

Use for installed system expansion applications:

- See [TrueAlert addressable controller and 4100ES TPS reference specifications](#) for appliance compatibility details.
- For new addressable notification fire alarm control panel applications, refer to data sheet S4100-0100

TrueAlert addressable operation features

Each individually addressed notification appliance receives power and control over a single wire pair providing:

- Supervised wiring connections to each appliance that support T-tapped wiring for Class B circuits. Class A circuits require in/out wiring.
- Horns sounding with selectable high or low output, as Temporal 3 or March Time pattern, 60 bpm or 120 bpm, or Steady On, controlled separately from visible appliances on the same two-wire circuit.
- Visible appliances operating synchronized at 1 Hz.
- Control over power limited, isolated output signaling line circuits (SLCs) with up to 63 addressable appliances for each SLC, and up to 189 appliances for each control source. For detailed SLC ratings see [TrueAlert addressable controller and 4100ES TPS reference specifications](#).
- Control sources selectable to provide individual appliance magnetic test mode and appliance LED polling indicator.
- 4100ES, 4100U and 4010ES systems also provide additional control capabilities using virtual NAC (VNAC) appliance groupings across SLCs and across control sources.

Class B, T-tapped wiring advantages:

- Less wiring distance is required as traditional end-of-line Class B wiring supervision is not needed.
- With less wiring distance required, voltage drops are reduced, enabling more appliances for each wire run.

UL listed to Standard 864

4100ES TrueAlert Power Supplies (TPS)

For mounting in 4100ES or 4100U control panels:

Three 3 A, SLCs, special application rating.

TrueAlert Addressable Controllers

Remote mounted control panel that provides:

- Three 2.5 A, SLCs, special application rating.
- An 8 A power supply with battery charging for internal batteries up to 12.7 Ah or up to 18 Ah in an external cabinet.

Multiple communications formats are available:

- **Remote unit interface (RUI) communications** from Simplex™ 4100ES/4010ES/4100U/4120/4100/4020 fire alarm control panels assigns an address point with custom label to each appliance for individual trouble reporting. 4100U/4120/4100/4020 require Rev. 9 or higher software.
- **IDNet** communications from Simplex 4010 Classic fire alarm control panels provide individual or multiple channel control using a single IDNet address.
- **Wired control** from conventional NACs connects with multiple options.

Extensive internal diagnostics include:

- LED status indicators that identify the channel and the trouble.
- Support for host fire alarm control panel WALKTEST system test with IDNet or RUI communications.
- Status monitoring of battery, input power, and earth faults.

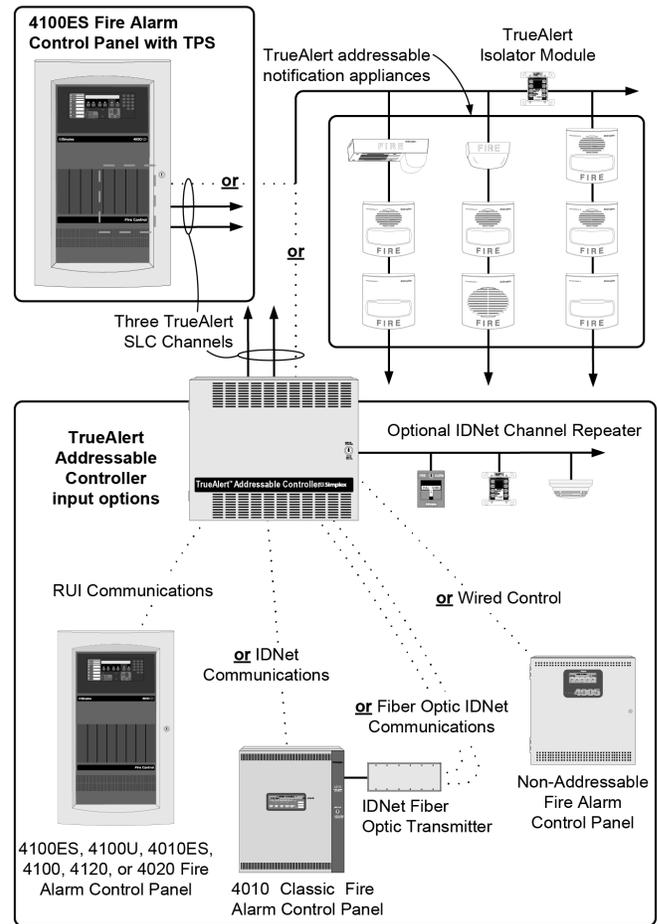


Figure 1: TrueAlert Addressable Operation reference diagram

Optional internal modules:

- Class A Three Channel Adapter Module
- IDNet Communications: Repeater or Fiber Optic Receiver / Repeater. Models for Class A or Class B.

External accessories:

- IDNet communication fiber optic transmitters
- Remote TrueAlert communications isolator 4905-9929, for details refer to data sheet S4905-0001.
- External battery cabinet for 18 Ah batteries

Introduction

TrueAlert addressable notification appliances are individually addressed and receive power, supervision, and control from a TrueAlert signaling line circuit (SLC). For wired control systems, strobe flashes and horn outputs are synchronized by the controller. For RUI and IDNet communications control, controllers on the same host control panel are synchronized. Combination speaker strobe TrueAlert appliances receive audible control from separate audio circuit wiring.

TrueAlert addressable operation enables strobes to be wired onto the same two-wire SLC circuit as horns but with a separately controlled operation. Typical applications are audible notification appliances activated as on-until-silenced and visible notification appliances activated as on-until-reset.

From the control panel, you can implement **TrueAlert Addressable Controller diagnostics** including Silent or Active individual appliance magnet test, appliance LED polling indication, or all appliance LEDs on.

RUI communications control

When used with fire alarm control panels that support RUI communications, you can connect the TrueAlert Addressable Controller to an RUI addressable communications channel also with other RUI addressable devices. The host panel can control multiple TrueAlert Addressable Controllers. The maximum is 20 for each RUI connection.

Note: The 4010ES system is limited to 20 internal and external card addresses for each panel.

For additional information, see Figure 3.

Address points and custom labels are assigned to each TrueAlert appliance enabling troubles to be reported individually. Additionally, individual device types are assigned, and audible appliance coding types are selectable for high or low output, ~5 dBA difference, and with operation as Temporal pattern, March Time pattern 60 bpm or 120 bpm, or Steady On that means continuous.

4100ES and 4010ES VNAC details

Virtual NAC (VNACs) operation groupings provide control of TrueAlert appliances similar to conventional NAC operation but VNACs include appliances across SLCs and across SLC sources within a 4100ES, or 4100U, or 4010ES controlled system. VNACs require point allocation, you can declare them public for use in a Network fire alarm system, and they can be manually controlled.

Note: The terms Virtual NAC, VNAC, and TrueAlert Zone refer to the same feature and are interchangeable.

Custom VNACs. For programming convenience, there are default VNAC groups according to device type. You can create up to 56 custom VNACs. Eight VNACs are system reserved for each 4100ES TPS or for each TrueAlert Addressable Controller connected to a 4100ES or 4010ES control panel. Appliances can be in up to three custom VNACs.

Note: Appliances assigned to multiple VNACs remain ON if any of the VNACs are ON.

You can program 4100ES, 4100U, and 4010ES fire alarm control panels for up to 247 total custom VNACs, for increased selective signaling operation.

TrueAlert Addressable Controller product selection

Table 1: Standard models

Model	Listings	Input voltage	Description
4009-9401	See note.	120 VAC input	TrueAlert Addressable Controller with 3 Class B TrueAlert SLC channels and 8 A power supply.
4009-9402CA	UL, FM, CSFM, MEA (NYC)		
4009-9501	ULC (includes low battery cutout feature)	240 VAC input	
	Not agency listed		

Table 2: Optional Modules for on-site installation

Model	Description	Comments
4009-9812	Three channel Class A adapter	Select if required.
4009-9809	IDNet Repeater, output is Class A or Class B	Select an IDNet Repeater or a fiber optic receiver as required.
4009-9810	Class B	Fiber optic with IDNet repeater
4009-9811	Class A (Class X input)	
4009-9805	Red Appliqué for door	Select if required, 16-1/8 in. W x 5-1/2 in. H (410 mm x 140 mm)
2975-9801	Beige trim	Semi-Flush Trim Kit 1-7/16 in. wide (78 mm), use if required for semi-flush installations
2975-9802	Red trim	

Table 3: Select external accessories by system requirements

Model	Description	Comments
4090-9105	Class B	IDNet Fiber Optic Transmitter Mounts in six-gang electrical box, see Figure 7 for mounting information.
4090-9107	Class A (Class X output)	
4905-9929	Remote TrueAlert Communications Isolator	Refer to data sheet S4905-0001 for details
4009-9801	External battery cabinet for 18 Ah batteries, beige	16-1/4 in. W x 13-1/2 in. H x 5-3/4 in. D (413 mm x 343 mm x 146 mm)

Table 4: Select battery size by system requirements

Model	Description
2081-9272	6.2 Ah Battery, 12 VDC
2081-9274	10 Ah Battery, 12 VDC

Table 4: Select battery size by system requirements

Model	Description
2081-9288	12.7 Ah Battery, 12 VDC
2081-9275	18 Ah Battery, 12 VDC. Requires an external battery cabinet.

- Note:**
- For 24 VDC operation, two batteries are required.
 - 4009-9401 has been seismic tested and is certified to IBC and CBC standards in addition to ASCE 7 categories A through F. It requires battery brackets. See details on data sheet S2081-0019

4100ES or 4100U VNAC wiring reference

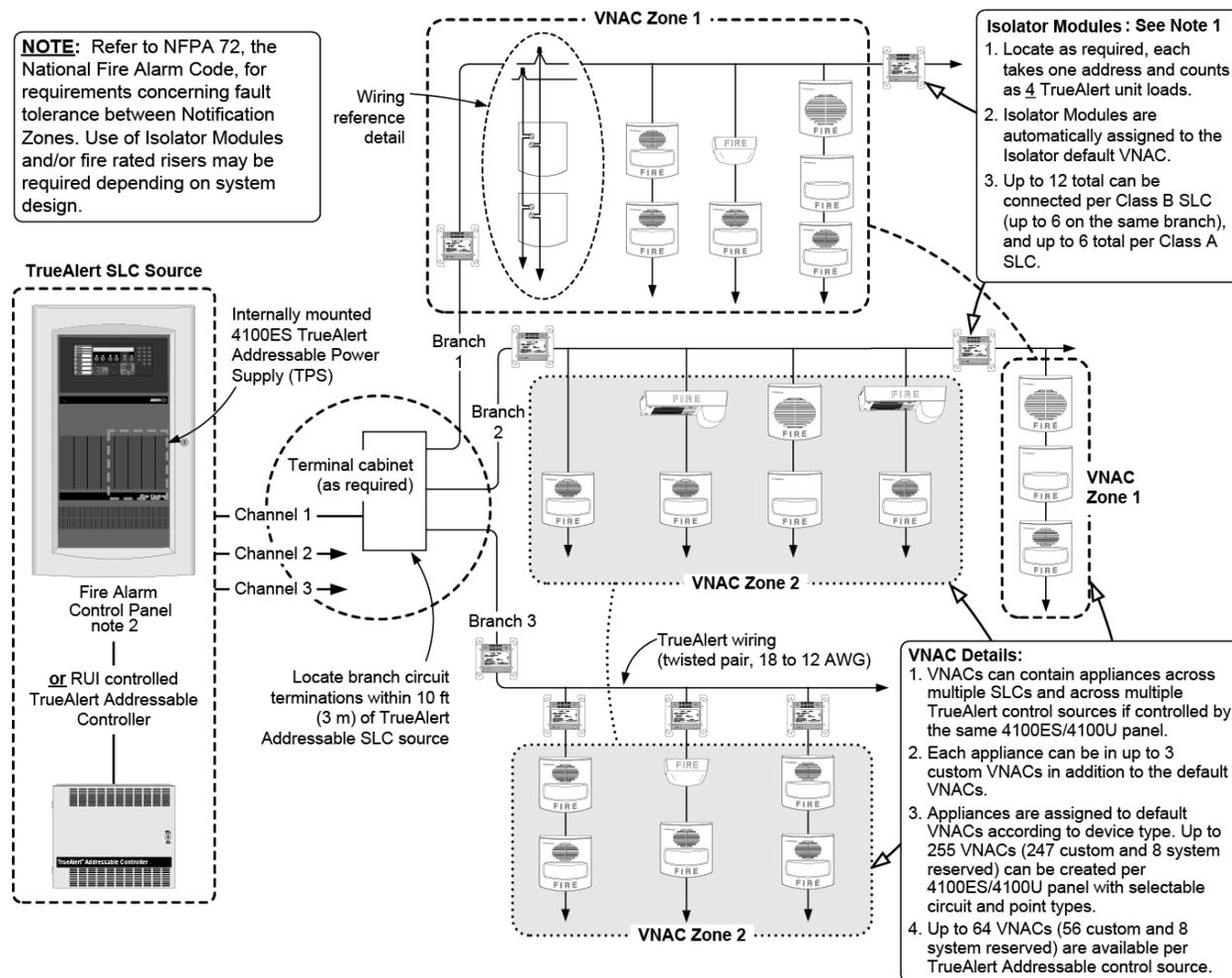


Figure 2: VNAC wiring reference diagram

- Note:**
1. 4905-9929 Isolator Modules.
 2. 4100ES or 4100U fire alarm control panel. The 4100ES is shown.

RUI communications wiring reference

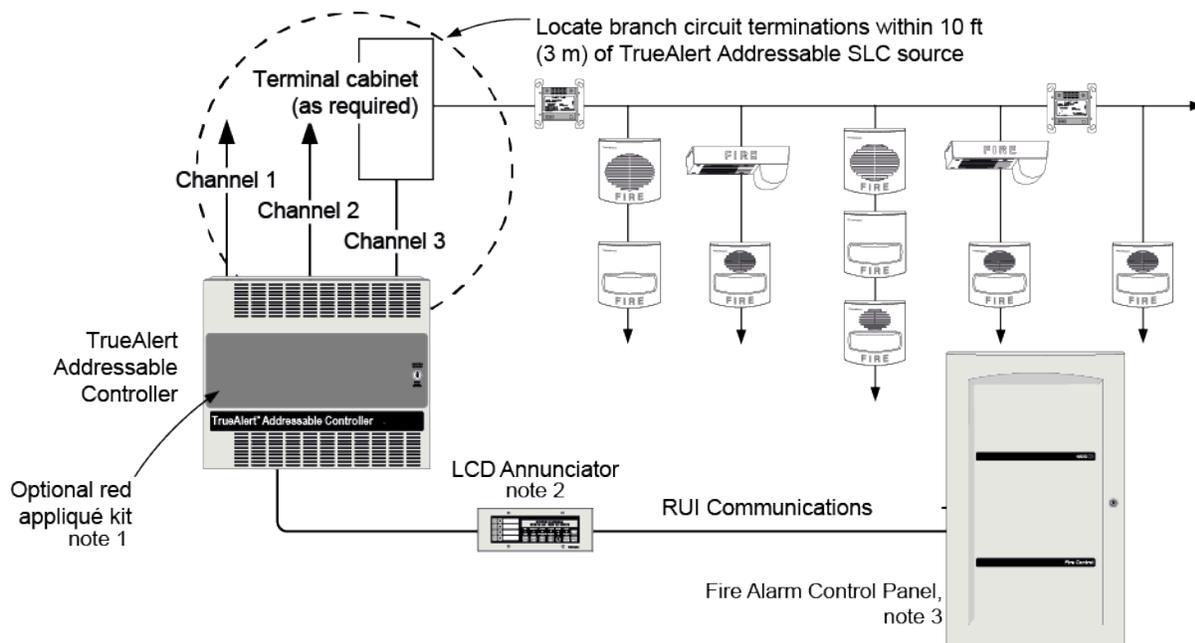


Figure 3: RUI communications wiring reference diagram

Note:

1. 4009-9805 optional red appliqué kit.
2. 4603-9101 LCD Annunciator.
3. 4100ES, 4100U, 4010ES, 4100, 4120, or 4020 fire alarm control panel. 4100ES is shown.

RUI communications rules summary:

1. Limit of 20 TrueAlert Addressable Controllers. The 4010ES has a maximum internal and external limit of 20 card addresses.
2. Can be wired with other RUI devices. An LCD Annunciator is shown for reference.
3. Wiring distance is up to 2500 ft (762 m) continuous wiring, and up to 10,000 ft (3048 m) when T-tapped, Class B only.
4. Minimum wiring is unshielded twisted pair. Some applications may require shielded twisted pair. Consult your Simplex product supplier for details.

IDNet communications input

IDNet Addressable communications compatible. For use with the Simplex 4010 fire alarm control panel, a single IDNet communications channel can control up to five TrueAlert Addressable Controllers with each requiring only one point address. Use 4010 custom control to individually control each TrueAlert Addressable Controller SLC channel. Each TrueAlert SLC channel can provide horn control selected as Temporal pattern, March Time pattern, **60 bpm or 120 bpm**, or Steady On.

Manual control. You can manually control individual TrueAlert SLC channels from the 4010 for service operations or for manual override.

Trouble communications. The 4010 receives TrueAlert Addressable Controller troubles to include: device supervision, reported as a channel trouble, power trouble, battery status, and earth detect.

Optional IDNet repeater modules. You can repeat IDNet communications with the optional IDNet Repeater Module or with the optional Fiber Optic Receiver Module. Up to 100 of the IDNet channel points can be repeated once. See [TrueAlert Addressable Controller with wired IDNet input control](#) and [TrueAlert Addressable Controller with fiber optic IDNet input control](#). Repeated IDNet communications also support the device level earth fault location utility of the host panel.

TrueAlert Addressable Controller with wired IDNet input control

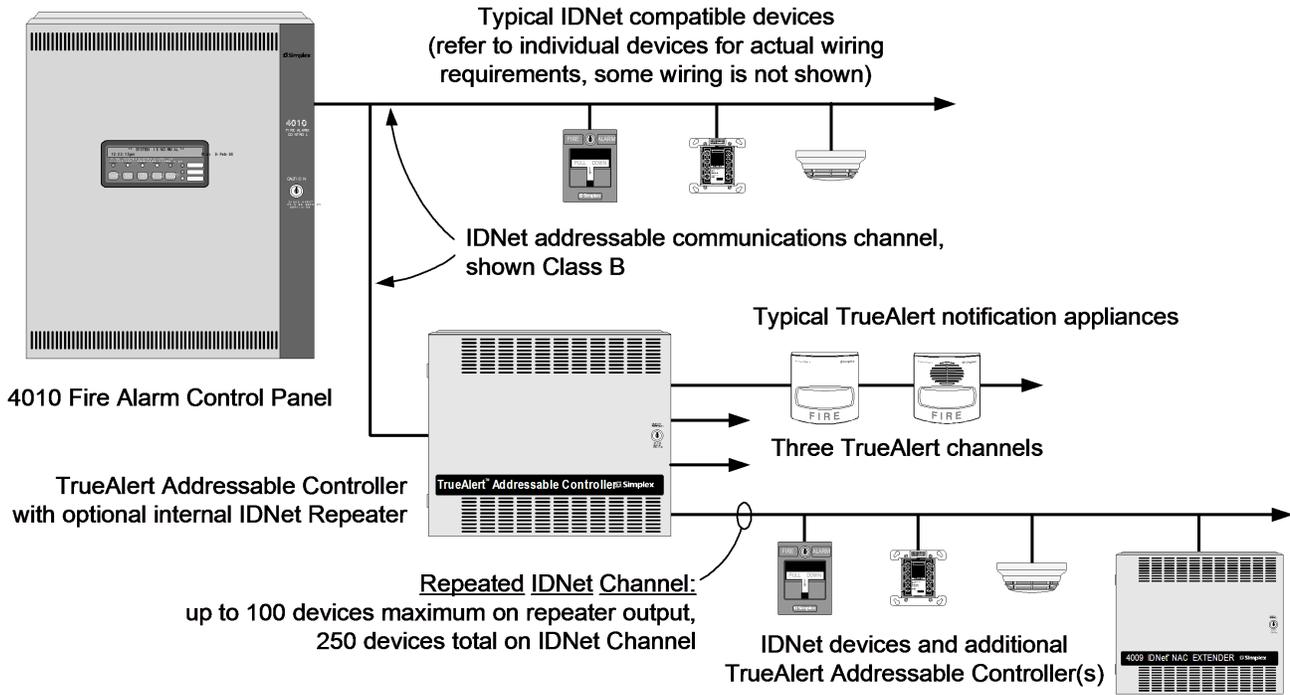


Figure 4: TrueAlert Addressable controller with Wired IDNet input control

TrueAlert Addressable Controller with fiber optic IDNet input control

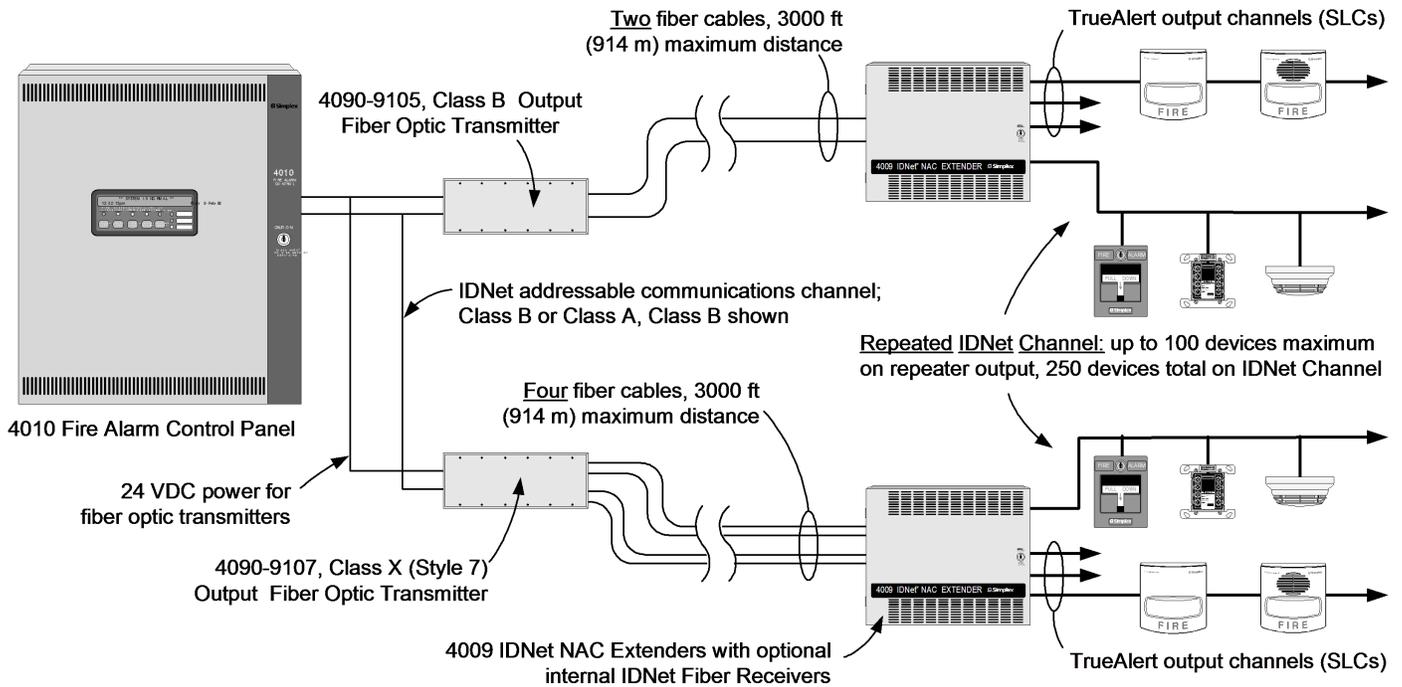


Figure 5: TrueAlert Addressable Controller with fiber optic IDNet input control

Wired NAC input connection information

Wired conventional NAC input compatible

For applications where existing or new conventional notification appliance circuits (NACs) are available, the NACs can directly control the TrueAlert Addressable Controller. For details see [TrueAlert addressable controller with wired control](#).

Flexible connection choices

You can connect two NACs from the same, or different host fire alarm control panels, to control the TrueAlert output channels. Multiple control selections provide flexible operation. See Table 5.

NAC input to SLC output control

NAC input to SLC output control is selectable. See Table 5. Configure NAC input as Steady On, uncoded:

Table 5: Output SLC control options

Input NAC	A	B
NAC 1	Controls visibles	Controls audibles and visibles on Channel 1
NAC 2	Controls audibles	Controls audibles and visibles on Channels 2 and 3

Strobe Output. TrueAlert Addressable Strobes are operated with synchronized flashes.

Horn Output. TrueAlert Addressable Horn operation is selectable for each TrueAlert Addressable Controller as either: Temporal pattern, March Time pattern at 60 bpm, 120 bpm, or Steady On.

Door mounted reference label

A detailed programming and diagnostic label is located inside the front door providing a quick reference for both installation and checkout.

Service diagnostic features

Power-up self-diagnostics. On power-up, the TrueAlert Addressable Controller tests each module and performs earth fault diagnostics. Trouble conditions are communicated to the host control panel and are also displayed on internal LEDs.

System troubles via RUI or IDNet. Communications are reported with detailed information concerning which TrueAlert Addressable Controller is involved and the nature of the trouble. Messages include power and battery status, earth fault, channel troubles, address problems, and other information.

System Troubles by wired control. When controlled with conventional NAC inputs, common troubles are signaled by providing an open circuit that disconnects the NAC wiring from its end-of-line resistor but still enables a reversed polarity alarm to be received.

LED status indicators are provided for the following:

- Five yellow status LEDs provide 22 separate indications listed in priority of urgency. As a trouble is eliminated, any remaining troubles are indicated until the TrueAlert Addressable Controller is returned to normal operation.
- Three separate yellow LEDs indicate which of the three TrueAlert channels are involved for channel specific troubles.
- AC power status is indicated by a green LED that is on when AC is normal. During low AC, or brownout conditions, or with no AC, the LED is off. Additional power and battery status is indicated by the general status LEDs.

TrueAlert addressable controller with wired control

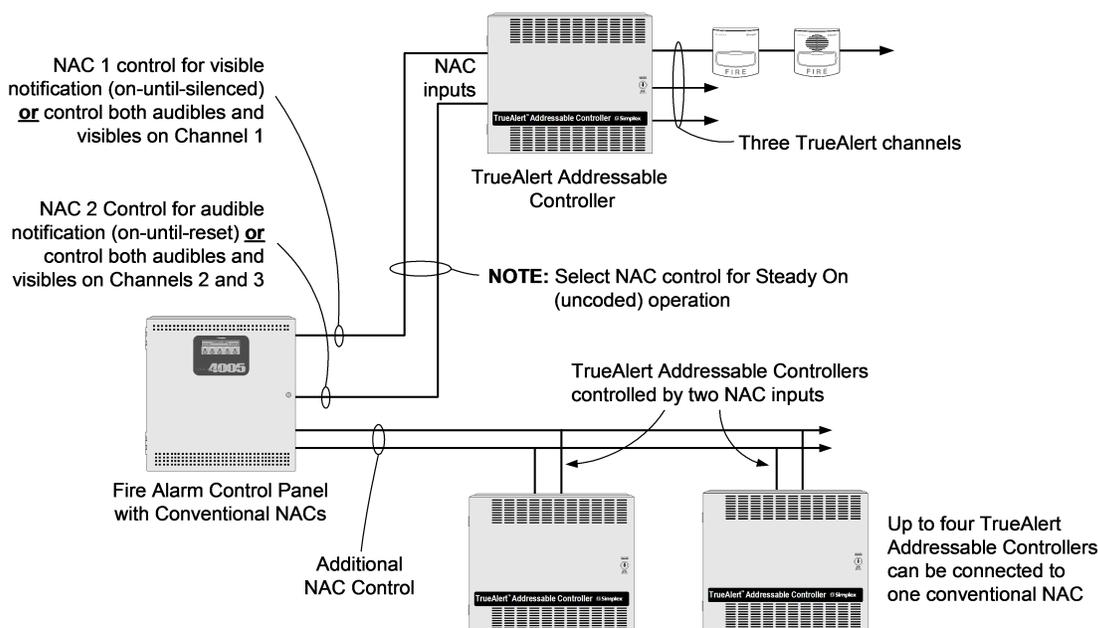


Figure 6: TrueAlert Addressable Controller with Wired Control

4090-9105/ 4090-9107 IDNet fiber optic transmitter mounting information

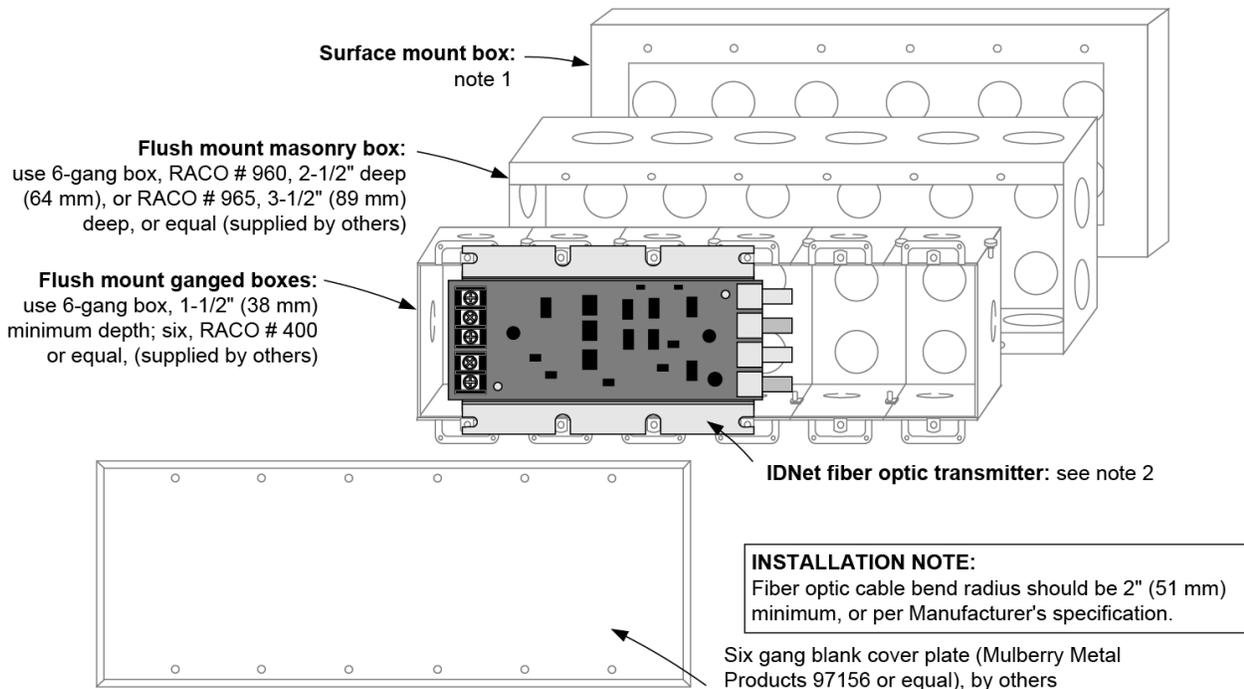


Figure 7: Mounting information

Note:

1. Simplex 2975-9217 surface mount box, ordered separately.
2. 4090-9107 Class X (Style 7) output: shown. 4090-9105, Class B, style 4, output: not shown.

TrueAlert Addressable Controller mounting and module placement reference

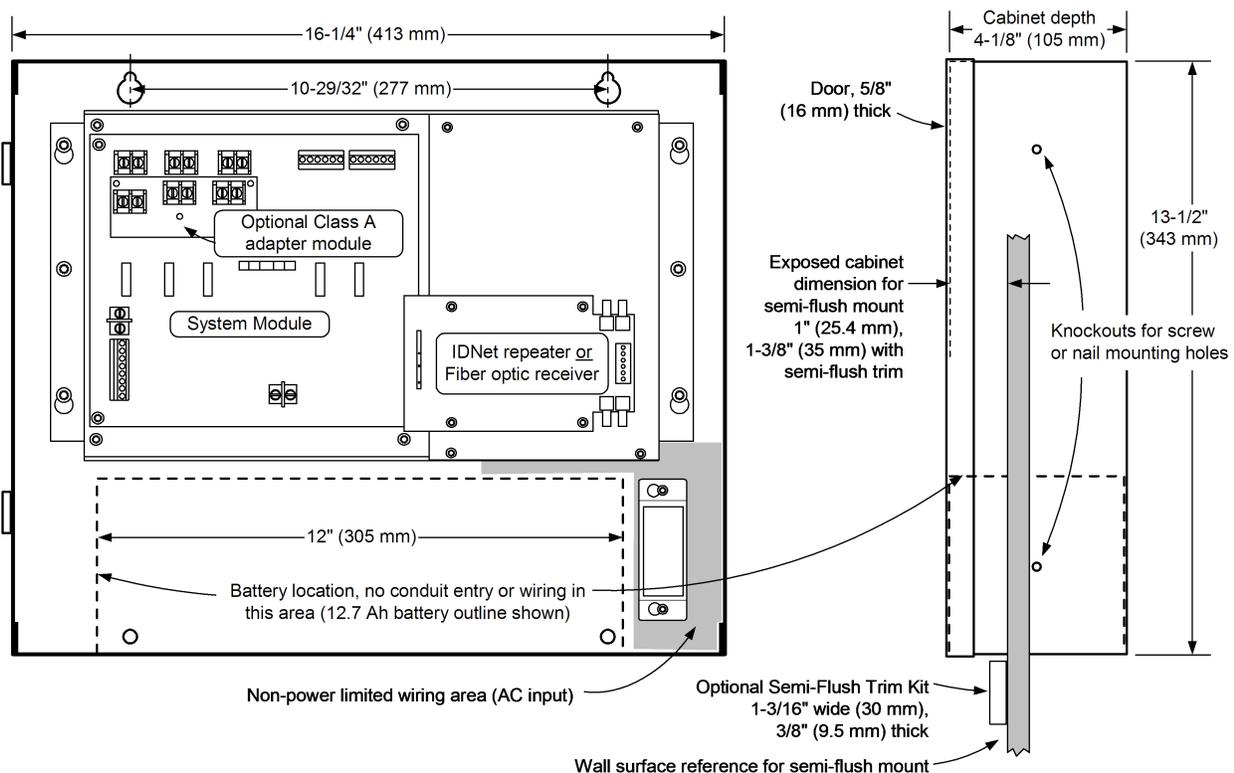


Figure 8: Mounting and module placement reference

Note:

- Recommended conduit entrance varies with module selection.
- For model 4009-9401 and 4009-9402CA, refer to *Installation Instructions (574-762)*, specific option module installation instructions, and to *Field Wiring Diagram (842-158)* before locating conduit entrance.
- For model 4009-9501, refer to *Installation Instructions (579-321)* and *Field Wiring Diagram (842-244)*.

TrueAlert addressable controller and 4100ES TPS reference specifications

Note: For additional 4100ES TrueAlert Addressable Power Supply (TPS) specification details, refer to data sheet S4100-0065.

Table 6: Input voltages

Rating	Specification
120 VAC input, 4009-9401/4009-9402CA	3 A at 102 VAC to 132 VAC, 60 Hz
240 VAC input, 4009-9501.	1.5 A, selectable for 220 / 240 VAC, +10% -15% for each selection, 50/60 Hz
Wired control input, requirements for each circuit.	3 mA at 24 VDC. Input voltage range is 16 VDC to 33 VDC, filtered. Control from conventional reverse polarity NA.

Table 7: Output ratings

Rating	Specification												
TrueAlert channel output voltage (SLC)	19 VRMS to 31 VRMS, special application control												
Compatible special application appliances	Simplex TrueAlert and TrueAlert ES addressable notification appliances, with limitations. Contact your Simplex product representative for compatible appliances.												
Appliance control characteristics	<table border="1"> <thead> <tr> <th>Category</th> <th>Details</th> <th>TrueAlert ES Appliance Control Limitation</th> </tr> </thead> <tbody> <tr> <td>Available strobe intensity</td> <td>15, 30, 75, and 110 cd</td> <td>Not compatible with TrueAlert ES intensities of 135 and 185 cd</td> </tr> <tr> <td>Available horn control</td> <td>Continuous, Temporal Code 3, and March Time of 60 bpm or 120 bpm</td> <td>Not compatible with TrueAlert ES horn tones of Temporal Code 4 or 20 bpm</td> </tr> <tr> <td>Minimum appliance voltage</td> <td>17 VRMS</td> <td>Not compatible with TrueAlert ES 23 VRMS appliance voltage minimum</td> </tr> </tbody> </table>	Category	Details	TrueAlert ES Appliance Control Limitation	Available strobe intensity	15, 30, 75, and 110 cd	Not compatible with TrueAlert ES intensities of 135 and 185 cd	Available horn control	Continuous, Temporal Code 3, and March Time of 60 bpm or 120 bpm	Not compatible with TrueAlert ES horn tones of Temporal Code 4 or 20 bpm	Minimum appliance voltage	17 VRMS	Not compatible with TrueAlert ES 23 VRMS appliance voltage minimum
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Minimum appliance voltage	17 VRMS	Not compatible with TrueAlert ES 23 VRMS appliance voltage minimum											
SLC ratings and loading	TrueAlert Addressable Controller or 4100ES TPS	Up to 63 total addressable appliances Up to 75 unit loads, appliances are 1 unit load. Up to 32 fixed candela, legacy strobes can be synchronized for each SLC.											
	TrueAlert Addressable Controllers 4100ES TPS	Each SLC can synchronize up to 39 multi-candela strobes. Total current for each controller is 8 A. Each SLC can synchronize up to 46 multi-candela strobes. Total current for each TPS is 9 A											
Auxiliary output	500 mA at 24 VDC nominal, requires 734-035 wiring harness												
TrueAlert SLC wiring	UTP, unshielded twisted pair, 18 AWG to 12 AWG												
TrueAlert strobe wiring distance	Maximum wiring distance between TrueAlert strobes is limited to 30 Ω wire resistance												
Wiring connections	Terminal blocks for 18 AWG to 12 AWG												

Table 8: Optional modules

Rating	Description		
IDNet Repeater Module (4009-9809)	Input power	70 mA at 24 VDC, system supplied	
	IDNet input, one address	Maximum distance from IDNet source is 2500 ft (762 m)	
	IDNet output specifications	Repeated IDNet output for up to 100 devices, total IDNet devices not to exceed 250 for each channel. Refer to a specific panel's details for additional IDNet communications specifications.	
Fiber optic receiver modules	Input current	4009-9810	Class B, 65 mA at 24 VDC, system supplied
		4009-9811	Class X, Style 7, 80 mA at 24 VDC, system supplied
	Note: Fiber optic input is Class X, repeated IDNet output is Class A		
	IDNet output specifications	Same as those for Repeater Module, see top row.	
General	Fiber optic transmission	Distance of 3000 ft (914 m) maximum	
	Operating temperature	32°F to 120°F (0°C to 49°C)	
	Operating humidity range	10% to 90% RH from 32°F to 104°F (0°C to 40°C)	

Fiber optic transmitter specifications

Table 9: Specifications

Rating		Description
Input voltage		18.9 VDC to 32 VDC from compatible listed fire alarm supply.
Input current	4090-9105	Class B, 30 mA at 24 VDC
	4090-9107	Class X, Style 7, 35 mA at 24 VDC
Fiber optic connections and cable requirements, type ST connectors.	4090-9105	Class B input, two fiber cables required
	4090-9107	Class X, Style 7, input, four fiber cables required
Module size, with mounting bracket.		6-13/16 in. W x 3-3/4 in. H x 1-1/8 in. D (173 mm x 95 mm x 29 mm)
Onboard status Indicators.	Green LED	Flashing means transmitting
	Red LED	Flashing means receiving
	4090-9107	Separate red LED means Class X (Style 7) receive
Communications		Simplex IDNet format
Fiber optic transmission distance		3000 ft (914 m) maximum
Wiring connections		Terminal blocks for 18 to 12 AWG
Operating humidity		Up to 90% RH, non-condensing at 100° F (38° C)
Operating temperature		32° F to 120° F (0° C to 49° C)

TrueAlert Addressable Controller Current Reference
Table 10: Panel module selection

SKU	Description	Supervisory current	Actual supervisory	Alarm current	Actual alarm	
4009-9401	120 VAC input	Basic panel	88 mA	88 mA	195 mA	
4009-9402 CA						
4009-9501						
4009-9812 See note 3	Class A adapter		7 mA	+	7 mA	+
4009-9809 See note 1 and 3	IDNet repeater		70 mA	+	70 mA	+
4009-9810 See note 1,2 and 3	Fiber optic receiver, Class B		65 mA		65 mA	
4009-9811 See note 1,2 and 3	Fiber optic receiver, Class X		80 mA		80 mA	
IDNet Devices, 0.7 mA each, maximum of 100, see Procedure step 5.			total devices x 0.7 mA each	+	total devices x 0.7 mA each	(A1) +
TrueAlert Appliances/Devices, Supervisory current, 0.2 mA for each unit load, add devices from all 3 SLCs, see Procedure step 7.			total loads x 0.2 mA each	+		
TrueAlert Isolators. Each requires 1 address and 4 unit loads.			total Isolators x 10 mA	+	total Isolators x 10 mA	+
Auxiliary Power Output, calculate for each total device requirements, see Procedure step 5.			500 mA maximum	+	500 mA maximum	(A2) +
			Total Supervisory Current = (A)			
			Total TrueAlert Addressable Controller Panel alarm current = (B1)			

Note:

- For a single TrueAlert Addressable Controller, you can choose only one of these three modules.
- IDNet Fiber Optic Transmitter current is supplied from the host fire alarm control panel.
- Shaded model numbers are optional modules

Table 11: TrueAlert Channel Notification Appliance current loads

	Channel number	NAC alarm current
TrueAlert Channel (SLC) 2.5 A maximum for each channel, see Procedure step 5	Channel 1	
	Channel 2	+
	Channel 3	+
Total TrueAlert Channel Loads alarm current = (C)		
Total TrueAlert Addressable Controller Panel alarm current, enter B1 from previous = (B2)		+
Total alarm current = (D)		

Procedure:

- Calculate total panel supervisory current (A).
- Calculate total panel alarm current (B1) [convert mA to A, example: 350 mA = 0.35 A]. Copy (B1) into block (B2).
- Calculate total NAC loads alarm current from notification appliance ratings (C).
- Add (C) + (B2) to determine total alarm current (D).
- Total of IDNet device current (A1) + Auxiliary Power Output current (A2) + SLC Loads Alarm current (C) is 8 A maximum.
- For specific standby requirements, refer to *Simplex battery selection document (900-012)* for recommended battery size. For example, 24 hours supervisory, 5 minutes of alarm. Internal cabinet space is provided for batteries up to 12.7 Ah.
- Most TrueAlert appliances / devices are one unit load, Isolators are four unit loads. Refer to *Field Wiring Diagram (842-158)*.