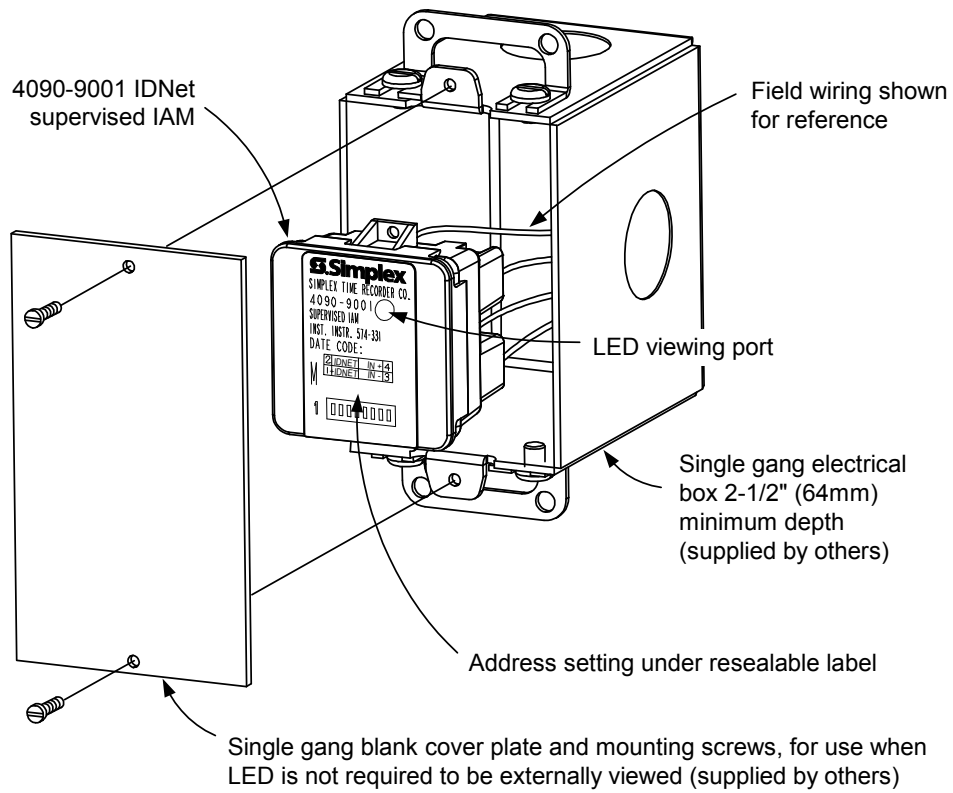
Wiring Distances

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

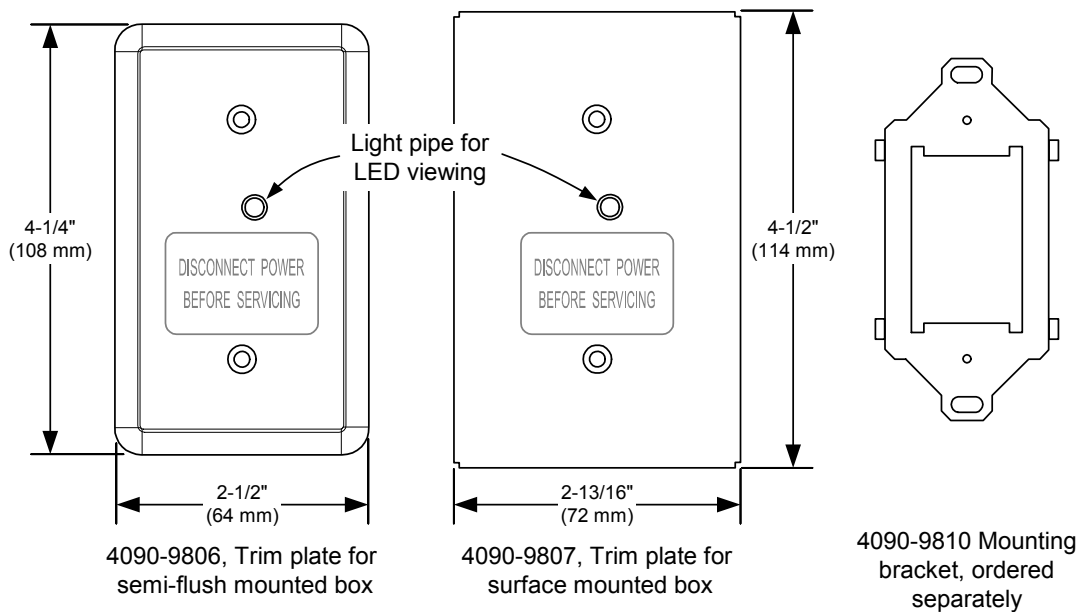
Mechanical

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

Mounting Information



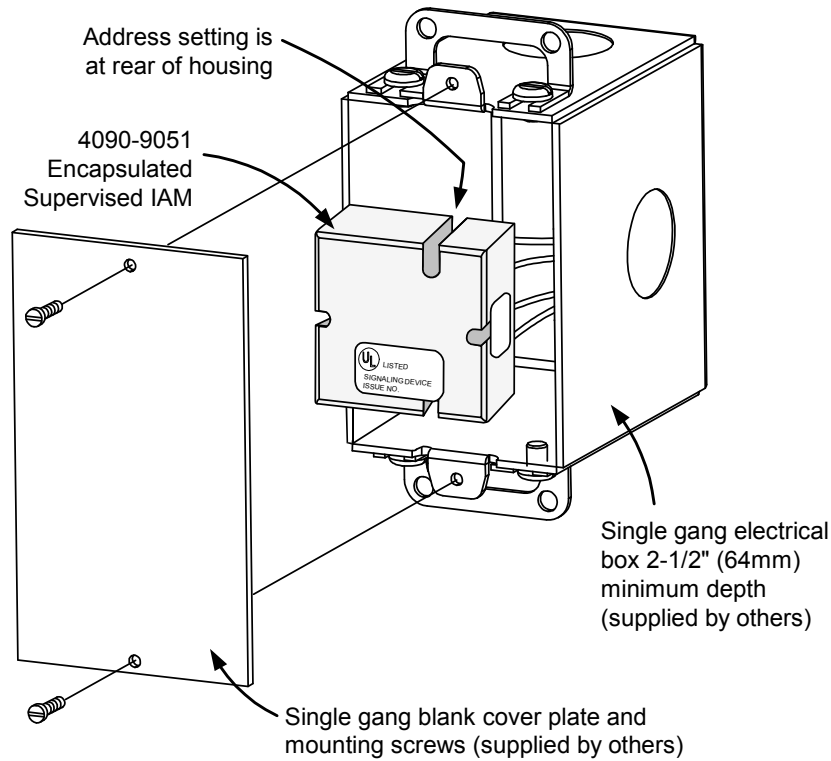
Mounting Reference, Single Gang Blank Cover Plate



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

Optional Trim Plates and Mounting Bracket for Visible LED

4090-9051 Mounting Information



Features

Individual Addressable Relay Module (Relay IAM):

- IDNet addressable control for use with Simplex® fire alarm control panel models 4007ES, 4008, 4010, 4010ES, 4100ES, and 4100U
- A single addressable point provides control and status tracking of a Form “C” contact
- Low power latching relay design allows IDNet communications to supply both data and module power
- Relay is set to OFF on initial power up and upon loss of IDNet communications

Compact, sealed construction:

- Enclosed design minimizes dust infiltration
- Mounts in standard 4” (102 mm) square electrical box, optional adapter bracket is available to mount in a 4 11/16” (119 mm) square electrical box
- Screw terminals for wiring connections
- Visible LED flashes to indicate communications
- Optional covers are available to allow LED to be viewed after installation

UL listed to Standard 864

Description

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

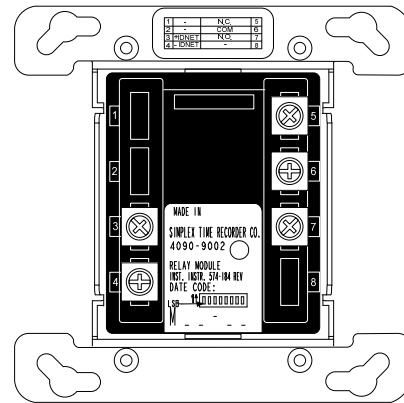
Product Selection

Model	Description
4090-9002	Relay IAM

Optional Adapter and Trim Plates

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

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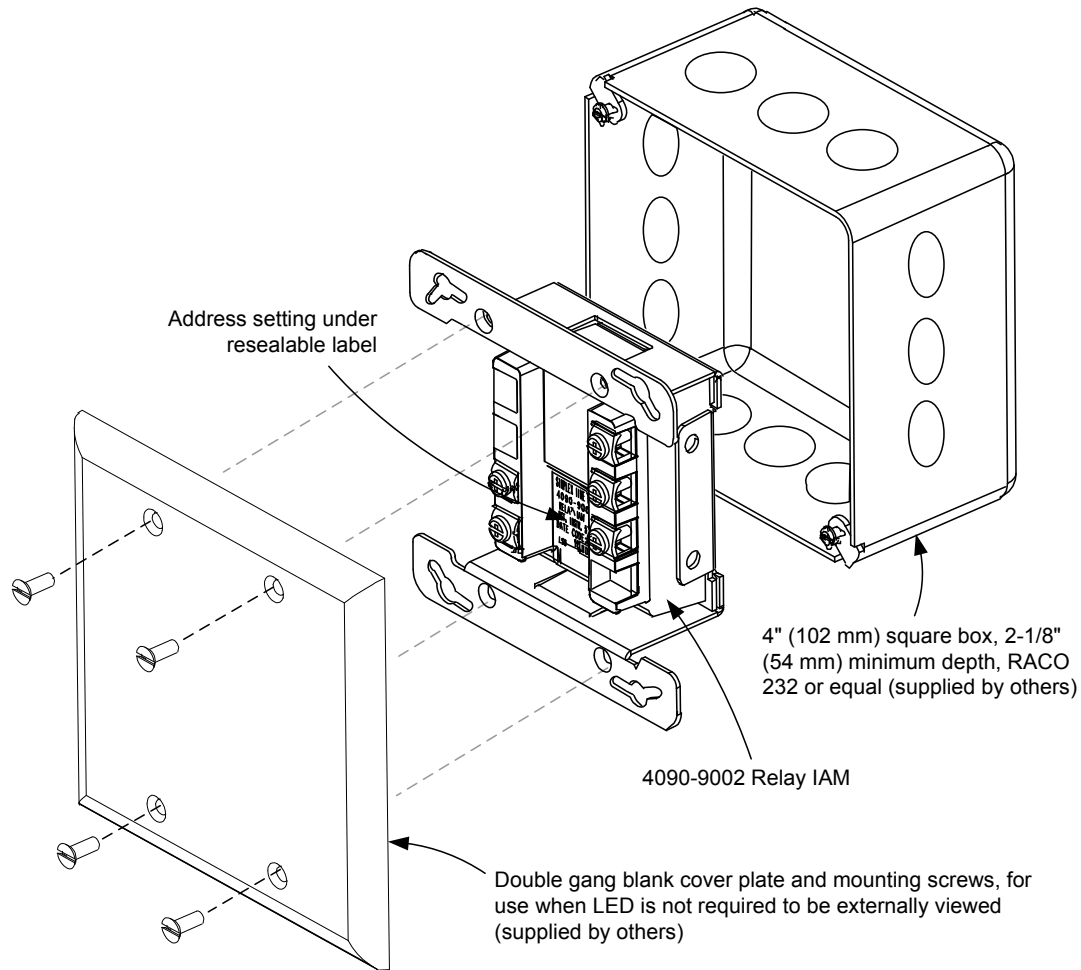


4090-9002 IDNet Relay IAM Package
(shown approximately 1/2 size)

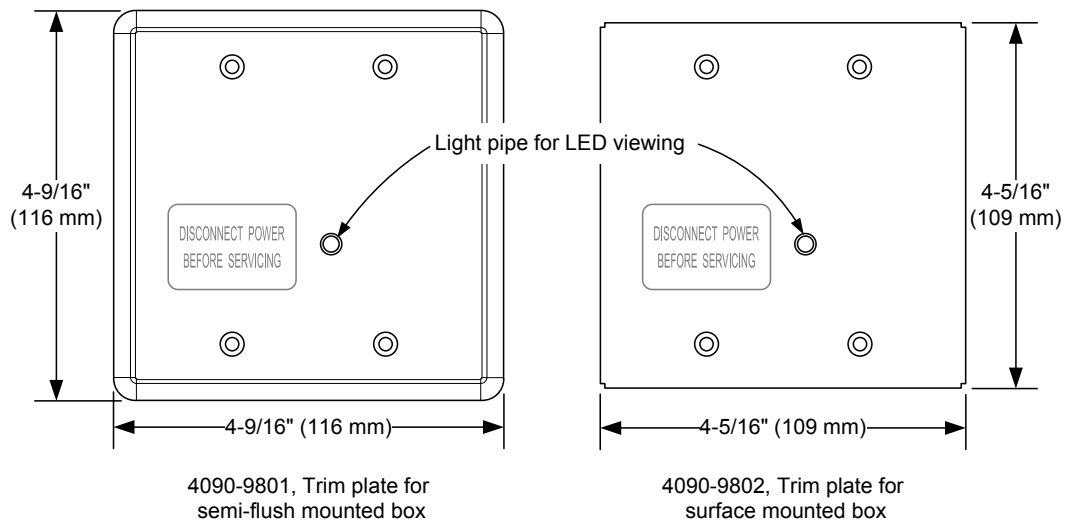
Specifications

Communications	IDNet communications, 1 address per device	
Relay IAM Power	Supplied by IDNet communications	
Contact Ratings* (not rated for incandescent switching)		
Type	Form C, SPDT	
Power-Limited	2 A @ 24 VDC, resistive	from listed fire alarm supply
	1 A @ 24 VDC, inductive	
Nonpower-Limited	0.5 A @ 120 VAC, resistive	
* Provide circuit fusing and transient suppression as required per application. DC inductive loads can typically be diode suppressed; 120 VAC loads may require RC networks or varistors, depending on device type. Refer to the installation instructions for additional information.		
Wire Connections	Screw terminals for in/out wiring, 18 to 14 AWG wire (0.82 to 2.08 mm ²)	
IDNet Communications Wiring Reference	Up to 2500 ft (762 m) from control panel	
	Up to 10,000 ft (3048 m) total wiring distance (including T-Taps)	
	Compatible with Simplex 2081-9044 Overvoltage Protectors	
Dimensions	4 1/8" H x 4 1/8" W x 1 3/8" D (105 mm x 105 mm x 35 mm)	
Housing Material	Black thermoplastic	
Mounting Plate	Sheet metal, galvanized	
Temperature Range	32° to 120° F (0° to 49° C), intended for indoor operation	
Humidity Range	Up to 93% RH at 100° F (38° C)	
Installation Instructions	574-184	

Relay IAM Mounting Information



Mounting Reference, Double Gang Blank Cover Plate



Optional Trim Plates for Visible LED

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S4090-0002-10 11/2014

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Features

Individually addressed and controlled multi-candela TrueAlert ES A/V (audible/visible) notification appliances provide:

- Multi-candela xenon strobe with synchronized 1 Hz flash rate and with intensity *programmable from the control panel* or jumper selected as 15, 30, 75, 110, 135, or 185 cd
- Advanced addressable notification controlled by *IDNAC SLCs* providing *regulated 29 VDC* allowing strobes to operate with lower current even under battery backup
- Wiring supervision to each appliance allowing "T-tapped" connections for Class B circuits to simplify wiring (Class A circuits require in/out wiring)
- *Self-Test Mode* allows on-board sensors to detect the strobe and horn output and then report their status to the control panel
- *TrueAlert Device Reports* Reports are available at the control panel detailing appliance point ID, custom label, type, and candela setting
- *Magnet Test diagnostics* Magnet Test diagnostics assist checkout and testing of appliances and wiring.
- *Electrical test point access* Access the electrical test point without removing cover
- Compatibility with ADA requirements; (refer to [Installation Reference](#))
- Compatibility with legacy TrueAlert addressable systems for upgrade and replacement (see page 4)
- Strobe operation is listed to UL Standard 1971 and ULC Standard S526; Horn operation is listed to UL Standard 464 and ULC Standard S525

LED Indicator and Magnet Test

- Appliance LED can be selected to display each polling cycle to indicate appliance supervision
- When the controller is in diagnostic mode, the Magnet Test pulses the LED to indicate appliance address and can be set to also briefly flash the strobe and sound the horn

Mechanical design features

- Rugged, high impact, flame retardant thermoplastic housing in red with white letters or white with red letters, with clear lens, available with FIRE, FEU, ALERT, FEU/FIRE, or blank lettering
- Separate covers are available to change application type on-site or for replacement
- A separate mounting plate allows wiring to be completed before appliance is mounted; use with single gang, double gang, or 4-inch square box, flush or surface mount
- Covers can be easily removed without disturbing the connected housing and avoiding trouble conditions
- In/out wiring terminals for 18 AWG to 12 AWG
- Optional mounting adapters are available to cover surface mounted electrical boxes and to adapt to Simplex, 2975-9145 boxes
- Optional red wire guards See [Product Selection](#) for details.



Figure 1: TrueAlert ES Addressable A/Vs are Available in Red with White Lettering and White with Red Lettering

Audible notification appliance (horn)

- Harmonically rich output sound for either coded or steady operation
- Horns sound as Temporal Code 3, March Time pattern, continuous; or Temporal Code 4, controlled separately from visible appliances on the same two-wire circuit
- Selectable March Time rates of 20, 60, or 120 beats per minute
- Output is "high" or "low" (~5 dBA difference) selectable at the appliance or from the controller with FACP mode selected at the appliance

Description

TrueAlert ES addressable A/Vs are individually addressed audible/visible notification appliances that receive power, supervision, and control signals from a Simplex fire alarm control panel providing IDNAC Signaling Line Circuits (SLCs). See [TrueAlert ES A/V LEGACY Compatibility Reference](#) for more detail.

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

TrueAlert ES Operation Advantage

TrueAlert ES addressable appliances on IDNAC SLCs provide separate visible and audible notification using a single two-wire circuit that also *confirms connection to the individual notification appliance's electronic circuit*. This operation increases circuit supervision integrity by providing supervision that extends beyond the appliance wiring connections.

Reduced current allows efficient IDNAC SLC operation. With *IDNAC SLCs*, a *constant* 29 VDC 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 wiring distances up to 2 to 3 times farther than with conventional notification, or support for more appliances per IDNAC SLC, or use of smaller gauge wiring, or combinations of these benefits, all providing installation and maintenance savings with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions.

Reducing Installation and Testing Time. With separate controls 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. Use of Self-Test and Magnet Test features improve installation efficiency. TrueAlert device reports conveniently identify information about each connected appliance.

TrueAlert ES Diagnostics

Test Features

When IDNAC SLCs are in diagnostic mode, *Self-Test* and *Magnet Test* features provide individual appliance testing. With the *Self-Test* feature, *appliance operation can be confirmed without leaving the control panel*. Additionally, each appliance's LED can be selected to pulse when it receives a supervision poll during normal operation.

Self-Test Details

Selecting Self-Test Mode from the control panel allows on-board sensors, depending on the device type, to detect its own strobe and/or horn output and then report their status to the control panel. Operation is by selected VNAC appliance groups and is either automatic (all briefly simultaneously activated) or individually activated by applying a magnet. (Refer to control panel data sheet for more Self-Test information, see [TrueAlert ES A/V LEGACY Compatibility Reference](#) for more information.

Silent Appliance Magnet Test

In this test mode, in response to application of a magnet, the appliance LED pulses sequentially to conveniently indicate the appliance's address.

Operational Appliance Magnet Test

In this test mode, after the address is indicated by pulsing the appliance LED, the strobe will briefly flash and the horn will briefly sound to indicate proper operation.

TrueStart Instrument Two (TSIT)

The 2nd generation of the Simplex TrueStart Test Instrument adds testing of IDNAC SLC wiring and TrueAlert ES appliances to its ability to test IDCs, NACs, and IDNet communications *before connection to the control panel*. Please contact your local Simplex representative for additional information.

TrueAlert Addressable Wiring Isolator

Isolator Model 4905-9929 is available for remote mounting on TrueAlert addressable circuits to isolate short circuited wiring from functioning wiring. See data sheet *S4905-0001* for information.

Product Selection

Table 1: TrueAlert ES Wall Mount Addressable Audible/Visible Appliances

Model*	Cover Color	Wording	Lens Color
TrueAlert ES addressable A/V appliances include cover and matching mounting plate except as noted; Dimensions with Cover = 5 1/8" H x 5" W x 2 5/8" D (130 mm x 127 mm x 67 mm)			
49AV-WRF	Red	FIRE	Clear
49AV-WRF-BA			
49AV-WWF	White	FEU	
49AV-WWF-BA			
49AV-WRQ	Red	Simplex logo only	
49AV-WRS			
49AV-WRS-BA	White	Select cover and mounting plate separately	
49AV-WWS-BA			
49AV-APPLW			
49AV-APPLW-BA			

Audible/Visible Notification Appliances, Wall Mount Multi-Candela Horn/Strobe, Model Series 49AV

Table 2: Separate Mounting Plate

Model	Color	Note
49MP-AVVOWR	Red	Mounting Plate is required when ordering model 49AV-APPLW/49AV-APPLW-BA
49MP-AVVOWW	White	

Table 3: Separate Covers (Required when ordering model 49AV-APPLW(-BA))

Model*	Color	Wording
49AVC-WRFIRE	Red	FIRE
49AVC-WWFIRE	White	
49AVC-WRALT	Red	ALERT
49AVC-WWALT	White	
49AVC-WRFEU	Red	FEU
49AVC-WWFEU	White	
49AVC-WRBLNG	Red	FEU/FIRE
49AVC-WWBLNG	White	
49AVC-WRS	Red	Simplex logo only
49AVC-WWS	White	

Note: Model numbers ending in -BA, APPLW models, and separate mounting plates are assembled in the USA.

Table 4: Mounting Adapters and Wire Guard

Model	Color	Description	Dimensions
4905-9937	Red	Surface Mount Adapter Skirt	5 ³ / ₈ " H x 5 ¹ / ₄ " W x 1 ⁵ / ₈ " D (136 mm x 133 mm x 41 mm) Total depth with strobe = 4 ³ / ₈ " (111 mm)
4905-9940	White		
4905-9931		Red Adapter Plate for mounting to Simplex 2975-9145 Box (typically for retrofit, mount 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 4905-9931 Adapter Plate	7 ⁷ / ₈ " x 5 ¹ / ₈ " x 2 ³ / ₄ " D (200 mm x 130 mm x 70 mm)
4905-9961		Red wire guard with mounting plate, compatible with semi-flush or surface mount boxes	6 ¹ / ₁₆ " H x 6 ¹ / ₁₆ " W x 3 ¹ / ₈ " D (154 mm x 154 mm x 79 mm)

Installation Reference

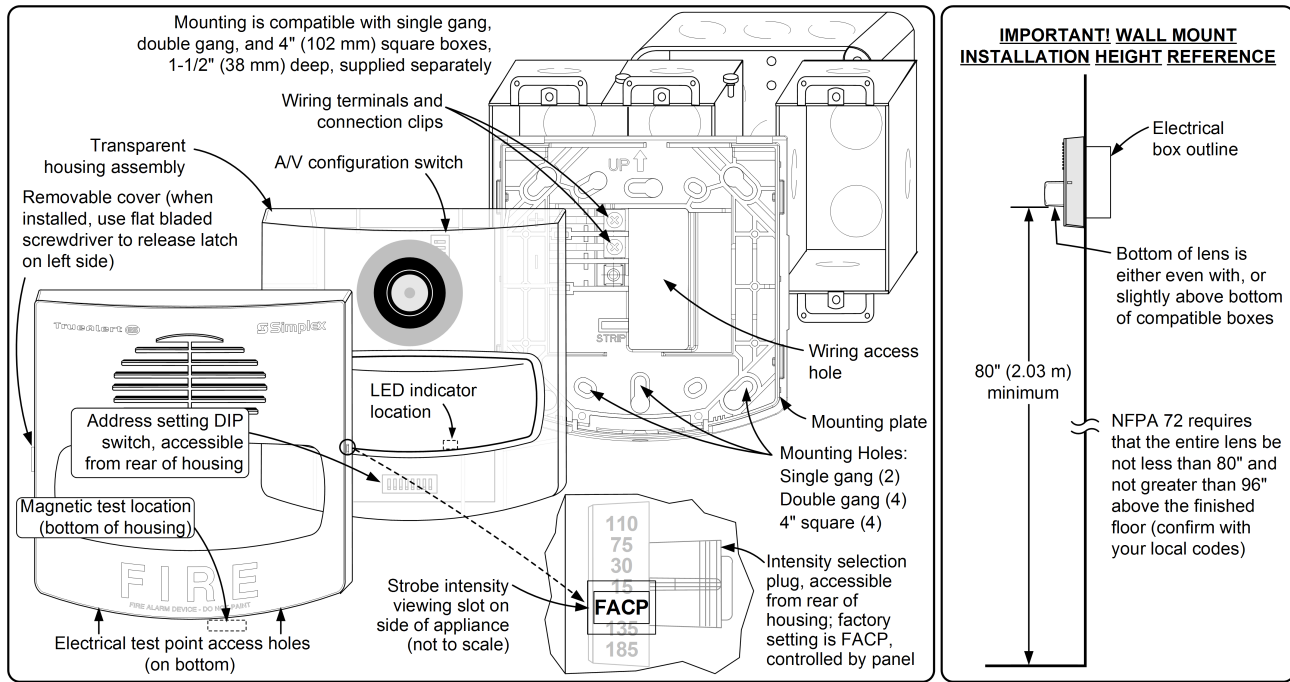


Figure 2: Installation Reference

Adapter Plate and Surface Mount Installation Reference

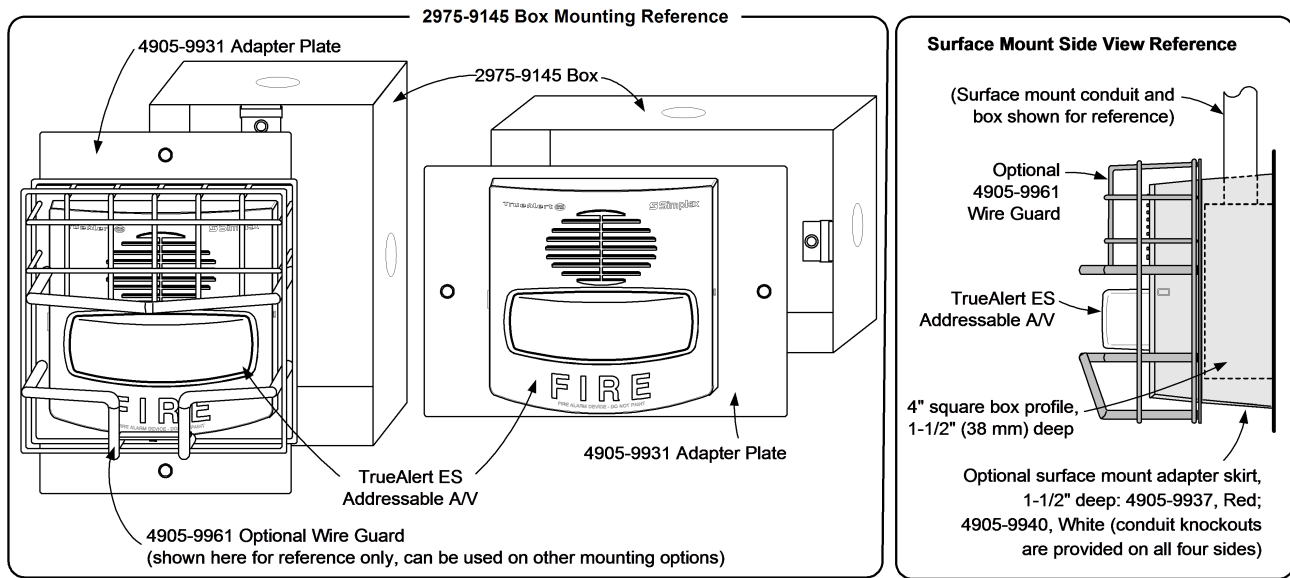


Figure 3: Adapter Plate and Surface Mount Installation Reference

IDNAC SLC Controller Compatibility Reference

Table 5: Compatibility Reference

Compatible Controllers	Data Sheet Reference	Controller Output	IDNAC SLC Output Voltage	Appliance Voltage Design Reference
4100ES with EPS+ or EPS Power Supply	S4100-0100	IDNAC SLC	29 VDC (regulated)	23 VDC (with 6 VDC drop)
4009 IDNAC Repeater	S4009-0004			
4007ES with IDNAC Notification	S4007-0002			
4010ES with ESS Enhanced System Supply	S4010-0011			

TrueAlert ES A/V Specifications

Table 6: Electrical Ratings

Typical Operating Voltage Range	23 VDC to 31 VDC, Special Application (see below for 17 VDC rating)
Supervisory Requirements	1 unit load (= 0.8 mA control panel current)
IDNAC SLC Loading	Maximum of 127 addresses per SLC, 139 unit loads

Table 7: Sound Output Ratings @ 10 ft (3 m) @ 23 VDC (with IDNAC SLCs)

Sound Type/Setting	Steady/High	Steady/Low	Coded/High	Coded/Low
Reverberant Chamber, UL 464 Test	90.1 dBA	83.6 dBA	85.7 dBA	80.1 dBA
Anechoic Chamber, ULC 525 Test	94.1 dBA	88.1 dBA	94.1 dBA	88.1 dBA

Table 8: Sound Output Dispersion per ULC S541 Anechoic Testing

Horizontal	-3 dBA @ 50°; -6 dBA @ 63°; left and right from center
Vertical	-3 dBA @ 20° above, 48° below; -6 dBA @ 65° above, 60° below; ref. to center

Table 9: Candela Setting

Candela Setting	15 cd	30 cd	75 cd	110 cd	135 cd	185 cd
23 VDC RMS Current Ratings, with horn on continuous at high setting	59 mA	67 mA	107 mA	139 mA	166 mA	215 mA

Table 10: General Specifications

Sound Characteristics	2400 to 3700 Hz sweep, modulated at 120 Hz rate
Temperature Range	32° to 122° F (0° to 50° C)
Humidity Range	10% to 93%, non-condensing @ 104° F (40° C)
Installation Instructions	579-1031
Connections	Terminal blocks on mounting plate for 18 AWG to 12 AWG (0.82 mm ² to 3.31 mm ²); two wires per terminal for in/out wiring

Table 11: IDNAC SLC Wiring Specifications

IDNAC SLC Wiring Specifications (refer to control panel installation instructions for more information)	UTP, unshielded twisted pair recommended
	Maximum wire length allowed with "T-Taps" for Class B wiring per SLC = 10,000 ft (3048 m)
	Maximum wire length to any appliance = 4000 ft (1219 m)
Note: UL 464 test coded values are typical of the output measured with a Temporal or a March Time pattern and with a sound level meter reading on a "fast" setting. Under the same test conditions, coded horn output "peak" sound level readings are typically 4 dBA higher. Anechoic horn output ratings are typically more representative of actual installed sound output.	

TrueAlert ES A/V LEGACY Compatibility Reference

Table 12: Compatibility Reference

Compatible Controller	Data Sheet Reference	Controller Output	Available Strobe Intensity	Available Horn Control	Appliance Voltage Minimum
4100ES or 4100U with TrueAlert Power Supply	S4100-0031	TrueAlert Addressable SLC	15, 30, 75, and 110 cd	Continuous, Temporal Code 3, and March Time of 60 or 120 bpm	17 VDC
4009 TPS, Remote TrueAlert Power Supply	S4100-0037				
TrueAlert Addressable Controller (4009T)	S4009-0003				

Audible/Visible Notification Appliances, Wall Mount Multi-Candela Horn/Strobe, Model Series 49AV

Table 13: Electrical Ratings Differences for Legacy Applications (refer to above specifications for other ratings)

Voltage Range	17 VDC to 31 VDC, Special Application
----------------------	---------------------------------------

Table 14: Sound Output Ratings @ 10 ft (3 m) @ 17 VDC

Sound Type/Setting	Steady/High	Steady/Low	Coded/High	Coded/Low
Reverberant Chamber, UL 464 Test	87.8 dBA	81.6 dBA	83.4 dBA	77.0 dBA
Anechoic Chamber, ULC 525 Test	91.7 dBA	85.4 dBA	91.7 dBA	85.4 dBA

Table 15: Candela setting

Candela Setting	15 cd	30 cd	75 cd	110 cd
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Table 16: 17 VDC RMS Current Ratings

17 VDC RMS Current Ratings, with horn on continuous at high setting, use when connected to TrueAlert Addressable SLCs per above	74 mA	85 mA	140 mA	185 mA
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Description

Ceiling Mount Addressable Visible (A/V) Notification Appliances

are individually addressed audible/visible notification appliances that receive power, supervision, and control signals from a Simplex fire alarm control panel providing **IDNAC** Signaling Line Circuits (SLCs). LED and Xenon tube strobes devices are interoperable on the same IDNAC channel. (See [TrueAlert ES A/V LEGACY Compatibility Reference](#).)

Features

Individually addressed and controlled multi-candela TrueAlert ES A/V (audible/visible) notification appliances provide:

- Multi-candela xenon strobe with synchronized 1 Hz flash rate and with intensity **programmable from the control panel** or jumper selected as 15, 30, 75 or 110cd on the AV model, or 110, 135 or 185 cd on the AVH model
- Advanced addressable notification controlled by **IDNAC SLCs**.
- **IDNAC SLCs** provide **regulated 29 VDC** allowing horns to operate with lower current
- Wiring supervision to each appliance allowing “T-tapped” connections for Class B circuits to simplify wiring (Class A circuits require in/out wiring)
- **Self-Test Mode** allows on-board sensors to detect the strobe and horn output and then report their status to the control panel
- **TrueAlert Device Reports** at the control panel detailing appliance point ID, custom label, type, and candela setting (see sample in [TrueAlert Device Reports Reference](#))
- **Magnet Test diagnostics** to assist checkout and testing of appliances and wiring
- **Electrical test point access** by removing the cover
- Compatibility with ADA requirements; (refer to important installation information in [Installation Reference](#))
- Compatibility with legacy TrueAlert addressable systems for upgrade and replacement (see [TrueAlert ES A/V LEGACY Compatibility Reference](#))
- Strobe operation is listed to UL Standard 1971 and ULC Standard S526; Horn operation is listed to UL Standard 464 and ULC Standard S525

LED Indicator and Magnet Test feature:

- Appliance LED can be selected to display each polling cycle to indicate appliance supervision
- When the controller is in diagnostic mode, the Magnet Test pulses the LED to indicate appliance address and can be set to also briefly flash the strobe and sound the horn

Mechanical design features

- Rugged, high impact, flame retardant thermoplastic housing in red with white letters or white with red letters, with clear lens, available with FIRE, FEU, ALERT, FEU/FIRE, or blank lettering
- Separate covers are available to change application type onsite or for replacement
- You can use a back box to mount the appliance assembly to the wall. Mount to a 4-inch (10.16 cm) square electrical box
- Covers can be easily removed without disturbing the connected housing and avoiding trouble conditions
- In/out wiring terminals for 18 AWG to 12 AWG
- Optional red wire guards (see [Product Selection](#))

Audible notification appliance (horn):

- Harmonically rich output sound for either coded or steady operation
- Horns sound as Temporal Code 3, March Time pattern, continuous; or Temporal Code 4, controlled separately from visible appliances on the same two-wire circuit
- Selectable March Time rates of 20, 60, or 120 beats per minute
- Output is “high” or “low” (~5 dBA difference) selectable at the appliance or from the controller with FACP mode selected at the appliance



Figure 1: TrueAlert ES Addressable A/V

Strobe Application Reference

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).

TrueAlert ES Operation Advantage

TrueAlert ES addressable appliances on IDNAC SLCs

provide separate visible and audible notification using a single two-wire circuit that also **confirms connection to the individual notification appliance's electronic circuit**. This operation increases circuit supervision integrity by providing supervision that extends beyond the appliance wiring connections.

Reduced current usage on IDNAC SLCs

With **IDNAC SLCs**, a constant 29 VDC 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 wiring distances up to 2 to 3 times farther than with conventional notification, or support for more appliances per IDNAC SLC, or use of smaller gauge wiring, or combinations of these benefits, all providing installation and maintenance savings with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions.

Reducing Installation and Testing Time

With separate controls 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. Use of Self-Test and Magnet Test features improve installation efficiency. TrueAlert device reports conveniently identify information about each connected appliance.

TrueAlert ES Diagnostics

Test Features

When IDNAC SLCs are in diagnostic mode, *Self-Test* and *Magnet Test* features provide individual appliance testing. With the *Self-Test* feature, *appliance operation can be confirmed without leaving the control panel*. Additionally, each appliance's LED can be selected to pulse when it receives a supervision poll during normal operation.

Self-Test Details

Selecting Self-Test Mode from the control panel allows on-board sensors, depending on the device type, to detect its own strobe and/or horn output and then report their status to the control panel. Operation is by selected VNAC appliance groups and is either automatic (all briefly simultaneously activated) or individually activated by applying a magnet. (Refer to control panel data sheet for more Self-Test information, see list in Table 10.)

Silent Appliance Magnet Test

In this test mode, in response to application of a magnet, the appliance LED pulses sequentially to conveniently indicate the appliance's address.

Operational Appliance Magnet Test.

In this test mode, after the address is indicated by pulsing the appliance LED, the strobe will briefly flash and the horn will briefly sound to indicate proper operation.

TrueStart Instrument Two (TSIT)

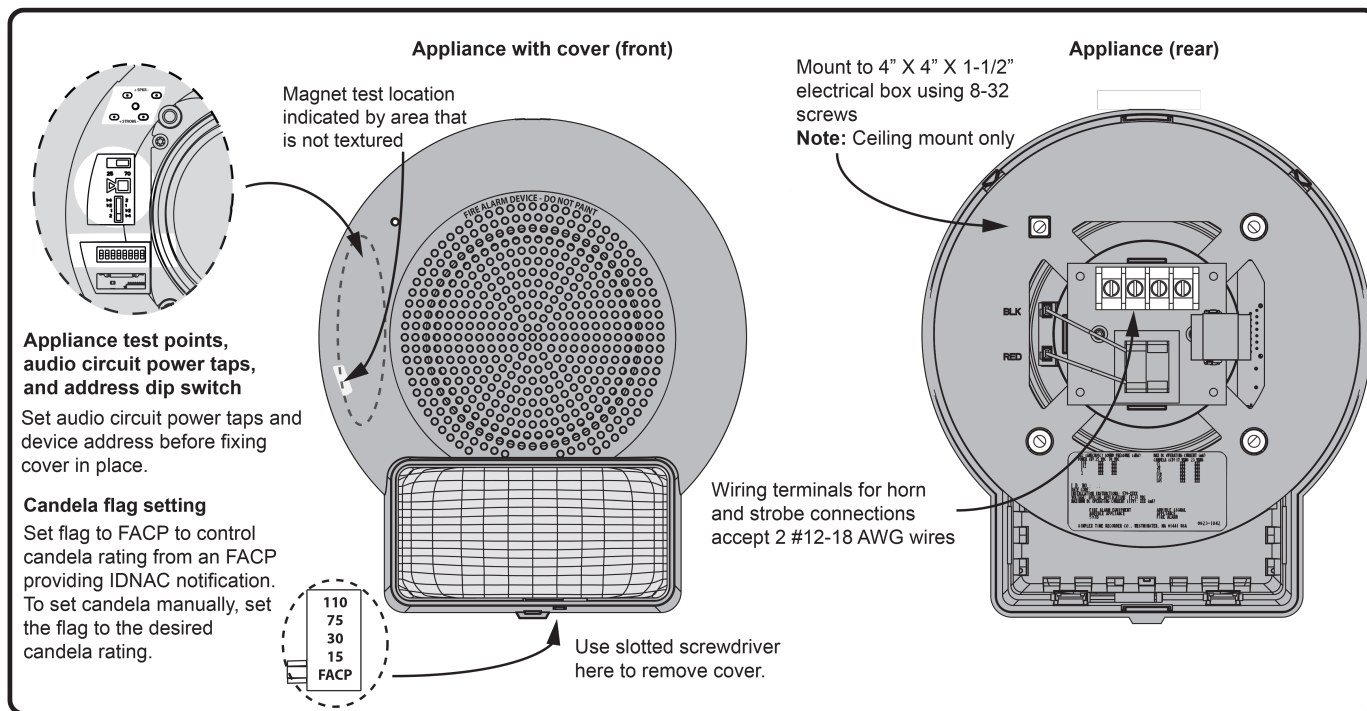
The 2nd generation of the Simplex TrueStart Test Instrument adds testing of IDNAC SLC wiring and TrueAlert ES appliances to its ability to test IDCs, NACs, and IDNet communications *before connection to the control panel*. Please contact your local Simplex representative for additional information.

TrueAlert Addressable Wiring Isolator

Isolator Model 4905-9929

Isolator Model 4905-9929 is available for remote mounting on TrueAlert addressable circuits to isolate short circuited wiring from functioning wiring. (See data sheet S4905-0001.)

Installation Reference



TrueAlert Device Reports Reference

Service Port		Page 1	
REPORT 5 : TrueAlert Device Report		12:34:56am	TUE 27-Jan-15
POINT ID	CUSTOM LABEL	DEVICE TYPE	CANDELA
T14-1-1	Location Label . . . up to 40 characters	V/O	15
T14-1-2	Break Room 5	A/V	110
T14-1-3	Boiler Room	A/V	75
T14-1-4	Elec. Room 7	A/V	135

Product Selection

Ceiling Mount Addressable Audible/Visible (A/V) Appliances

TrueAlert ES Addressable A/V appliance dimensions with cover: 8 1/8" H x 7 1/8" W x 3" D (206 mm x 180 mm x 76 mm)

Table 1: Ceiling Mount Addressable Audible-Visual Only A/V Appliances

Model*	Lens color	Description	Installation Instructions
49AV-APPLC 49AV-APPLC-BA 49AVH-APPLC 49AVH-APPLC-BA	Clear	AV appliance only. Select cover separately.	579-1242
49AVH-APPLCA-BA	Amber		
49AVH-APPLCB-BA	Blue		
49AVH-APPLCG-BA (Pending)	Green		
49AVH-APPLCR-BA (Pending)	Red		579-1279

Table 2: Back boxes

Model	Color
49WPBB-SVCR	Red
49WPBB-SVCW	White

Note: Use WP back boxes for surface mounting only. Using weatherproof back boxes does not make an appliance weatherproof.

Table 3: Separate Covers (Required when ordering model 49AV-APPLC(-BA))

Model*	Color	Wording
49AVC-CRFIRE	Red	FIRE
49AVC-CWFIRE	White	
49AVC-CRALT	Red	ALERT
49AVC-CWALT	White	
49AVC-CRBAA	Red	إنذار/ALERT
49AVC-CWBAA	White	
49AVC-CRS	Red	Simplex logo only
49AVC-CK	Black	Blank
49AVC-CRFEU	Red	FEU
49AVC-CWFEU	White	
49AVC-CRBAF	Red	حريق/FIRE
49AVC-CWBAF	White	
49AVC-CRBF	Red	FEU/FIRE
49AVC-CWBF	White	
49AVC-CWS	White	Simplex logo only
49AVC-CWCALT	White	火警/FIRE

Table 4: Wire Guards and Wire Guard Back Boxes

Model	Description
49WG-SVWCR	AV Ceiling Mount Red Wire Guard
49WG-BB-SVCR-O	AV Ceiling Mount Red Wire Guard Back Box

TrueAlert ES A/V Specifications

Table 5: Electrical Ratings

Specification	Rating
Typical Operating Voltage Range	23 VDC to 30 VDC, Special Application
Supervisory Requirements	1 unit load (= 0.8 mA control panel current)
IDNAC SLC Loading	Maximum of 127 addresses per SLC

Table 6: Sound Output Ratings @ 10 ft (3 m) (with IDNAC SLCs)

Sound Type/Setting	Voltage	Steady/High	Steady/Low	Coded/High	Coded/Low
Reverberant Chamber, UL 464 Test	23	89.0 dBA	83 dBA	85 dBA	80 dBA
	31	91 dBA	85.5 dBA	87 dBA	82 dBA
Anechoic Chamber, ULC 525 Test	23	97 dBA	92.5 dBA	97 dBA	92.5 dBA
	31	99 dBA	95 dBA	99 dBA	95 dBA

Table 7: Maximum RMS operating current

49AV Visible			49AVH Visible			
Candela	23-30 VDC Current	17-31 VDC Current	Candela			Current
			CD amber dome	CD blue dome	CD clear dome	
15	67 mA	84 mA	-	-	-	-
30	92 mA	119 mA	95	75	110	300 mA
75	159 mA	214 mA	110	95	135	330 mA
110	215 mA	279 mA	135	110	185	391 mA
UL rated only	AO: 17 V or 23 V rating					18 mA

Table 8: General Specifications

Specifications	Ratings
Sound Characteristics	2400 to 3700 Hz sweep, modulated at 120 Hz rate
Temperature Range	32° to 120° F (0° to 49° C)
Humidity Range	10% to 93%, non-condensing @ 104° F (40° C)
Connections	Terminal blocks on mounting plate for 18 AWG to 12 AWG (0.82 mm ² to 3.31 mm ²); two wires per terminal for in/out wiring
IDNAC SLC Wiring Specifications (refer to control panel installation instructions for more information)	UTP, unshielded twisted pair recommended
	Maximum wire length allowed with "T-Taps" for Class B wiring per SLC = 10,000 ft (3048 m)
	Maximum wire length to any appliance = 4000 ft (1219 m)
Note: UL 464 test coded values are typical of the output measured with a Temporal or a March Time pattern and with a sound level meter reading on a "fast" setting. Under the same test conditions, coded horn output "peak" sound level readings are typically 4 dBA higher. Anechoic horn output ratings are typically more representative of actual installed sound output.	

IDNAC SLC Controller Compatibility Reference

Table 9: Compatibility Reference

Compatible Controllers	Data Sheet Reference	Controller Output	IDNAC SLC Output Voltage	Appliance Voltage Design Reference
4100ES with EPS+ or EPS Power Supply	S4100-0100	IDNAC SLC	29 VDC (regulated)	23 VDC (with 6 VDC drop)
4009 IDNAC Repeater	S4009-0004			
4007ES with IDNAC Notification	S4007-0002			
4010ES with ESS Enhanced System Supply	S4010-0011			

TrueAlert ES A/V LEGACY Compatibility Reference
Table 10: Compatibility Reference

Compatible Controller	Data Sheet Reference	Controller Output	Available Strobe Intensity		Appliance Voltage Minimum
4100ES or 4100U with TrueAlert Power Supply	S4100-0031	TrueAlert Addressable SLC	15, 30, 75, and 110 cd	Continuous, Temporal Code 3, and March Time of 60 or 120 bpm	17 VDC
4009 TPS, Remote TrueAlert Power Supply*	S4100-0037				
TrueAlert Addressable Controller (4009T)*	S4009-0003				
Electrical Ratings Differences for Legacy Applications (refer to above specifications for other ratings)					
Voltage Range		17 VDC to 31 VDC, Special Application			
Sound Output Ratings @ 10 ft (3 m) @ 17 VDC	Sound Type/Setting	Steady/High	Steady/Low	Coded/High	Coded/Low
	Reverberant Chamber, UL 464 Test	87.0 dBA	81.0 dBA	82.0 dBA	77.0 dBA
	Anechoic Chamber, ULC 525 Test	94.5 dBA	90.0 dBA	94.5 dBA	90.0 dBA
	Candela Setting	15 cd	30 cd	75 cd	110 cd
17 VDC RMS Current Ratings, with horn on continuous at high setting, use when connected to TrueAlert Addressable SLCs per above		74 mA	85 mA	140 mA	185 mA

*Not compatible with 49AVH-APPLC. For connection to legacy fire panel models Simplex 4009T and 4100/TPS. High candela (49AVH) appliances are not compatible with Simplex models 4009T and TPS, see the fire panel compatibility charts.

Features

Individually addressed and controlled multi-candela TrueAlert ES V/O (visible only) notification appliances provide:

- Multi-candela xenon strobe with synchronized 1 Hz flash rate and with intensity **programmable from the control panel** or jumper selected as 15, 30, 75, 110, 135, or 185 cd
- Advanced addressable notification controlled by **IDNAC SLCs** providing **regulated 29 VDC** allowing strobes to operate with lower current even under battery backup
- Wiring supervision to each appliance allowing "T-tapped" connections for Class B circuits to simplify wiring (Class A circuits require in/out wiring)
- **Self-Test Mode** allows an on-board sensor to detect the strobe output and then report its status to the control panel
- **TrueAlert Device Reports** at the control panel detailing appliance point ID, custom label, type, and candela setting
- **Magnet Test diagnostics** to assist checkout and testing of appliances and wiring and **Electrical test point access** without removing cover
- Compatibility with ADA requirements; (refer to [Installation Reference](#))
- Compatibility with legacy TrueAlert addressable systems for upgrade and replacement (see [TrueAlert ES Strobe LEGACY Compatibility Reference](#))
- Listed to UL Standard 1971 and ULC Standard S526

LED Indicator and Magnet Test feature:

- Appliance LED can be selected to display each polling cycle to indicate appliance supervision
- When the controller is in diagnostic mode, the Magnet Test pulses the LED to indicate appliance address and can be set to also briefly flash the strobe

Mechanical design features include:

- Rugged, high impact, flame retardant thermoplastic housing in red with white letters or white with red letters, with clear lens, available with FIRE, ALERT, FEU, FEU/FIRE, or blank lettering
- Separate covers are available to change appliance type on-site or for replacement; covers can be easily removed without disturbing the connected housing and avoiding trouble conditions
- A separate mounting plate allows wiring to be completed before appliance is mounted; use with single gang, double gang, or 4-inch square box, flush or surface mount
- In/out wiring terminals for 18 AWG to 12 AWG
- Optional mounting adapters are available to cover surface mounted electrical boxes and to adapt to Simplex, 2975-9145 boxes
- Optional red wire guards (see [Product Selection](#))

Description

TrueAlert ES addressable strobes

TrueAlert ES addressable strobes are individually addressed visible notification appliances that receive power, supervision, and control signals from the Simplex fire alarm control panel providing **IDNAC** Signaling Line Circuits (SLCs). (See [IDNAC SLC Controller Compatibility Reference](#).)

Strobe Application Reference

Proper selection of visible notification is dependent on occupancy, location, local codes, and proper applications of: the **National Fire Alarm Code** (NFPA 72), ANSI A117.1; the appropriate model building code:

BOCA, ICBO, or SBCCI; and the application guidelines of the Americans with Disabilities Act (ADA).



Figure 1: TrueAlert ES Addressable Strobes are Available in Red with White Lettering and White with Red Lettering

TrueAlert ES Operation Advantage

TrueAlert ES addressable appliances on IDNAC SLCs provide separate visible (and audible) notification using a single two-wire circuit that also **confirms connection to the individual notification appliance's electronic circuit**. This operation increases circuit supervision integrity by providing supervision that extends beyond the appliance wiring connections.

Reduced current allows efficient IDNAC SLC operation. With **IDNAC SLCs**, a **constant 29 VDC** 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 wiring distances up to 2 to 3 times farther than with conventional notification, or support for more appliances per IDNAC SLC, or use of smaller gauge wiring, or combinations of these benefits, all providing installation and maintenance savings with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions.

Reducing Installation and Testing Time. With separate controls 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. Use of Self-Test and Magnet Test features improves installation efficiency. TrueAlert device reports conveniently identify information about each connected appliance.

* 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 7125-0026:0373 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.

TrueAlert ES Diagnostics

Test Features. When IDNAC SLCs are in diagnostic mode, *Self-Test* and *Magnet Test* features provide individual appliance testing. With the *Self-Test* feature, *appliance operation can be confirmed without leaving the control panel*. Additionally, each appliance's LED can be selected to pulse when it receives a supervision poll during normal operation.

Self-Test Details. Selecting Self-Test Mode from the control panel allows on-board sensors, depending on the device type, to detect its own strobe and/or horn output and then report their status to the control panel. Operation is by selected VNAC appliance groups and is either automatic (all briefly simultaneously activated) or individually activated by applying a magnet (Refer to control panel data sheet for more Self-Test information, see [IDNAC SLC Controller Compatibility Reference](#)).

Silent Appliance Magnet Test. In this test mode, in response to application of a magnet, the appliance LED pulses sequentially to conveniently indicate the appliance's address.

Operational Appliance Magnet Test. In this test mode, after the address is indicated by pulsing the appliance LED, the strobe will briefly flash to indicate proper operation.

TrueStart Instrument Two (TSIT). The 2nd generation of the Simplex TrueStart Test Instrument adds testing of IDNAC SLC wiring and TrueAlert ES appliances to its ability to test IDCs, NACs, and IDNet communications *before connection to the control panel*. Please contact your local Simplex representative for additional information.

TrueAlert Addressable Wiring Isolator

Isolator Model 4905-9929 is available for remote mounting on TrueAlert addressable circuits to isolate short circuited wiring from functioning wiring. (See data sheet [S4905-0001](#) .)

Installation Reference

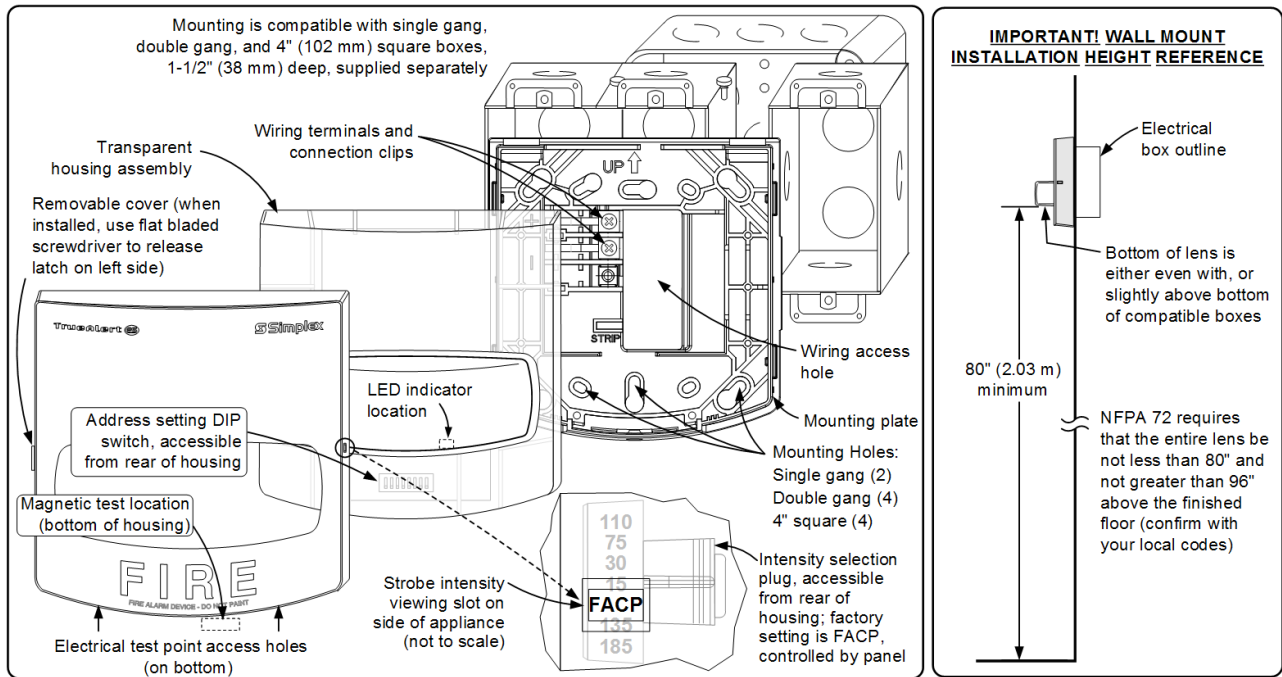


Figure 2: Installation Reference

Adapter Plate and Surface Mount Installation Reference

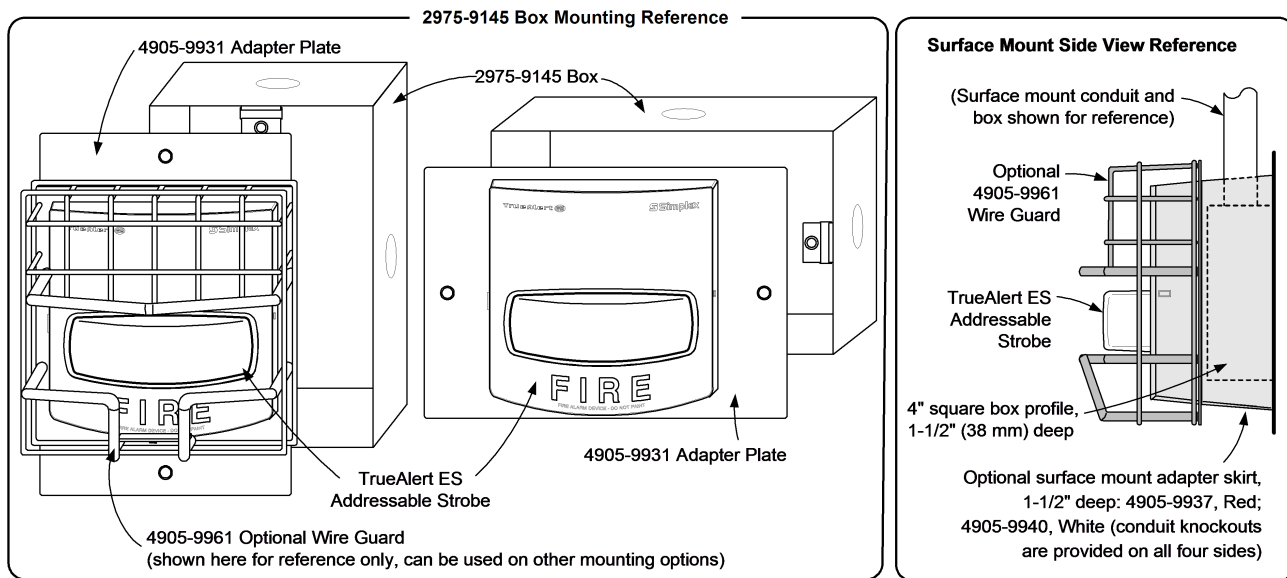


Figure 3: Adapter Plate and Surface Mount Installation Reference

The 2975-9145 box is shown mounted to the 4905-9931 Adapter Plates. Also shown is the optional surface mount adapter skirt (available in red 4905-9937 or white 4905-9940), as well as the 4905-9961 optional wire guard.

Product Selection
Table 1: TrueAlert ES Wall Mount Addressable Strobes

SKU*	Cover Color	Wording	Lens Color
49VO-WRF	Red	FIRE	Clear
49VO-WRF-BA			
49VO-WWF	White		
49VO-WWF-BA			
49VO-WRA	Red	ALERT	
49VO-WRA-BA			
49VO-WWA	White		
49VO-WWA-BA			
49VO-WRQ	Red	FEU	
49VO-WWQ	White		
49VO-WRS	Red	Simplex logo only	
49VO-WRS-BA			
49VO-WWS	White		
49VO-WWS-BA			
49VO-APPLW	Select cover and mounting plate separately		
49VO-APPLW-BA			

TrueAlert ES addressable VO (strobe) appliances include cover and matching mounting plate except as noted; Dimensions with Cover = 5 1/8" H x 5" W x 2 5/8" D (130 mm x 127 mm x 67 mm)

Table 2: Separate Mounting Plate

Model	Color	Note
49MP-AVOWR	Red	Mounting Plate is required when ordering model 49VO-APPLW(-BA)
49MP-AVOWW	White	

Table 3: Separate Covers (Required when ordering model 49VO-APPLW(-BA))

SKU*	Color	Wording
49VOC-WRFIRE	Red	FIRE
49VOC-WWFIRE	White	
49VOC-WRALT	Red	ALERT
49VOC-WWALT	White	
49VOC-WRFEU	Red	FEU
49VOC-WWFEU	White	
49VOC-WRBLNG	Red	FEU/FIRE
49VOC-WWBLNG	White	
49VOC-WRS	Red	Simplex logo only
49VOC-WWS	White	

Table 4: Mounting Adapters and Wire Guard

Model	Color	Description	Dimensions
4905-9937	Red	Surface Mount Adapter Skirt	5 3/8" H x 5 1/4" W x 1 5/8" D (136 mm x 133 mm x 41 mm)
4905-9940	White		Total depth with strobe = 4 3/8" (111 mm)
4905-9931	Red Adapter Plate for mounting to Simplex, 2975-9145 Box (typically for retrofit, mount 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 4905-9931 Adapter Plate		7 7/8" x 5 1/8" x 2 3/4" D (200 mm x 130 mm x 70 mm)
4905-9961	Red wire guard with mounting plate, compatible with semi-flush or surface mount boxes		6 1/16" H x 6 1/16" W x 3 1/8" D (154 mm x 154 mm x 79 mm)

IDNAC SLC Controller Compatibility Reference

Compatible Controllers	Data Sheet Reference	Controller Output	IDNAC SLC Output Voltage	Appliance Voltage Design Reference
4100ES with EPS+ or EPS Power Supply	S4100-0100	IDNAC SLC	29 VDC (regulated)	23 VDC (with 6 VDC drop)
4009 IDNAC Repeater	S4009-0004			
4007ES with IDNAC Notification	S4007-0002			
4010ES with ESS Enhanced System Supply	S4010-0011			

TrueAlert ES Strobe Specifications

Table 5: Electrical Ratings

Specification	Rating
Typical Operating Voltage Range	23 VDC to 31 VDC, Special Application (see below for 17 VDC rating)
Supervisory Requirements	1 unit load (= 0.8 mA control panel current)
IDNAC SLC Loading	Maximum of 127 addresses per SLC, 139 unit loads

Table 6: Candela Setting

Candela	15 cd	30 cd	75 cd	110 cd	135 cd	185 cd
23 VDC RMS Current Ratings, for typical design of IDNAC Addressable SLCs (6 VDC drop)	47 mA	57 mA	100 mA	132 mA	160 mA	208 mA

Table 7: General Specifications

Temperature Range	32° to 122° F (0° to 50° C)
Humidity Range	10% to 93%, non-condensing @ 104° F (40° C)
IDNAC SLC Wiring Specifications (refer to control panel installation instructions for more information)	UTP, unshielded twisted pair recommended
	Maximum wire length allowed with "T-Taps" for Class B wiring per SLC = 10,000 ft (3048 m)
	Maximum wire length to any appliance = 4000 ft (1219 m)
Connections	Terminal blocks on mounting plate for 18 AWG to 12 AWG (0.82 mm ² to 3.31 mm ²); two wires per terminal for in/out wiring
Installation Instructions	579-1031
Note: Refer to compatibility table above for fire alarm control panel and power supply operation type.	

TrueAlert ES Strobe LEGACY Compatibility Reference

Table 8: Compatibility Reference

Compatible Controller	Data Sheet Reference	Controller Output	Available Strobe Intensity	Appliance Voltage Minimum
4100ES or 4100U with TrueAlert Power Supply	<i>S4100-0031</i>	TrueAlert Addressable SLC	15, 30, 75, and 110 cd	17 VDC
4009 TPS, Remote TrueAlert Power Supply	<i>S4100-0037</i>			
TrueAlert Addressable Controller (4009T)	<i>S4009-0003</i>			

Table 9: Electrical Ratings Reference for Retrofit Applications

Voltage Range	17 VDC to 31 VDC, Special Application			
Candela Setting	15 cd	30 cd	75 cd	110 cd
17 VDC RMS Current Ratings, use when connected to TrueAlert Addressable SLCs per above	62 mA	75 mA	133 mA	178 mA

Description

Ceiling Mount Addressable Visible (V/O) Notification Appliances

are individually powered, addressed, and controlled from a Simplex fire alarm control panel IDNAC Signaling Line Circuit (SLC). V/O notification appliances use a multi-candela strobe with synchronized 1 Hz flash rate and selectable candela rating. Xenon tube strobes devices are interoperable on the same IDNAC channel. Separate appliance and cover selection greatly simplifies the ordering and installation process.

Features

Individually addressed Visible Only (V/O) notification appliances

- Multi-candela Xenon strobe available in low (15 cd, 30 cd, 75 cd and 110 cd) and high (110 cd, 135 cd and 185 cd) range candela models
- Small compact design and low current draw due to energy efficient Xenon tube strobes, with LED indicators
- Advanced addressable notification controlled by **IDNAC SLCs**.
- **IDNAC SLCs** provide **regulated 29 VDC** allowing horns to operate with lower current
- Electrical test point access by removing the cover
- Strobe intensity can be programmed from the control panel or the device
- Wiring supervision to each appliance allows T-tapped connections for Class B circuits to simplify wiring (Class A circuits require in/out wiring)
- Self-Test Mode allows on-board sensors to detect the strobe output and then report their status to the control panel
- TrueAlert Device Reports at the control panel detail appliance point ID, custom label, type, and candela setting
- Magnet test diagnostics assist checkout and testing of appliances and wiring
- Compatibility with ADA requirements
- Strobe operation is listed to UL Standard 1971 and ULC Standard S526
- Synchronized strobe operation on its IDNAC channel

LED Indicator and Magnet Test feature:

- Indicator LED indicates magnet test acknowledgment, 3 digit IDNAC address, and candela rating
- Indicator LED can be configured to blink every polling cycle to indicate appliance supervision
- When the controller is in diagnostic mode, the magnet test pulses the Indicator LED to indicate appliance address and can be set to also briefly flash the strobe LEDs

Mechanical design features

- Rugged, high impact, flame retardant thermoplastic housing in red and white colors
- Various covers and lettering options available – Red with white letters or white with red letters
- Covers can be easily removed without disturbing the connected housing and avoiding trouble conditions
- In/out wiring terminals for 18 AWG to 12 AWG
- Mounts on 4 in. square or single gang USA electrical boxes. Adapter plate required for mounting on single gang electrical boxes
- Optional wire guards
- Weatherproof back boxes are required for surface mounting



Figure 1: Indoor Ceiling Mount Strobe

Strobe application reference

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).

TrueAlert Addressable Wiring Isolator

Isolator Model 4905-9929

Isolator Model 4905-9929 is available for remote mounting on TrueAlert addressable circuits to isolate short circuited wiring from functioning wiring. Refer to data sheet S4905-0001 for additional information.

TrueAlert ES Diagnostics

Test Features

Controllers can be selected to pulse each appliance's LED when it receives a supervision poll. When the controller is selected for diagnostic mode, the appliance magnet test feature provides a response at the individual appliance being tested.

Silent Appliance Magnet Test

The appliance LED pulses sequentially to conveniently indicate the appliance's address when a magnet is applied.

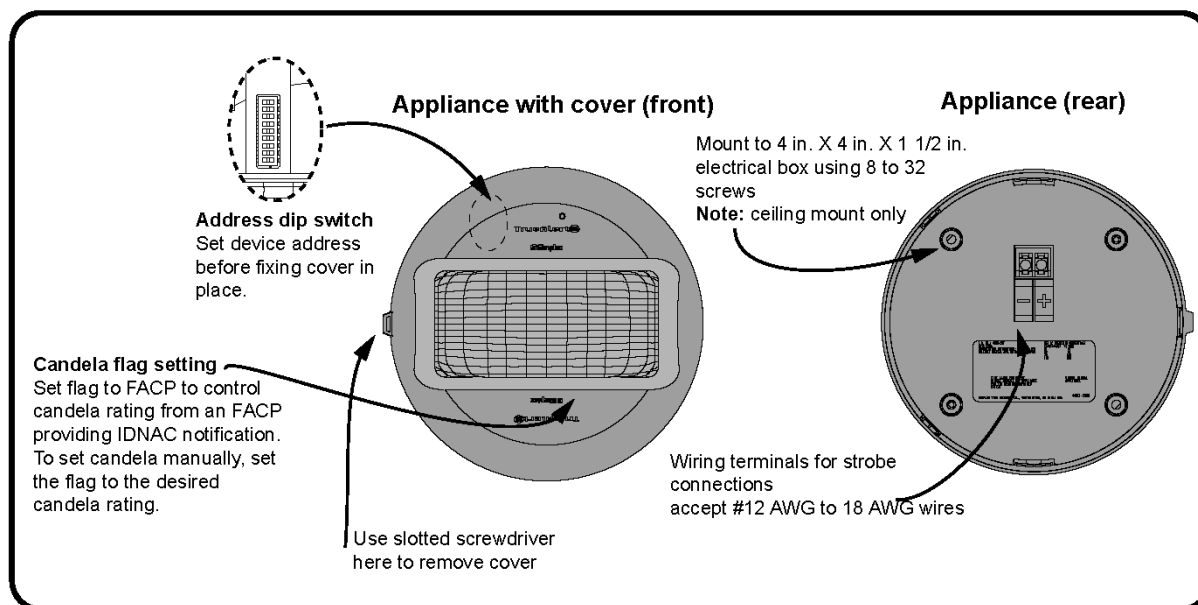
Operational Appliance Magnet Test

In this test mode, after the address is indicated by pulsing the appliance LED, the strobe will briefly flash to indicate proper operation.

TrueStart Instrument Two (TSIT)

The 2nd generation of the Simplex TrueStart Test Instrument adds testing of IDNAC SLC wiring and TrueAlert ES appliances to its ability to test IDCs, NACs, and IDNet communications **before connection to the control panel**. Contact your local Simplex representative for additional information.

Installation reference



IDNAC SLC Operation Advantage

TrueAlert Addressable visible appliances on IDNAC SLCs

TrueAlert Addressable visible appliances on IDNAC SLCs provide visible notification using one two-wire circuit that also confirms connection to the individual notification appliance's electronic circuit. This operation increases circuit supervision integrity by providing supervision that extends beyond the appliance wiring connections.

Reduced current usage on IDNAC SLCs

A constant 29 VDC source voltage is maintained, even during battery standby. This allows appliances 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 wiring distances up to 2 to 3 times farther than with conventional notification, support for more appliances per IDNAC SLC, use of smaller gauge wiring, or combinations of these benefits.

Reducing Installation and Testing Time

With separate controls 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. Use of the magnet test feature improves installation efficiency. TrueAlert device reports conveniently identify information about each connected appliance.

Product Selection

Table 1: Ceiling mount addressable visual only V/O appliances

Model*	Lens color	Description	Installation Instructions
49VO-APPLC 49VO-APPLC-BA	Clear	VO appliance only. Select cover separately.	579-1227
49VOH-APPLC 49VOH-APPLC-BA			
49VOH-APPLCA	Amber	579-1280	
49VOH-APPLCB	Blue		
49VOH-APPLCG	Green		
49VOH-APPLCR	Red		

Table 2: Surface/WP back boxes

Model	Color	Description	Installation instructions
49WPBB-VOCR	Red	Surface/WP back box in red	579-1270
49WPBB-VOCW	White	Surface/WP back box in white	

Note: Use WP back boxes for surface mounting only. Using weatherproof back boxes does not make an appliance weatherproof.

Table 3: Adapter plates

Model	Description	Installation Instructions
49VO-APCS	VO Ceiling Mount Adapter Plate. Required for mounting on a single gang electrical box.	579-1227

Table 4: V/O covers (required when ordering APPLC models)

Model*	Color	Wording
49VOC-CRALT	Red	ALERT
49VOC-CRBF		FEU/FIRE
49VOC-CRFEU		FEU
49VOC-CRF		FIRE
49VOC-CRS		Simplex logo only
49VOC-CRBAA		إنذار/ALERT
49VOC-CRBCF		火警/FIRE
49VOC-CRBAF		حريق/FIRE
49VOC-CK	Black	Blank
49VOC-CWALT	White	ALERT
49VOC-CWBF		FEU/FIRE
49VOC-CWFEU		FEU
49VOC-CWF		FIRE
49VOC-CWS		Simplex logo only
49VOC-CWBAA		إنذار/ALERT
49VOC-CWBCF		火警/FIRE
49VOC-CWBAF		حريق/FIRE

Table 5: Wire guards

Model	Description
49WG-VOCR	VO Ceiling Mount Red Wire Guard
49WGBB-VOCR	VO Ceiling Mount Wire Guard Back Box

Note: * (-BA) indicates model is available either with or without the -BA suffix. Model numbers ending in -BA are assembled in the USA

IDNAC SLC Controller Compatibility Reference

Table 6: Compatibility reference

Compatible Controllers	Data Sheet Reference	Controller Output	IDNAC SLC Output Voltage	Appliance Voltage Design Reference
4100ES with EPS+ or EPS Power Supply	S4100-0100	IDNAC SLC	29 VDC (regulated)	23 VDC (with 6 VDC drop)
4009 IDNAC Repeater	S4009-0004			
4100ES Flex 35, 50, and 100 Amplifiers	S4100-0034			
4100ES Constant Supervision and Signal Cards				

TrueAlert ES V/O LEGACY Compatibility Reference

Table 7: Compatibility reference

Compatible Controller	Data Sheet Reference	Controller Output	Available Strobe Intensity	Appliance Voltage Minimum
4100ES or 4100U with TrueAlert Power Supply	S4100-0031	TrueAlert Addressable SLC	15, 30, 75, and 110 cd	17 VDC
4009 TPS, Remote TrueAlert 17 VDC Power Supply*	S4100-0037			
TrueAlert Addressable Controller (4009T)	S4009-0003			
Electrical Ratings Differences for Legacy Applications (refer to above specifications for other ratings)				
Voltage Range		17 VDC to 31 VDC, Special Application		
Candela Setting	15 cd	30 cd	75 cd	110 cd
17 VDC RMS Current Ratings, with horn on continuous at high setting, use when connected to TrueAlert Addressable SLCs per above	73 mA	114 mA	210 mA	269 mA

* For connection to legacy fire panel models Simplex 4009T and 4100/TPS. High candela (49VOH) appliances are not compatible with Simplex models 4009T and TPS, see the fire panel compatibility charts.

Ceiling Mount V/O Specifications

Table 8: Specifications

Specification	Rating
Environmental	32°F to 120°F (0°C to 49°C); 10% to 93%, non-condensing at 104°F (40°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. Use Unshielded Twisted Pair (UTP) for IDNAC.
IDNAC SLC Loading	Maximum of 127 addresses per SLC, 139 unit loads. See device and compatible Fire Panel Installation Instructions for circuit current load limits.

Table 9: Percentage of rated light output at room temperature

Angle	On-Axis			Horizontal, Left/Right of Axis	
	0°	45°	90°	45°	90°
UL required output	100%	45%	25%	45%	25%
Typical output	327%	134%	83%	129%	47%

Table 10: Appliance specifications

Specification	Rating							
Operating Voltage Range	23 VDC to 30 VDC, Special Application							
Supervisory Requirements	1 unit load (= 0.8 mA control panel current)							
Flash Rate and Synchronized SLC Loading	1 Hz; with up to 63 synchronized strobes maximum per powered circuit, max 127 S/V appliances per IDNAC channel							
Current consumption**	Candela Setting	15 cd	30 cd	75 cd	90/95 cd	110 cd	135 cd	185 cd
	49VO model	55 mA	83 mA	153 mA	N/A	199 mA	N/A	N/A
	49VOH model	N/A	N/A	N/A	N/A	253 mA	296 mA	377 mA
	49VOH amber lens	N/A	N/A	N/A	253 mA (90 cd)	296 mA	377 mA	N/A
	49VOH blue lens	N/A	N/A	253 mA	296 mA (95 cd)	377 mA	N/A	N/A

** Measured at 23 VDC on IDNAC Addressable SLC

Features

Isolator+ modules provide short circuit isolation for TrueAlert addressable notification appliance wiring:**

- Power and communications are supplied by Simplex 4100ES, 4010ES, and 4007ES fire alarm control panels equipped with power supplies that provide advanced addressable notification from IDNAC Signaling Line Circuits (SLCs), and from 4009 IDNAC Repeaters**
- Operation is also compatible with legacy TrueAlert SLCs from TrueAlert Power Supplies (TPS) or TrueAlert Addressable Controllers (4009T)
- Dual port design accepts communications and power from either port and automatically isolates one port from the other when a short circuit occurs
- Mounts in standard 4" (102 mm) square electrical box, 2 1/8" (54 mm) deep
- UL listed to Standard 864

Status diagnostics:

- On-board yellow LED provides module status, can indicate communications poll or be activated from panel
- Isolators report faults to the host control panel (method varies with system connection type)

Information received at the control panel allows identification of the short circuit location:

- Simplex control panels providing IDNAC SLCs will be advised of *individual* appliances disabled due to activated isolators; (also true of legacy panels with TPS or when connected to TrueAlert Addressable Controller using RUI communications)
- Other control panels controlling TrueAlert Addressable Controllers do not recognize appliance addresses but will receive a report of an open circuit channel trouble due to activated isolators

Class B (Style 4) IDNAC SLC wiring:

- Up to 12 Isolator+ modules can be connected per IDNAC SLC and up to 6 Isolator+ modules can be connected directly together in series on the same branch

Class A (Style 6) IDNAC SLC wiring:

- For Class A operation, up to 6 Isolator+ modules can be connected per SLC loop

General channel loading rules:

- Isolator+ modules require one address and are rated as 4 unit loads
- TrueAlert addressable notification appliances are a single unit load

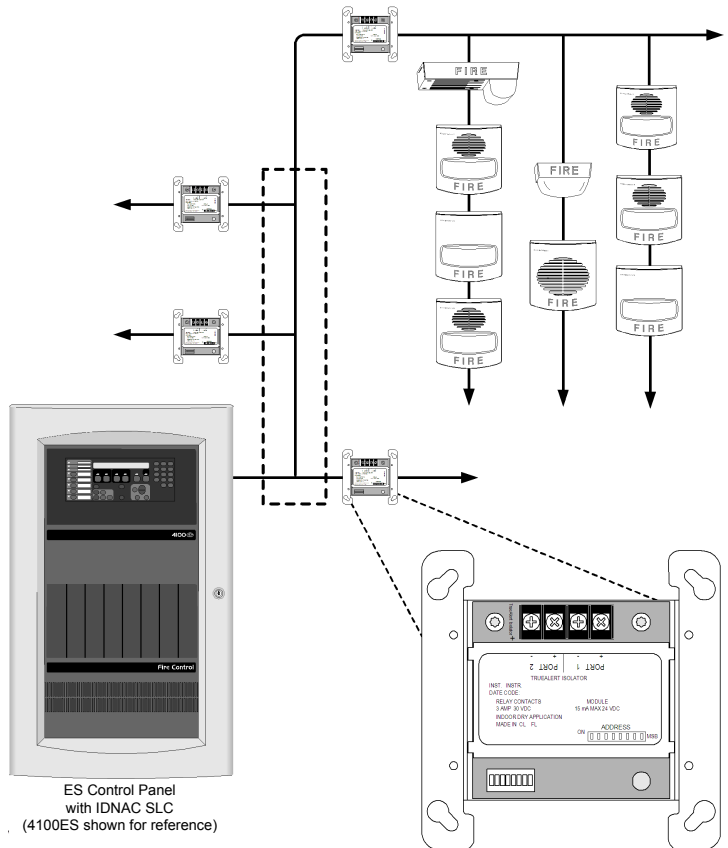


Figure 1: Typical TrueAlert Isolator+ Module Application One-Line Drawing Including Module Detail

Introduction

IDNAC Addressable Notification SLCs (and legacy TrueAlert SLCs) are internally isolated from each other. In the event of a channel wiring short circuit, the channel will safely shut down and then monitor the wiring for restoration to normal when the short is repaired. However, within the branch and "T" tap wiring of an IDNAC channel, the use of 4905-9929 TrueAlert Isolator+ Modules can provide additional isolation that can reduce the quantity of TrueAlert addressable appliances impacted by a short circuit.

Short Circuit Isolation. An internal isolation relay allows the Isolator+ module to separate shorted and/or disabled wiring from functioning wiring to optimize the available appliances. Isolator+ module status is communicated to the control panel providing assistance in identifying the shorted wiring location.

Convenient Location. The 4905-9929 Isolator+ Module mounts in a standard 4" square, 2 1/8" deep electrical box, allowing isolators to be conveniently located on the IDNAC SLC channel where the local wiring could most benefit.

** Use of "TrueAlert" in this document refers to both TrueAlert and TrueAlert ES notification appliances. Use of IDNAC SLCs also refers to operation of TrueAlert SLCs

*This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:214 for allowable values and/or conditions concerning material presented in this document. Accepted for use - City of New York Department of Buildings - MEA35- 93E. Additional listings may be applicable; contact your local Simplex product supplier for the latest status. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Safety Products Westminster.

TrueAlert Isolator+ Example 1

Branch Protection. The diagram below illustrates the addition of 4905-9929 Isolator+ Modules to IDNAC SLC wiring located at the start of each branch. With Isolator+ modules added in these locations, there will be an increase in overall system operation in the event of a short circuit.

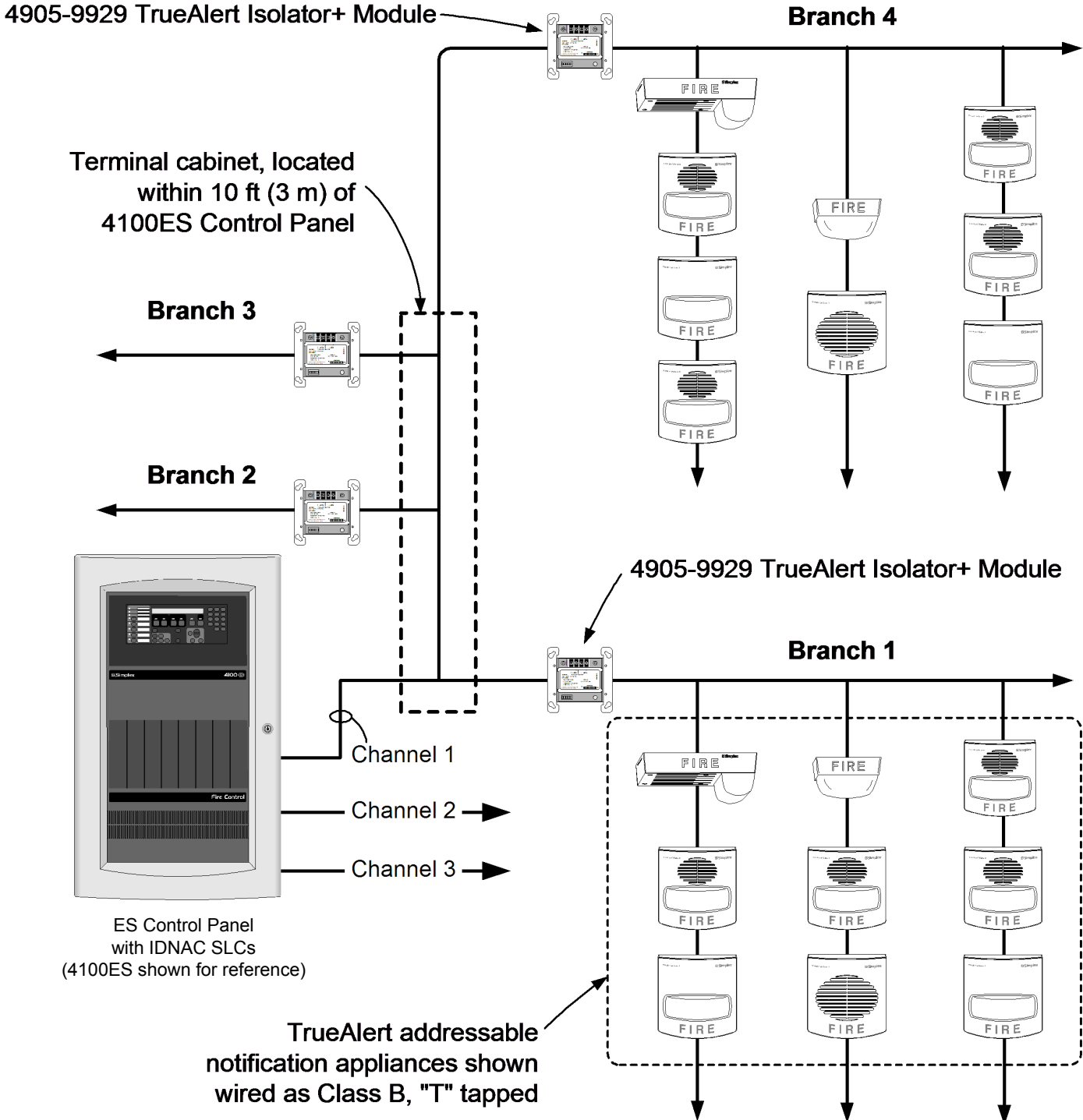
Branch Short Circuits. Without Isolator+ modules, if a short circuit occurred on a branch connection, the entire channel would be inoperative, the same as occurs with conventional Notification Appliance Circuit (NAC) operation. With the addition of Isolator+ modules, short circuits would only disable those appliances connected electrically beyond the Isolator+ module. Since short circuits are sometimes encountered during initial wiring installations, the use of Isolator+ modules can also assist in finding those wiring faults, allowing a decrease in the total installation and checkout time.

Address Allocation. For the example shown below, there are 18 notification appliances which would occupy a total of 18 addresses at the 4100ES control panel. There are also 4 Isolator+ modules, each requiring an address. The total addresses count on this IDNAC SLC would be $18 + 4 = 22$ addresses.

SLC Loading. Isolator+ modules are powered from the IDNAC SLC and they require an additional loading factor with each Isolator+ designated as four unit loads. Each TrueAlert addressable appliance, whether strobe, horn, or combination unit, is only one address and only one unit load. The total unit loads for this example is 18 appliances + 4 Isolator+ modules (4 unit loads each) = $18 + 16 = 34$ unit loads.

Channel Capacity. Capacity may vary with IDNAC SLC control, but typically is up to 127 addresses and up to 139 unit loads. This example is not fully loaded and could probably accommodate additional appliances. However, the appliance currents also need to be considered. (IDNAC SLCs and legacy TPS SLCs are rated 3 A full load. TrueAlert Addressable Controller channels are rated 2.5 A full load.)

TrueAlert Isolator+ Example 1, One-Line Diagram Showing Individual Branch Protection



TrueAlert Isolator+ Example 2

"T" Tap Level Isolation. The one-line diagram directly below shows Isolator+ modules located at the start of each "T" tap on a single branch of a single IDNAC SLC, all wired Class B (Style 4). With this approach, each tap is isolated from short circuits that may occur out on the other taps.

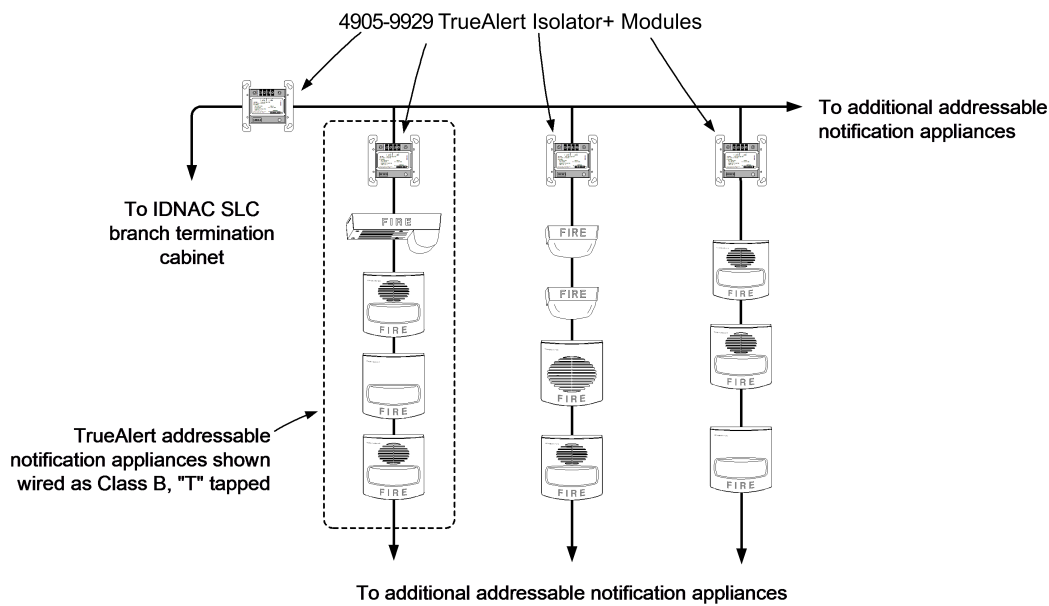
Channel Loading. Total addresses: 15. Total unit loads: 11 appliances + 4 Isolator+ modules (4 unit loads each) = 11 + 16 = 27 unit loads.

TrueAlert Isolator+ Example 3

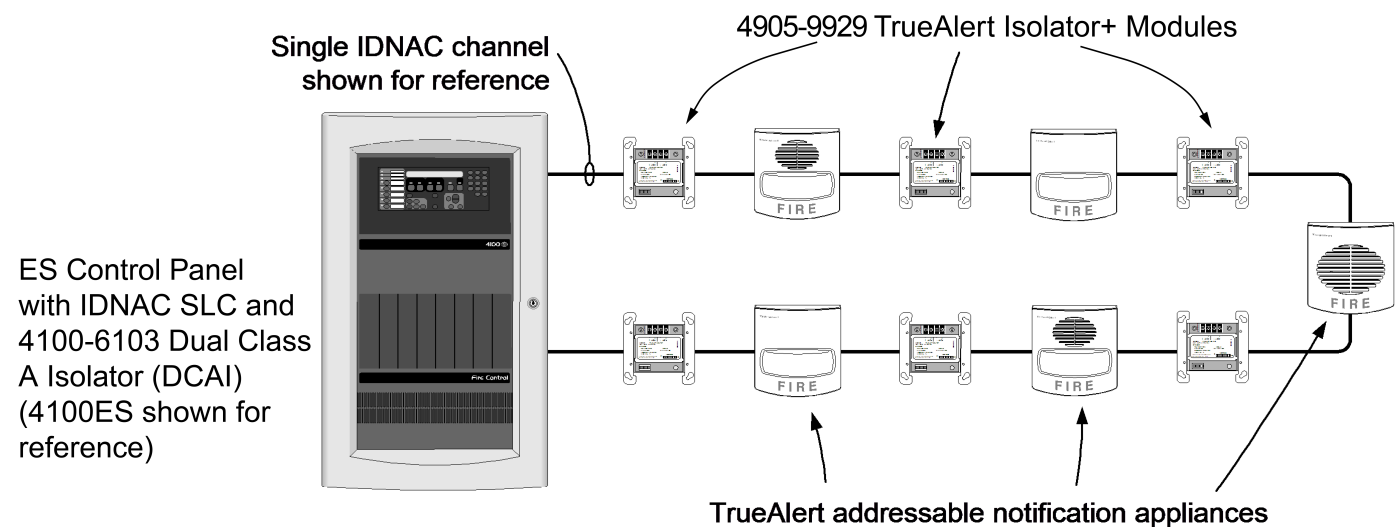
Class A Wiring Isolation. Example 3 (at the bottom of this page) illustrates an "optimized" Class A (Style 6) IDNAC SLC with each notification appliance connected between an Isolator+ module. With this connection, a single short circuit between Isolator+ modules would only disable one TrueAlert notification appliance. (Please note that Isolator+ modules can be applied as desired, the configuration shown is to illustrate operation and is not required.)

Channel Loading. Total addresses = 11. Total unit loads = 5 appliances + 6 Isolator+ modules (4 units loads each) = 5 + 24 = 29 unit loads.

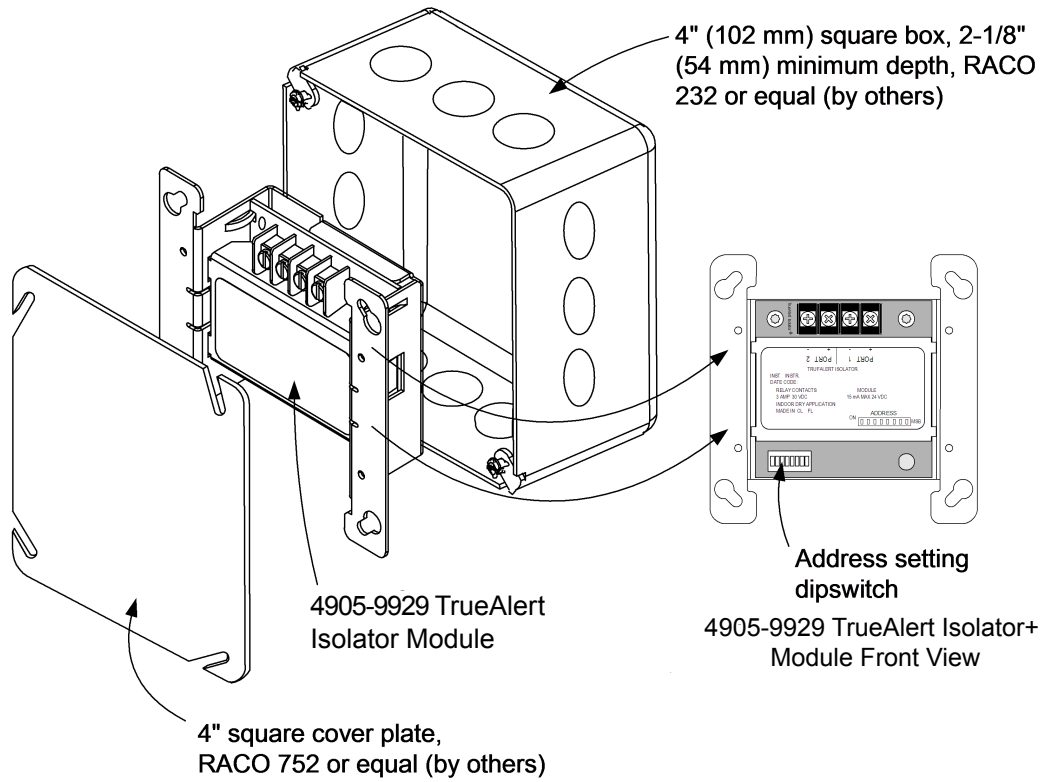
TrueAlert Isolator+ Example 2, One-Line Diagram Showing Individual "T" Tap Protection



TrueAlert Isolator+ Example 3, One-Line Diagram Showing Class A/Style 6 with Isolators



TrueAlert Isolator+ Mounting Information



Specifications

Table 1: Electrical

Isolated Circuit Wire Resistance	1.5 Ω maximum, measured from any Isolator+ port to the farthest appliance in the protected segment
Voltage Range	18 to 32 VDC, provided from TrueAlert channel
Current, Isolated Mode	10 mA @ 24 VDC
Address Requirements	1 Address per Isolator+ Module
Unit Load Requirements	4 Unit loads per Isolator+ Module (1 unit load = 0.8 mA control panel current)

Table 2: IDNAC SLC Loading

Class B	Up to 12 Isolator+ modules total with up to 6 being connected directly together in series on the same branch
Class A	Up to 6 Isolator+ modules total on the loop

Table 3: Mechanical

Dimensions	4 1/8" H x 4 1/8" W x 1 3/8" D (105 mm x 105 mm x 35 mm)
Housing Material	Black thermoplastic
Mounting Plate Material	Sheet metal, galvanized
Temperature Range	32° to 120° F (0° to 49° C) intended for indoor operation
Humidity Range	Up to 93% RH at 100° F (38° C)
Wiring Connections	Screw terminals for 18 to 12 AWG (0.82 mm ² to 3.31 mm ²)

Table 4: Reference

Installation Instructions	574-769	
Panel Data Sheets	4007ES with IDNAC SLCs	S4007-0002
	4009 IDNAC Repeater	S4009-0004
	4010ES with ESS	S4010-0011
	4100ES with EPS	S4100-0100
	4100ES with ES-PS	S4100-1031