



#### Use for installed system expansion applications:

- Refer to page 7 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 using “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 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 per SLC, and up to 189 appliances per control source (refer to page 7 for detailed SLC ratings)
- 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 since traditional end-of-line Class B wiring supervision is not needed
- With less wiring distance required, voltage drops can be reduced, allowing more appliances per wire run

UL listed to Standard 864\*

#### 4100ES TrueAlert Power Supplies (TPS)

For mounting in 4100ES/4100U control panels:

- Three, 3 A, SLCs (Special Application rating)

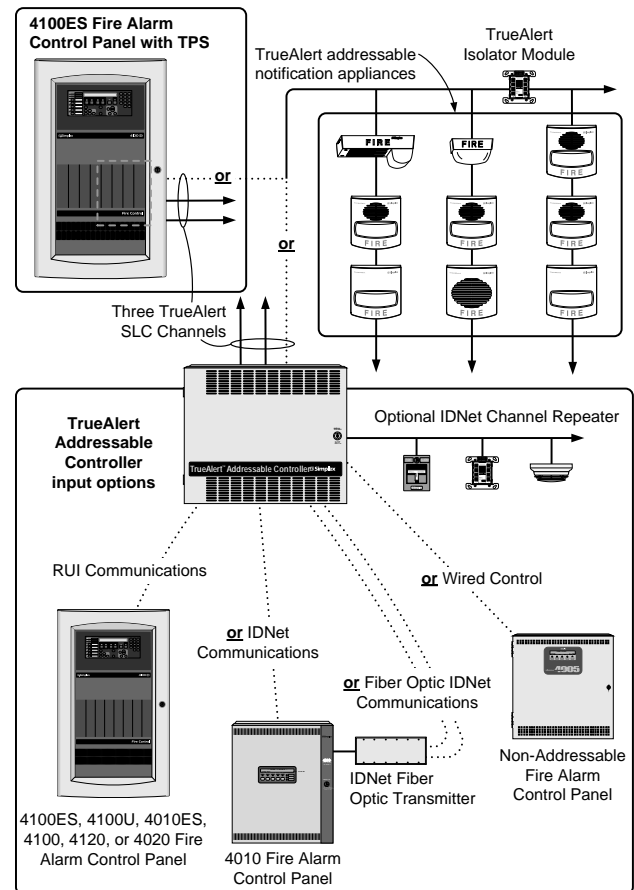
#### TrueAlert Addressable Controllers

Remote mounted control panel that provides:

- Three, 2.5 A, SLCs (Special Application rating)
- An 8 A power supply/battery charger for internal batteries up to 12.7 Ah or up to 18 Ah in external cabinet

Multiple communications formats are available:

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



TrueAlert Addressable Operation Reference Diagram

#### TrueAlert Addressable Controllers (Contd.)

Extensive internal diagnostics include:

- LED status indicators that identify channel and 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

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, refer to data sheet S4905-0001 for details
- External battery cabinet for 18 Ah batteries

\* NOTE: Model 4009-9501 (240 VAC input) is not included in these listings. Refer to page 2 for specific applicable listings by model. 4009-9401 (120 VAC input) 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 7310-0026:214 for allowable values and/or conditions concerning material presented in this document. 4009-9401 is 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..

## 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 per 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** allows strobes to be wired onto the same two-wire SLC circuit as horns but with separately controlled operation. Typical applications are audible notification appliances activated as “on-until-silenced” and visible notification appliances activated as “on-until-reset.”

**TrueAlert Addressable Controller diagnostics** can be implemented from the control panel 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, the TrueAlert Addressable Controller can be connected to an RUI addressable communications channel along with other RUI addressable devices. The host panel can control multiple TrueAlert Addressable Controllers (maximum recommended is 20 per RUI connection), (note: 4010ES system is limited to 20 internal and external card addresses per panel). Refer to the diagram on page 3 for additional information.

## TrueAlert Addressable Controller Product Selection

### Standard Models

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

### 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 <b>either</b> an IDNet Repeater <b>or</b> a Fiber Optic Receiver as required |
| 4009-9810 | Class B Fiber Optic Receiver                 |   |
| 4009-9811 | Class A (Class X input) with IDNet Repeater  |   |
| 4009-9805 | Red Appliqué for door                        | Select if required, 16-1/8" W x 5-1/2" H (410 mm x 140 mm)                          |
| 2975-9801 | Beige trim                                   | 1-7/16" wide (78 mm), use if required for semi-flush installations                  |
| 2975-9802 | Red trim                                     |   |

### External Accessories (select per system requirements)

| Model     | Description   | Comments  |
|-----------|---|---|
| 4090-9105 | Class B IDNet Fiber Optic Transmitter               | Mounts in six-gang electrical box, refer to page 6 for mounting details |
| 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" W x 13-1/2" H x 5-3/4" D (413 mm x 343 mm x 146 mm)             |

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

| Model     | Description            | Model     | Description  |
|-----------|------------------------|-----------|--|
| 2081-9272 | 6.2 Ah Battery, 12 VDC | 2081-9288 | 12.7 Ah Battery, 12 VDC                                  |
| 2081-9274 | 10 Ah Battery, 12 VDC  | 2081-9275 | 18 Ah Battery, 12 VDC; requires external battery cabinet |

\* 4009-9401 has been seismic tested and is certified to IBC and CBC standards as well as to ASCE 7 categories A through F, requires battery brackets as detailed on data sheet S2081-0019

## RUI Communications Control (Continued)

**Address points** and custom labels are assigned to each TrueAlert appliance allowing 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 or 120 bpm**), or Steady On (continuous).

## 4100ES and 4010ES VNAC Details

### Virtual NAC (VNACs) Operation Groupings

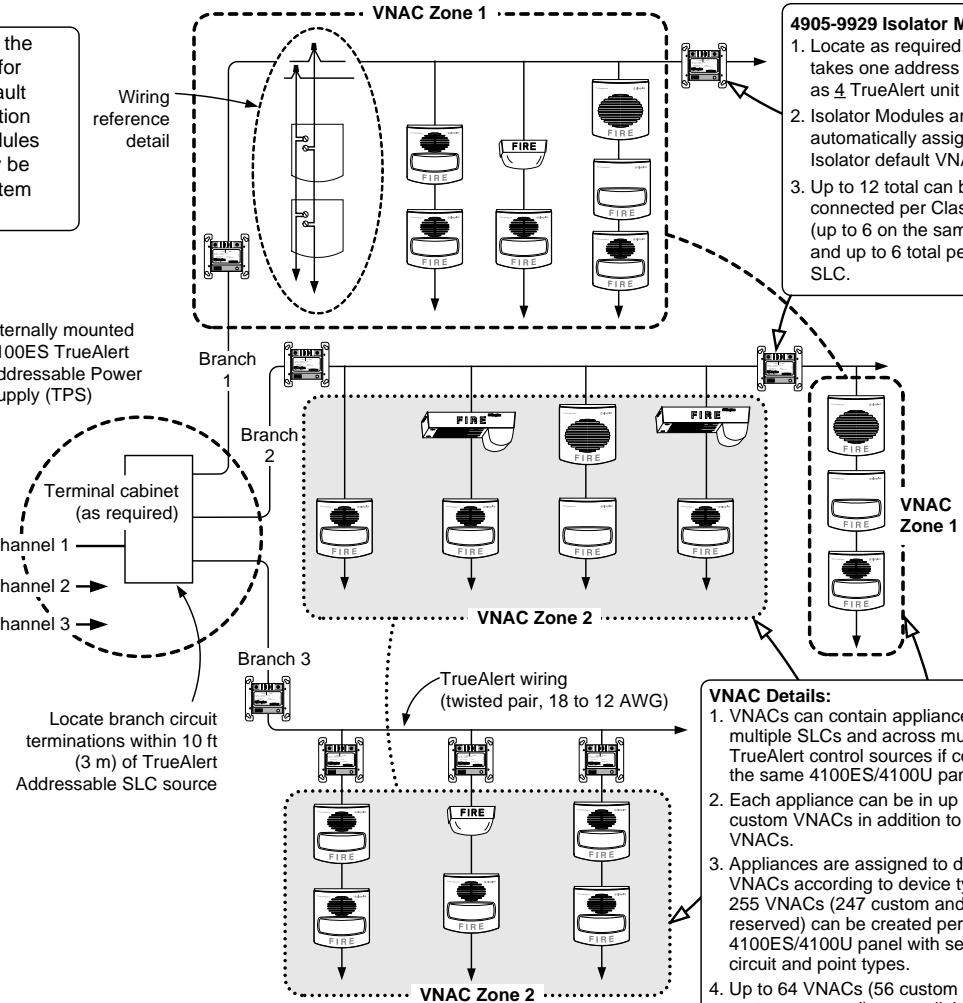
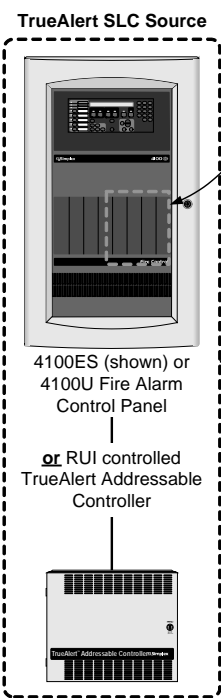
provide control of TrueAlert appliances similar to conventional NAC operation but VNACs include appliances across SLCs and across SLC sources within a 4100ES (or 4100U) or 4010ES controlled system. VNACs require point allocation, can be declared “public” for use in a Network fire alarm system, and can 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. Up to 56 custom VNACs (8 VNACs are system reserved) can be created per 4100ES TPS or per TrueAlert Addressable Controller connected to a 4100ES or 4010ES control panel. Appliances are able to be in up to three custom VNACs. (NOTE: Appliances assigned to multiple VNACs will remain ON if any of the VNACs are ON.)

4100ES, 4100U, and 4010ES Fire Alarm Control Panels can be programmed for up to 247 total custom VNACs for increased selective signaling operation.

# 4100ES/4100U VNAC Wiring Reference

**NOTE:** Refer to NFPA 72, the National Fire Alarm Code, for requirements concerning fault tolerance between Notification Zones. Use of Isolator Modules and/or fire rated risers may be required depending on system design.



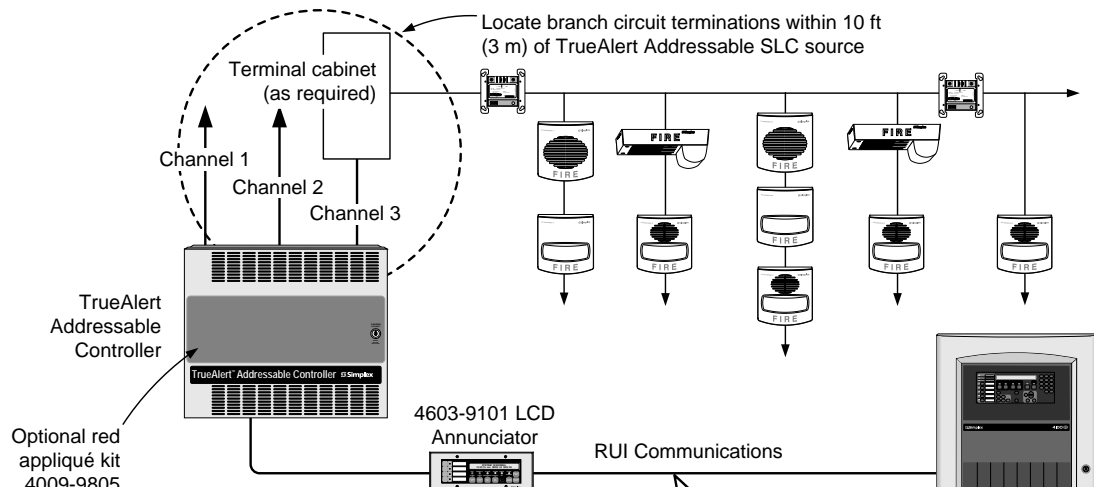
**4905-9929 Isolator Modules:**

1. Locate as required, each takes one address and counts as 4 TrueAlert unit loads.
2. Isolator Modules are automatically assigned to the Isolator default VNAC.
3. Up to 12 total can be connected per Class B SLC (up to 6 on the same branch), and up to 6 total per Class A SLC.

**VNAC Details:**

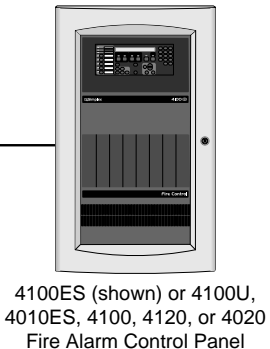
1. VNACs can contain appliances across multiple SLCs and across multiple TrueAlert control sources if controlled by the same 4100ES/4100U panel.
2. Each appliance can be in up to 3 custom VNACs in addition to the default VNACs.
3. Appliances are assigned to default VNACs according to device type. Up to 255 VNACs (247 custom and 8 system reserved) can be created per 4100ES/4100U panel with selectable circuit and point types.
4. Up to 64 VNACs (56 custom and 8 system reserved) are available per TrueAlert Addressable control source.

# RUI Communications Wiring Reference



**RUI Communications Rules Summary:**

1. Recommended limit of 20 TrueAlert Addressable Controllers. (4010ES has a maximum internal and external limit of 20 card addresses.)
2. Can be wired with other RUI devices (LCD Annunciator 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.

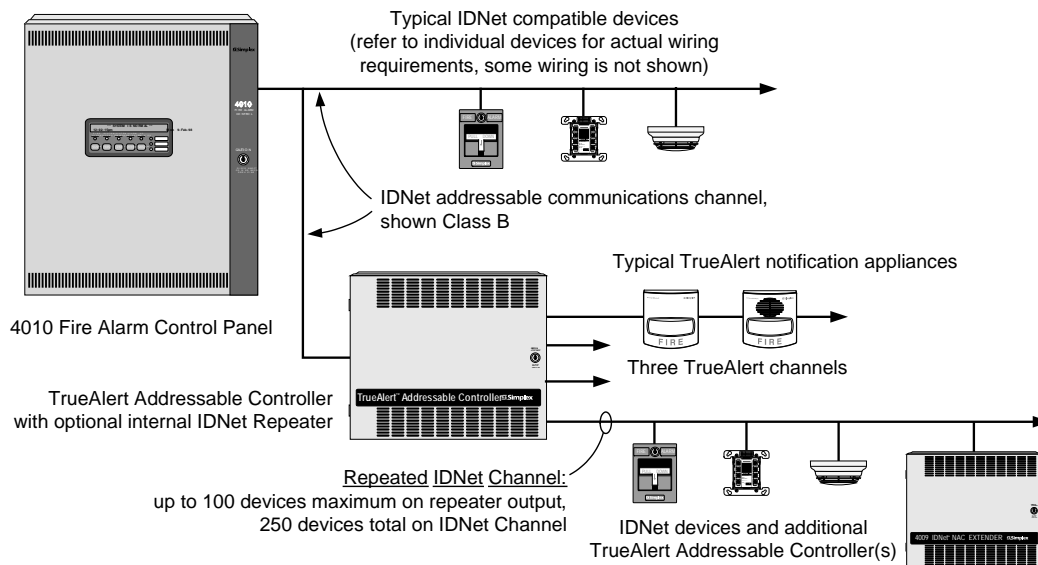
For use with the Simplex 4010 Fire Alarm Control Panel, up to five TrueAlert Addressable Controllers can be controlled on a single IDNet communications channel with each requiring only one point address. Each TrueAlert Addressable Controller SLC channel can be individually controlled by using 4010 custom control. Each TrueAlert SLC channel can provide horn control selected as Temporal pattern, March Time pattern (**60 or 120 bpm**), or Steady On.

**Manual Control.** Individual TrueAlert SLC channels can be manually controlled from the 4010 for service operations or for manual override.

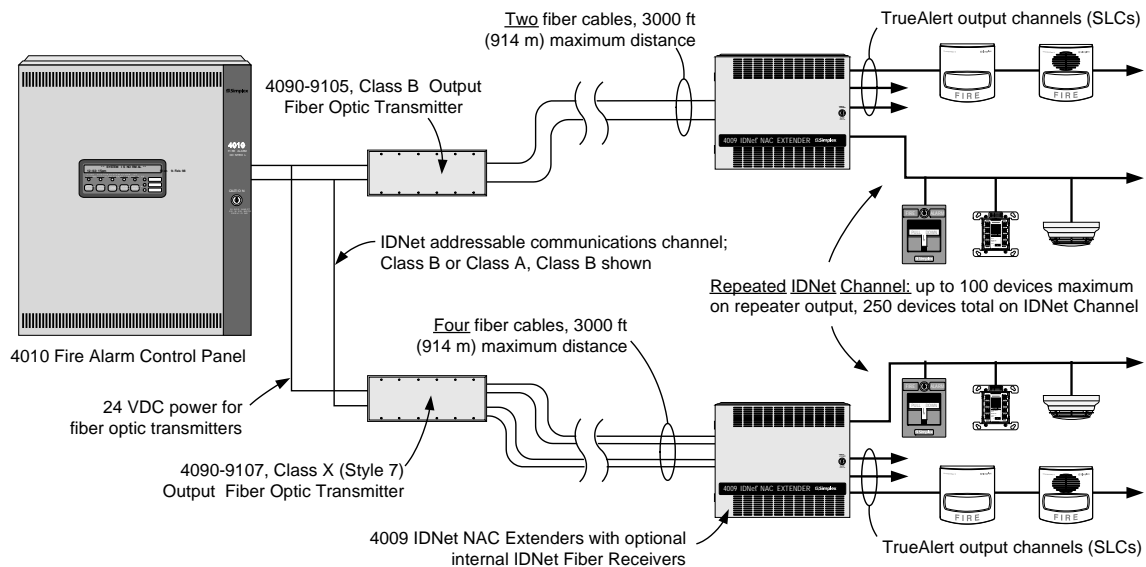
**Trouble Communications.** The 4010 receives TrueAlert Addressable Controller troubles to include: device supervision (reported as a channel trouble), power trouble, battery status, and earth detect.

**Optional IDNet Repeater Modules.** IDNet communications can be repeated with the optional IDNet Repeater Module or with the optional Fiber Optic Receiver Module. Up to 100 of the IDNet channel points can be repeated once (see illustrations below). Repeated IDNet communications also support the “device level” earth fault location utility of the host panel.

## TrueAlert Addressable Controller with Wired IDNet Input Control

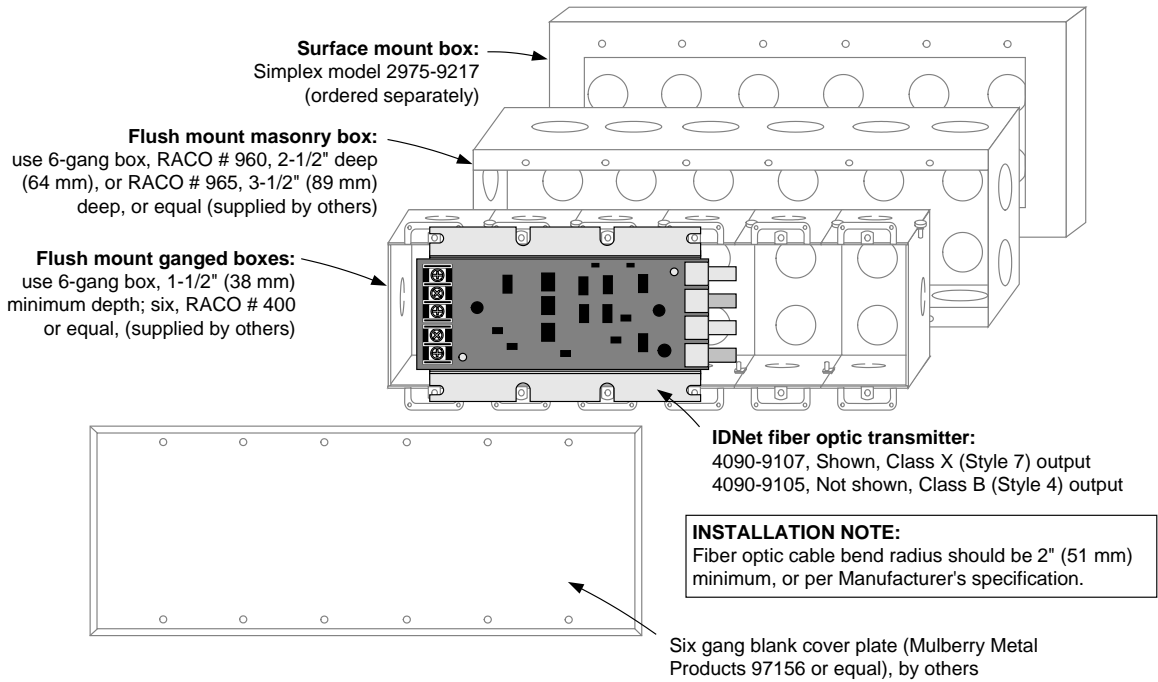


## TrueAlert Addressable Controller with Fiber Optic IDNet Input Control

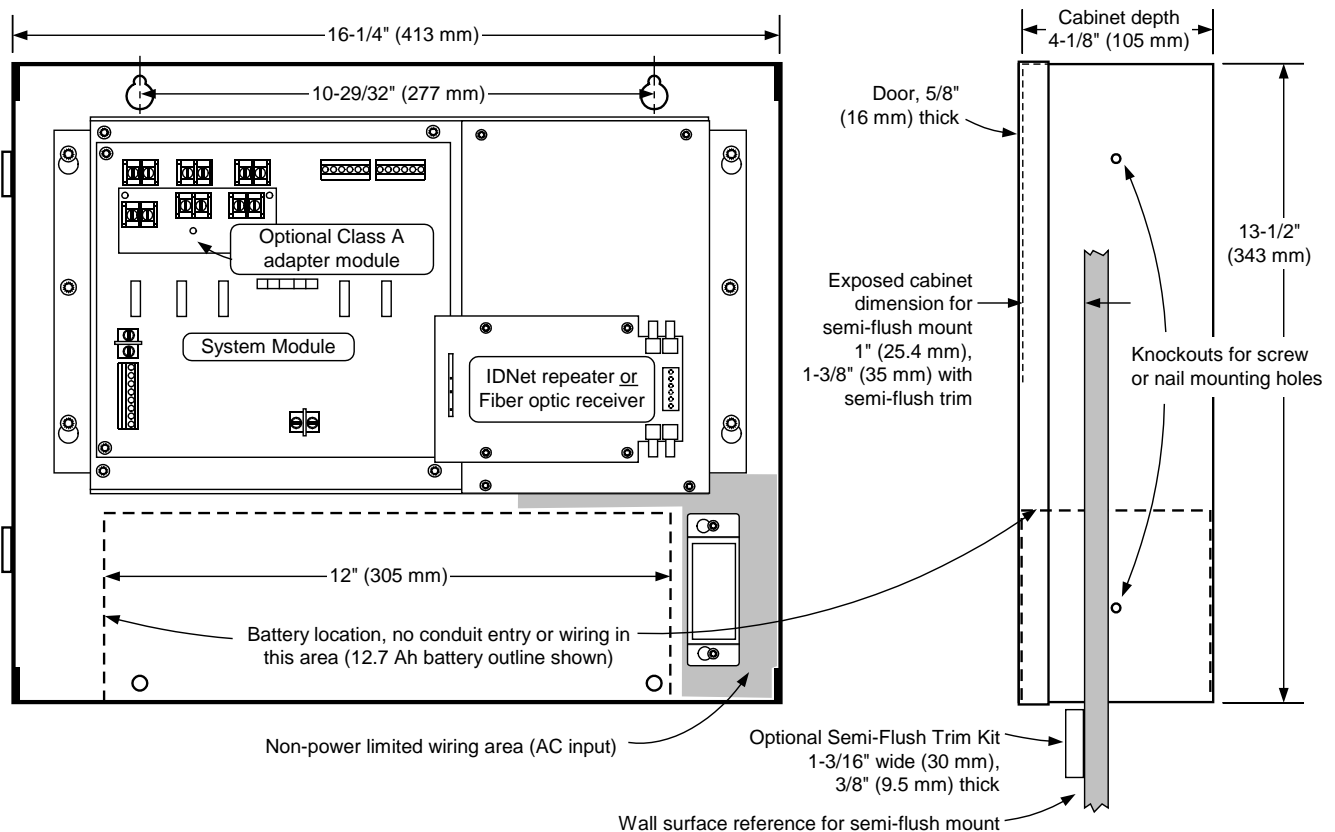




## 4090-9105/9107 IDNet Fiber Optic Transmitter Mounting Information



## TrueAlert Addressable Controller Mounting and Module Placement Reference



**NOTE:** Recommended conduit entrance varies with module selection. For models 4099-9401 and 4099-9402CA, refer to Installation Instructions 574-762, specific option module installation instructions, and to Field Wiring Diagram 842-158 before locating conduit entrance. [NOTE: For model 4099-9501, refer to Installation Instructions 579-321 and Field Wiring Diagram 842-244.]

## TrueAlert Addressable Controller and 4100ES TPS Reference Specifications

**NOTE:** Refer to data sheet S4100-0065 for additional 4100ES TrueAlert Addressable Power Supply (TPS) specification details.

|   |  |  |
|---|--|--|
| <b>Input Voltage</b>                          | 120 VAC Input (4009-9401/9402CA)               | 3 A @ 102-132 VAC, 60 Hz   |
|   | 240 VAC Input (4009-9501)                      | 1.5 A, selectable for 220/240 VAC, +10% - 15% per selection, 50/60 Hz  |
| Wired Control Input, requirements per circuit |  | 3 mA @ 24 VDC; input voltage range = 16 to 33 VDC, filtered; control from conventional reverse polarity NAC  |
| <b>Output Ratings</b>                         |  |  |
| TrueAlert Channel Output Voltage (SLC)        |  | 19 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             | <b>Category</b>                                | <b>Details</b>   |
|   | Available Strobe Intensity                     | 15, 30, 75, and 110 cd   |
|   | Available Horn Control                         | Continuous, Temporal Code 3, and March Time of 60 or 120 bpm   |
| Appliance Voltage Minimum                     |  | 17 VRMS  |
| 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 per SLC  |
|   | TrueAlert Addressable Controllers              | Up to 39 multi-candela strobes can be synchronized per SLC; <u>total current per controller = 8 A</u>  |
| 4100ES TPS                                    |  | Up to 46 multi-candela strobes can be synchronized per SLC; <u>total current per TPS = 9 A</u>   |
| Auxiliary Output                              |  | 500 mA @ 24 VDC nominal (requires 734-035 wiring harness)  |
| TrueAlert SLC Wiring                          |  | UTP, unshielded twisted pair, 18 to 12 AWG   |
| TrueAlert Strobe Wiring Distance              |  | Maximum wiring distance between TrueAlert strobes is limited to 30 $\Omega$ wire resistance  |
| Wiring Connections                            |  | Terminal blocks for 18 to 12 AWG   |
| <b>Optional Modules</b>                       |  |  |
| IDNet Repeater Module (4009-9809)             | Input Power                                    | 70 mA @ 24 VDC, system supplied  |
|   | IDNet Input, One Address                       | Maximum distance from IDNet source is 2500 ft (762 m)  |
|   | IDNet Output Specifications                    | Repeated IDNet output for up to 100 devices (total IDNet devices not to exceed 250 per channel)<br>Refer to specific panels details for additional IDNet communications specifications |
| Fiber Optic Receiver Modules                  | Input Current                                  | 4009-9810 Class B, 65 mA @ 24 VDC, system supplied   |
|   |  | 4009-9811 Class X (Style 7), 80 mA @ 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 above)  |
|   | Fiber Optic Transmission                       | Distance = 3000 ft (914 m) maximum   |
| General                                       | Operating Temperature                          | 32° to 120° F (0° to 49° C)  |
|   | Operating Humidity Range                       | 10% to 90% RH from 32° to 104° F (0° to 40° C)   |

## Fiber Optic Transmitter Specifications

|   |           |   |
|---|-----------|---|
| Input Voltage   |           | 18.9-32 VDC from compatible listed fire alarm supply      |
| Input Current   | 4090-9105 | Class B, 30 mA @ 24 VDC                                   |
|   | 4090-9107 | Class X (Style 7), 35 mA @ 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" W x 3-3/4" H x 1-1/8" D (173 mm x 95 mm x 29 mm) |
| On-board Status Indicators  | Green LED | Flashing = transmit                                       |
|   | Red LED   | Flashing = receive  |
|   | 4090-9107 | Separate Red LED = 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 @ 100° F (38° C)             |
| Operating Temperature   |           | 32° to 120° F (0° to 49° C)                               |

## TrueAlert Addressable Controller Current Reference

### Panel Module Selection (shaded model numbers are optional modules)

| Model   | Description                   |             | Supervisory Current         | Actual Supervisory | Alarm Current               | Actual Alarm |   |
|---|-------------------------------|-------------|-----------------------------|--------------------|-----------------------------|--------------|---|
| <b>4009-9401</b>  | 120 VAC input                 | Basic Panel | 88 mA                       | 88 mA              | 195 mA                      | 195 mA       |   |
| <b>4009-9402CA</b>  |                               |             |                             |                    |                             |              |   |
| <b>4009-9501</b>  | 240 VAC input                 |             |                             |                    |                             |              |   |
| <b>4009-9812</b>  | Class A Adapter               |             | 7 mA                        | +                  | 7 mA                        | +            |   |
| <b>4009-9809*</b>   | IDNet Repeater                |             | 70 mA                       | +                  | 70 mA                       | +            |   |
| <b>4009-9810*†</b>  | Fiber Optic Receiver, Class B |             | 65 mA                       |                    | 65 mA                       |              |   |
| <b>4009-9811*†</b>  | Fiber Optic Receiver, Class X |             | 80 mA                       |                    | 80 mA                       |              |   |
| <b>IDNet Devices</b> , 0.7 mA each, maximum of 100 (see Procedure Note 5)   |                               |             | total devices x 0.7 mA each | +                  | total devices x 0.7 mA each | <b>(A1)</b>  | + |
| <b>TrueAlert Appliances/Devices</b> , Supervisory Current, 0.2 mA per unit load, add devices from all 3 SLCs (see Procedure Note 7) |                               |             | total loads x 0.2 mA each   | +                  |                             |              |   |
| <b>TrueAlert Isolators</b> ; each requires 1 address and four (4) unit loads  |                               |             | total Isolators x 10 mA     | +                  | total Isolators x 10 mA     | +            |   |
| <b>Auxiliary Power Output</b> , calculate per total device requirements (see Procedure Note 5)                                      |                               |             | 500 mA maximum              | +                  | 500 mA maximum              | <b>(A2)</b>  | + |
| Total Supervisory Current =   |                               |             |                             | <b>(A)</b>         |                             |              |   |
| Total TrueAlert Addressable Controller Panel Alarm Current =  |                               |             |                             |                    |                             | <b>(B1)</b>  |   |

\* Only one of these three modules can be chosen for a single TrueAlert Addressable Controller.

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

### TrueAlert Channel Notification Appliance Current Loads

|  | Channel Number | NAC Alarm Current |
|--|----------------|-------------------|
| <b>TrueAlert Channel (SLC)</b> 2.5 A maximum per channel (see Procedure Note 5)    | Channel 1      |                   |
|  | Channel 2      | +                 |
|  | Channel 3      | +                 |
| Total TrueAlert Channel Loads Alarm Current =                                      |                | <b>(C)</b>        |
| Total TrueAlert Addressable Controller Panel Alarm Current (enter B1 from above) = |                | <b>(B2)</b> +     |
| Total Alarm Current =  |                | <b>(D)</b>        |

### 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.
- Refer to Simplex battery selection document 900-012 for recommended battery size for specific standby requirements (i.e., 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 4 unit loads. Refer to Field Wiring Diagram 842-158.

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