

PROJECT: DORTHEA DIX FIRE ALARM

PROJECT NUMBER: 25:650659814

CONTRACTOR: WATSON ELECTRICAL

LOCATION: LILLINGTON, NC

# FIRE ALARM SYSTEM

DATE: 05-26-2025

Submitted By:



540 Civic Boulevard, Suite 105  
Raleigh, NC 27610

919-279-6400  
FAX 919-279-6439

Sales Rep: Gordon Gibb

Prepared by: Joe Simmons





<b>QTY</b>	<b>MODEL NUMBER</b>	<b>DESCRIPTION</b>
1	4010-9402	4010ES FACP 120V PLATINUM
1	4010-9918	DUAL RS232 MODULE
1	LE4010CF-AT	AT&T LTE UNIVERSAL CELLULAR FI
2	2081-9275	BATTERY 18AH
1	4606-9102	REMOTE LCD ANNUN FOR 4010ES
6	4099-9006	STATION-LED, DA PUSH ADDR
16	4098-9714	PHOTO SENSOR
3	4098-9733	HEAT SENSOR
2	4098-9755	DUCT SENSOR HOUSING
19	4098-9792	SENSOR BASE
1	4098-9855	SAMPLING TUBE 24", PLASTIC
1	4098-9856	"SAMPLING TUBE 49"', PLASTIC"
2	4090-9001	SUPERVISED IAM
8	4090-9002	RELAY IAM
3	4090-9051	SUPERVISED IAM
8	4090-9802	COVER-ADDRESS MODULE SURFACE
2	4090-9806	COVER-ADDRESS MODULE FLUSH
2	4090-9810	BRACKET, IAM
2	2098-9806	REMOTE TEST STATION
2	2081-9044	OVERVOLTAGE SUPPRESSOR
1	E120V-GT	120V HYBRID SRG PROTECT
10	ELCHSWC	CHIME STR , WHT, CEIL, FIRE
19	ELSTWC	LED STR, WHT, CEIL, FIRE
3	STI-1210C	STROBE/HORN COVER - OPEN BOX



## Features

### Compatible with Simplex ES Net and 4120 fire alarm networks

#### Basic system features:

- Models available with Color ES Touch Screen Display or Monochrome 2 line x 40 Character Display
- Capacity for up to 1000 addressable IDNet points, up to 127 VESDA Air Aspiration points, up to 2000 points of annunciation, and up to 20 internal and external card addresses
- CPU assembly includes dedicated compact flash memory for on-site system information storage and convenient Ethernet service port access
- 8 A power supply with up to 2 A of auxiliary power and battery charger capacity for up to 110 Ah batteries (UL) or up to 50 Ah batteries (ULC), 33 Ah max in single bay control cabinet 50 Ah maximum with 4100-0650 battery shelf in two-bay control cabinet
- Four onboard Class A or B, 3 A notification appliance circuits (NACs) and one programmable auxiliary relay output rated for 2 A at 32 VDC
- IDNet addressable device communications that support TrueAlarm analog sensors and IDNet communications monitoring and control devices with an electrically isolated output channel allowing use with either shielded or unshielded, twisted or untwisted single pair wiring; and providing dual short circuit isolating output loops
- Remote annunciator module support with remote unit interface (RUI) communications port, either Class B or Class A operation
- 48 LED panel mount annunciation provides 40 red and 8 yellow pluggable LEDs (select models), optional LED kits are available for custom LED configurations

#### Optional Main System Supply 2 and door mounted modules, and other options include the following:

- City Connect Module
- Alarm relay module
- Battery brackets for seismic area protection

#### Optional block space modules include the following:

- Fire alarm network interface card (NIC) for ES Net or 4120 network
- Peer-to-peer network communications, supports either Class B or Class X operation
- Ethernet connectivity options include ES Net NIC, Building Network Interface card (BNIC), and BACpac Ethernet portal
- Dual RS-232 Module for printer or third party interface
- VESDA Air Aspiration High Level Interface
- Serial DACT
- 8-Point Zone/Relay Module
- 4-Point Auxiliary Relay Module with Feedback
- 8 Zone IDC Modules Class A or Class B
- Four point Auxiliary Relay module
- Modem or TCP/IP Physical Bridge Network Modules, Class B or Class X
- Additional IDNet addressable channels
- Connected Services Gateway

Figure 1: 2-Bay 4010ES Fire Alarm Control Unit with 2x40 Monochrome LCD Display



#### 4010ES Agency Listing\*:

- UL 864 - Control Units, System (UOJZ); Control Unit Accessories, System, Fire Alarm (UOXX); Control Units, Releasing Device Service (SYZV); Smoke Control System Equipment (UUKL)
- UL 1076 - Proprietary Alarm Units (APOU)
- UL 1730 - Smoke Detector Monitors and Accessories (UULH)
- UL 2017 - Emergency Alarm System Control Units, CO detection (FSZI); Process Equipment Management (QVAX)
- ULC-S527 - Control Units, System, Fire Alarm (UOJZ7); Control Unit Accessories, System, Fire Alarm (UOXX7); Control Units, Releasing Device Service (SYZV7)
- ULC-S559 - Central Station Fire Alarm System Units (DAYR7)
- ULC/ORD-C1076 - Proprietary Burglar Alarm System Units (APOU7)
- ULC/ORD-C100 - Smoke Control System Equipment, (UUKL7)

\*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 7165-0026:0369 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. NYC Fire Dept COA #6095. 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

4010ES series fire detection and control units provide leading edge installation, operator, and service features for customer applications in the mid-range addressable fire alarm systems market. An onboard 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 variety of functional modules are available to meet specific system requirements. With these selections, you can configure control units for either stand-alone or networked fire control operation.

InfoAlarm Command Center options provide convenient expanded display content. Refer to data sheet *InfoAlarm Command Center for the 4010ES Fire Alarm Control Unit S4010-0009* for more information.

### Compatible with the following Simplex remotely located modules:

- 4098-9757 QuickConnect2 and legacy 4098-9757 QuickConnect TrueAlarm smoke sensors
- 4003EC Small Voice Control Units
- 4009 IDNet NAC Extenders (4009A)
- 4081 Series, 110 Ah Battery Chargers
- 4100-7400 Series Graphic Annunciators
- 4190 Series Fiber Modems and Physical Bridges
- 4606-9102 Remote LCD Annunciator and 4100-9400 Series Remote ES Touch Screen Displays, and 4100-9400 Series Remote InfoAlarm Command Centers, and 4602 Series Status Command Units (SCU) and Remote Command Units (RCU) Annunciators

## Mechanical description

- Mounting box provides convenient stud markers for drywall thickness and nail-hole knockouts for quicker mounting
- Includes smooth box surfaces for precise local cutting of conduit entrance holes
- The hinged user interface panel easily opens for internal access
- NACs mount directly on power supply assemblies providing minimized wiring loss, compact size, and readily accessible terminations
- Modules are power-limited except where noted, such as relay modules
- Doors include tempered glass inserts; boxes and doors are available in platinum or red
- Box and door or retainer assemblies are included with basic control unit assemblies
- Cabinet assembly is rated NEMA 1 and IP 30
- Cabinet assembly design is seismic tested and is certified to IBC and CBC standards and to ASCE 7 categories A through F; requires battery brackets as detailed on data sheet *Battery Brackets for Seismic Activity Applications S2081-0019*

## Control unit hardware

### The Master Controller and Main System Supply 2

Mount the Master Controller and Main System Supply 2 in the upper section of the 4010ES cabinet. See [Figure 10](#) for more information.

### 4010ES Block Space Option Cards

Mount the 4010ES Block Space Option Cards to the left of the 4010ES Main System Supply 2. In two-bay cabinets, mount the block space option cards below the 4010ES ESS.

### Other 4010ES options

Mount the 4010ES City Connect module or the optional Alarm Relay module directly to the Main System Supply 2. These options are mutually exclusive.

The battery compartment located in the bottom of the 4010ES cabinet accepts two batteries without interfering with expansion module space.

## Software feature summary

- 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 a 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
- Module level ground fault searching assists installation and service by locating and isolating modules with grounded wiring
- Recurring Trouble Filtering allows the control unit 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

## Compatible peripheral devices

The 4010ES is compatible with an extensive list of remote peripheral devices including printers and both conventional and addressable devices including TrueAlarm analog sensors.

## Addressable device control

The 4010ES provides standard addressable device communications for IDNet 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 interface to the addressable controller to communicate their identity and status.

Addressability allows the location and condition of the connected device to display on the operator interface LCD and on remote system annunciators. Additionally, control circuits such as fans or dampers 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 pathway operation is available. Sophisticated poll and response communication techniques ensure supervision integrity and allow you to T-tap the circuit for Class B operation. Devices with LEDs pulse the LED to indicate receipt of a communications poll, and you can change them to steady from the control unit.

### IDNet addressable channel capacity

The Main System Supply 2 provides an electrically isolated IDNet2 signaling line circuit (SLC) that supports up to 250 addressable monitor and control points intermixed on the same pair of wires. Additional 250 address IDNet 2+2 Modules with four short circuit isolating output loops are available. IDNet 2+2 Module SLCs are isolated from other system reference voltages to reduce common mode noise interaction with adjacent system wiring.

**Table 1: IDNet 2 and IDNet 2+2 SLC wiring specifications**

Specification		Rating
Maximum distance from control unit for each device load	0 to 125	4000 ft (1219 m); 50 ohms
	126 to 250	2500 ft (762 m); 35 ohms
Total wire length allowed with T-taps for Class B wiring		Up to 12,500 ft (3.8 km); 0.60 µF
Maximum capacitance between IDNet channels		1 µF
Wire type and connections		Shielded or unshielded, twisted or untwisted wire. See note.
Connections		Terminals for 18 AWG to 12 AWG (0.82 mm <sup>2</sup> to 3.31 mm <sup>2</sup> )
Installation instructions		579-989
Compatibility includes: IDNet communicating devices and TrueAlarm sensors including QuickConnect2 sensors. See data sheet <i>S4090-0011</i> for additional reference.		
<b>Note:</b> 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.

To determine status, compare 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

You can select the programmable sensitivity of each sensor at the control unit for different levels of smoke obscuration, shown directly in percent, or for specific heat detection levels. To evaluate whether to revise the sensitivity, read the peak value, which is stored in memory, and compare the value to the alarm threshold directly in percent.

### CO sensor bases

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. You can enable or disable the CO sensor for use in LED or Switch modes and custom control, and you can make the CO sensor public for communication across a fire alarm network. Refer to data sheet *TrueAlarm CO Sensor Bases for Smoke, Heat, and Photo/Heat Sensors using IDNet Communications S4098-0052* for details.

### TrueAlarm heat sensors

You can select TrueAlarm heat sensors 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 are selectable as either Fahrenheit or Celsius.

### TrueSense early fire detection

The Multi-sensor 4098-9754 provides photoelectric and heat sensor data using a single 4010ES IDNet address. The control unit evaluates smoke activity, heat activity, and their combination, to provide TrueSense early detection. For more details on this operation, refer to data sheet *TrueAlarm Multi-Sensor Model A4098-9754 Providing TrueSense Early Fire Detection (S4098-0024)*.

## Diagnostics and default device type

### Sensor status

TrueAlarm operation allows the control unit 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 one year, six months, and when end of life is reached.

### Modular TrueAlarm sensors

Modular TrueAlarm sensors use the same base and either smoke or heat sensor types. You can easily interchange the sensors to meet specific location requirements. This allows intentional sensor substitution during building construction when conditions are temporarily dusty. Instead of covering smoke sensors and causing them to be disabled, you can install heat sensors without reprogramming the control unit. The control unit 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.

### Master Controller (CPU)

- The 4010ES Master Controller includes dedicated compact flash Mass Storage memory for on-site system information storage and convenient Ethernet service port access
- For quick and easy download of site-specific programming and firmware enhancements, the Ethernet port is conveniently accessed from the front panel. You can make firmware enhancements through software downloads to the onboard flash memory.
- Every downloaded job is automatically stored to compact flash without overwriting earlier versions providing a means for recovering previous configurations
- Downtime is reduced because the system stays running during download
- You can upload and download modifications for greater service flexibility
- You can store job specific files in the control unit such as test and inspection reports, record drawings, specifications, and more using mass storage.
- RUI communications port supports either Class B or Class A operation for remote annunciation equipment

### Basic control unit description

4010ES control units include the following features:

- An Operator Interface, Master Controller with Compact Flash, IDNet addressable device SLCs with short circuit isolating loops configurable for Class B or Class A operation
- 8 A power supply with up to 2 A of auxiliary power, 110 Ah (UL) or 50 Ah (ULC) battery charger (33 Ah max in one bay cabinet, 50 Ah max with 4100-0650 battery shelf in two bay control cabinet); four Class A or Class B NACs rated at 3 A each for Special Application Appliances, selectable for synchronized strobe, or SmartSync horn or strobe operation over two wires; and 2 A for regulated 24 DC operation; one programmable auxiliary relay rated for 2 A at 32 VDC
- One RUI Class B or Class A communications port for remote annunciation devices, cabinet and door
- Support for up to 20 internal and external card addresses. Other standard options may be provided depending on model; see and for additional details on specific models.

### 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 at 30 VDC (N.O. or N.C.); or a combinations of IDCs and Relays; each zone is separately configurable as an IDC or Relay output.
- IDC Support. Each IDC supports up to 30, 2-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 2-wire detector compatibility. Refer to *2-Wire Detector Compatibility Chart (579-832)* for additional details.
- You can select the following IDC EOL resistor values as: 3.3 kohms, 2 kohms, 2.2 kohms, 3.4 kohms, 3.9 kohms, 4.7 kohms, 5.1 kohms, 5.6 kohms, 6.34/6.8 kohms, and 3.6 kohms + 1.1 kohms. Refer to *Zone/Relay Module Installation Instructions (579-1236)* for more details.

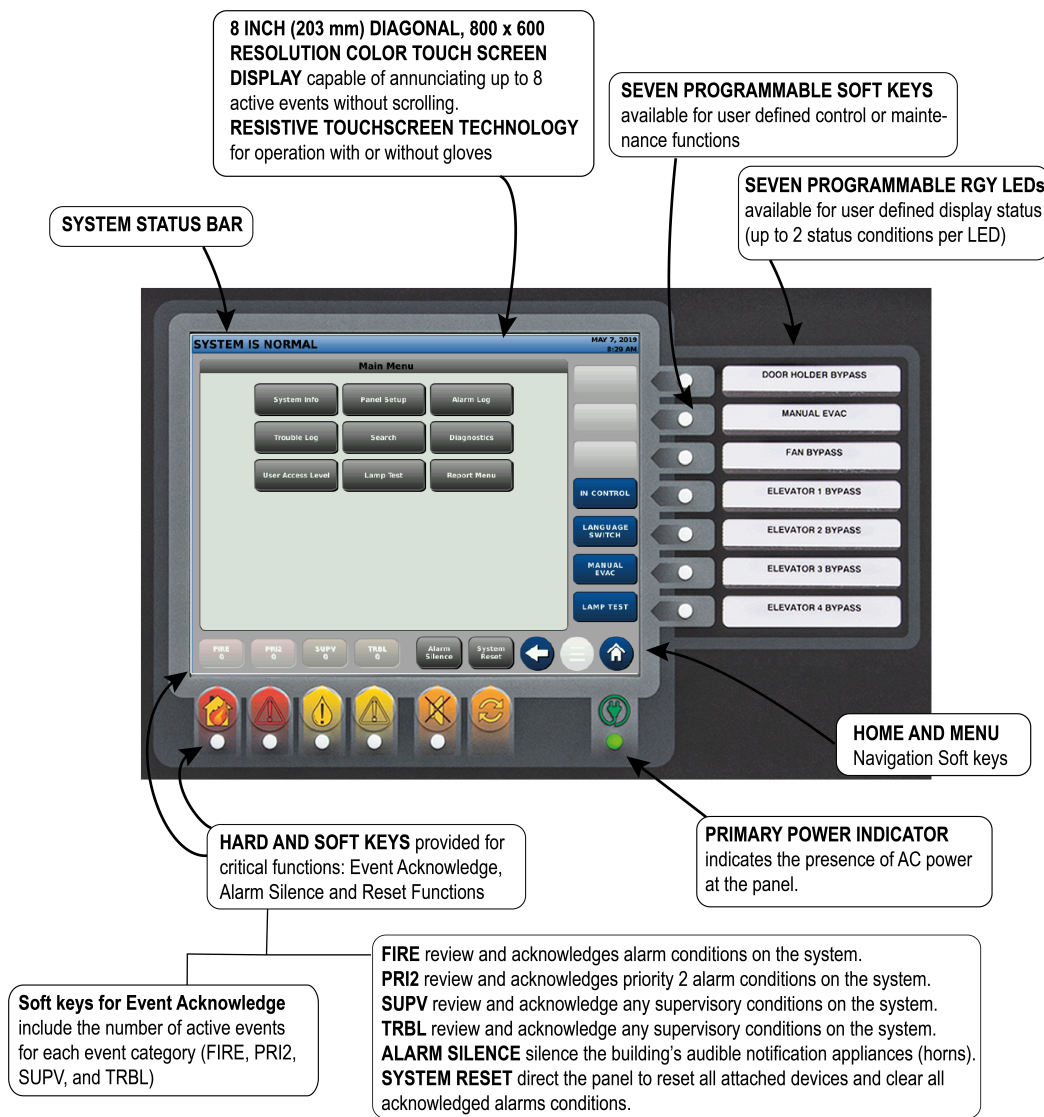
### Main System Supply 2

The Main System Supply 2 provides the power source and the input or output connections for the basic 4010ES control unit. The main features are listed in [Basic control unit description](#).

## Color ES Touch Screen Display

The Color ES Touch Screen Display interface offers intuitive operation similar to a tablet or smart phone. With a larger area format compared to an individual text line display, more information is available at a glance, and minimal key presses are needed to access detailed information.

Figure 2: ES Touch Screen Display Operator Interface



## Features

### The ES Touch Screen Displays provide customized operating experience with the following features

- Event activity display choices include: First 8 Events; or First 7 Events with emphasis on Most Recent; or First 6 Events with emphasis on First and Most Recent, individually selectable for each event type
- System reports are easily viewable; you can read logs with minimal scrolling
- Up to two languages are available for each system, easily selected by programmable key press
- You can vector information sent to Remote ES Touch Screen Displays by point or zone
- Both Hard and Soft keys are available for critical functions: Event Acknowledge, Alarm Silence, and Reset Functions
- Resistive touchscreen technology allows operation with or without gloves
- Seven programmable RGY LEDs are available for user-defined display status, up to 2 status conditions for each LED
- Seven programmable Soft keys are available for user-defined control or maintenance functions
- PRI2 Soft key label which you change to CO to annunciate Carbon Monoxide detection status
- ES Touch Screen Display which you can program to report individual points or groups of points as a single zone
- Supports ability to display a custom watermark background file of a company logo or other desired display content
- Seismically compliant under the State of California Statewide Office of Housing and Development (OSHPD) Special Seismic Certification (SSC) program guidelines. Refer to *Simplex Seismic Application Guide* (579-1213) and *Battery Brackets for Seismic Activity Applications* (S2081-0019) for details.

**Display properties**

- 8 inch (203 mm) diagonal, 800 x 600 resolution color touch screen display capable of annunciating up to 8 active events without scrolling
- Bright white LED backlighting provides efficient and long lasting illumination. The backlight is dim in a quiescent state and automatically switches to full power on touch or on event activity in system.

**Description**

ES Touch Screen Displays for 4010ES fire alarm systems provide a large display with extended information content, dual language support including UTF-8 character languages, and an intuitive control key interface with the following features:

- Each 4010ES control panel supports up to 8 ES Touch Screen Displays, one main and seven remote. It can enable one ES Touch Screen Display to take-control and to designate access levels for interfaces not in-control. You can assign programmable LEDs to, in-control status indications.
- Menu-driven format conveniently prompts operators for the next action required
- Direct point callup displays individual points alphabetically and then homes in on the logical choice as more point information is entered
- Event categories are color coded for quick visual representation; Red for Alarm and Priority 2 Events; Yellow for Supervisory and Trouble events
- Date formats are either MM/DD/YY or DD/MM/YY
- Time formats are either 24 hour or 12 hour with AM/PM
- System Normal screen supports a color background (watermark) for company name, company logo, or other desired display content

Example display screens

Figure 3: First and Most Recent Alarm Display

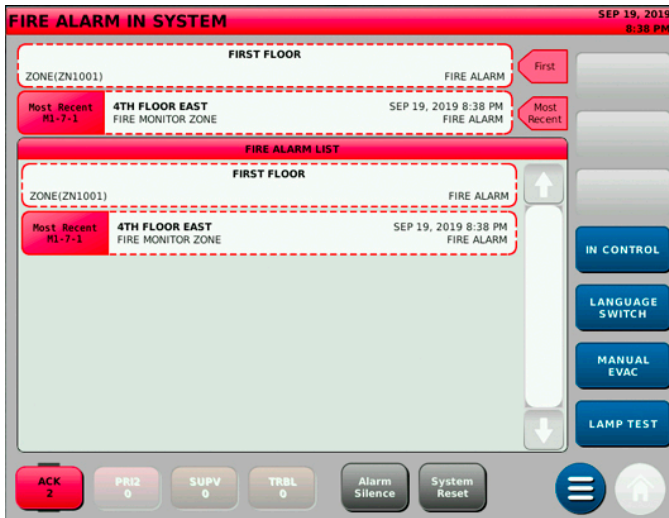


Figure 5: First Eight Active Trouble Events List



Figure 7: Alarm History Log

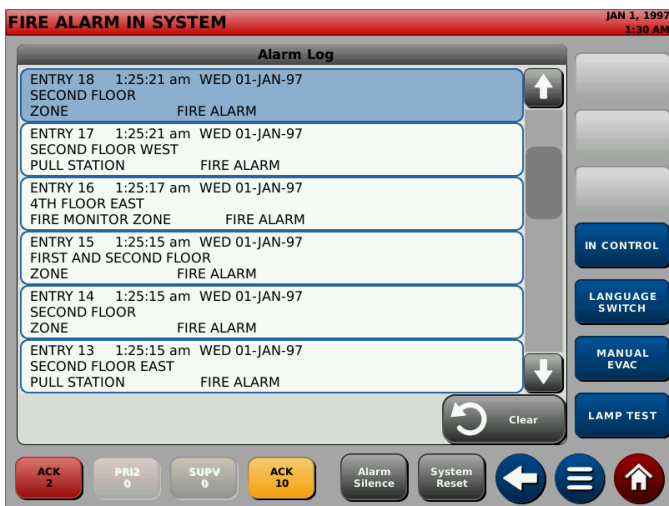


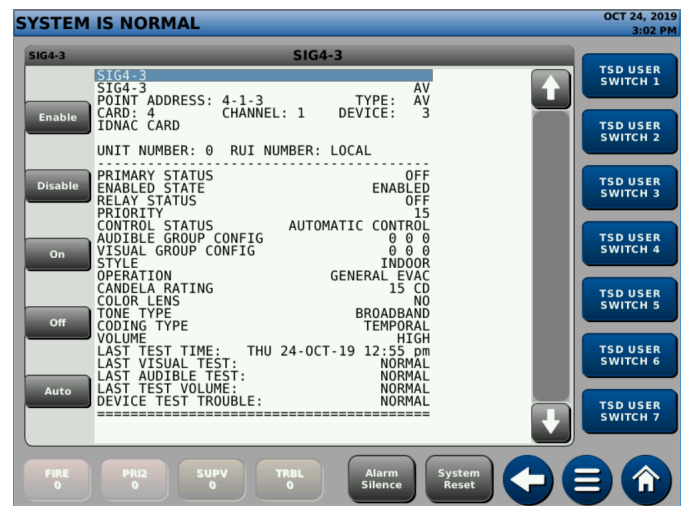
Figure 4: Main Menu



Figure 6: Direct Point Callup



Figure 8: Detailed Point Status Screen for TrueAlert ES Appliance



**Specifications**

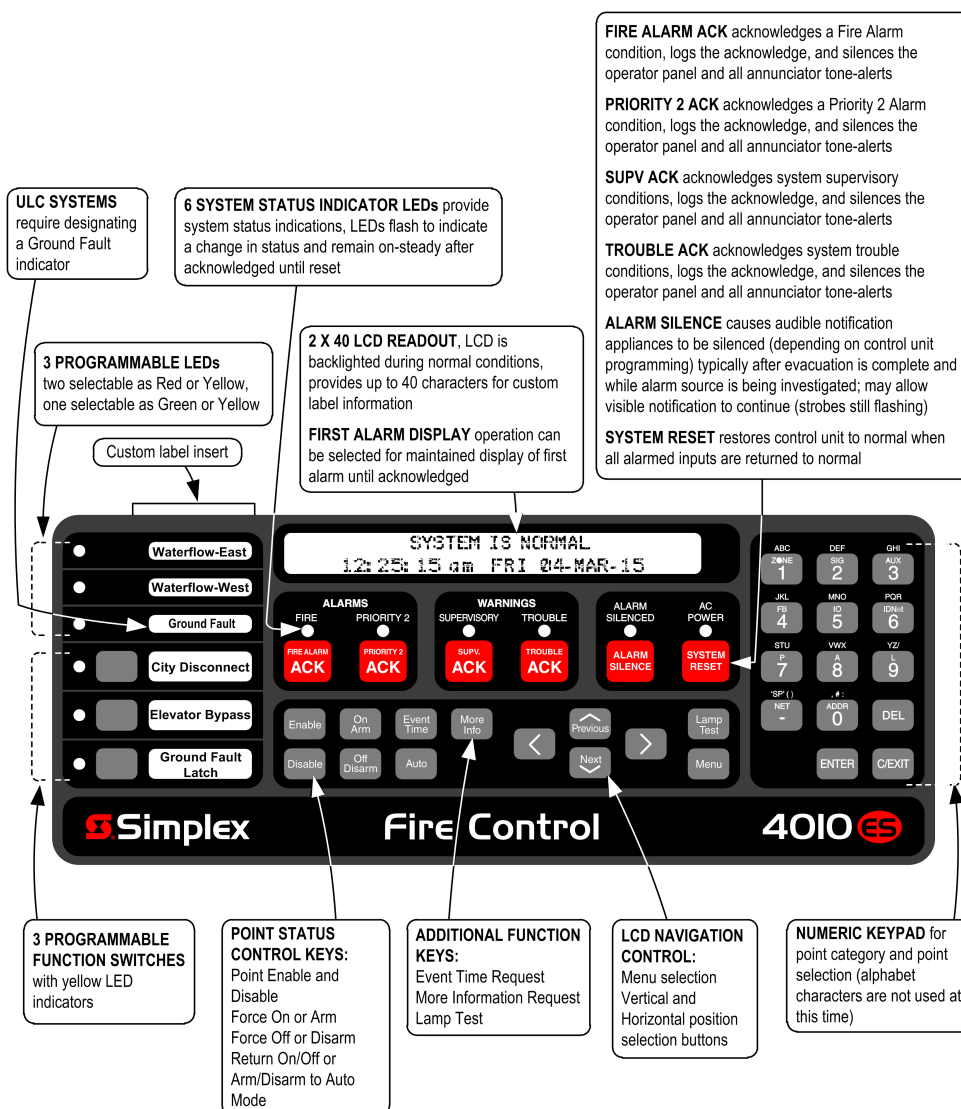
**Table 2: General ES Touch Screen Display Specifications**

Specification	Rating
Resolution	800 x 600 Pixels (RGB)
Size / Type	8 inch (203 mm) Diagonal / Color Touch Screen
Touch Screen Technology	Resistive
Event Display	Up to 8 Events without scrolling
Normal Screen Custom Watermark File Format	680 x 484 Pixels: BMP, JPG, TIFF, GIF or PNG file format
Environmental	Operating Temperature: 32°F to 120°F (0°C to 49°C)
	Operating Humidity: Up to 93% RH, non-condensing at 90°F (32°C) maximum

**Operator Interface with Monochrome 2 x 40 LCD**

- Provides convenient and extensive operator information using a logical, menu-driven display
- Multiple automatic and manual diagnostics for maintenance reduction
- Alarm and Trouble History Logs of up to 1250 entries for each, 2500 total events, are available for viewing on the LCD screen, printing on a connected printer, or downloading to a service computer
- Convenient PC programmer label editing
- Password access control

**Figure 9: Operator interface features**



### Basic control unit model selection, one-bay units

Supervisory and alarm current specifications are for determining battery standby requirements. Current specifications include an active RUI channel. Models with an IDNet channel include 20 IDNet device LEDs activated in alarm. Actual IDNet device current is not included. For models with 48 LED annunciation, alarm also includes 24 LEDs activated.

**Table 3: Basic Control Unit Model Selection - 1 Bay Units**

Model	Panel color	Language and voltage	Listings	Features	Supv. current	Alarm current	Available option blocks
4010-9401	Red	English 120 VAC	UL, CSFM, FM, NYC Fire Dept	Basic control unit with 2x40 LCD Operator Interface and one two-loop isolated IDNet2 Communications Channel, Class A or Class B operation, with support for up to 250 addressable analog devices	316 mA	430 mA	Three 4 in. x 5 in. blocks
4010-9402	Platinum						
4010-9404	Platinum	English 120 VAC	UL, ULC, CSFM, FM, NYC Fire Dept	Same features as above with 48 LED annunciation	336 mA	495 mA	
4010-9406	Platinum	French 120 VAC	ULC, CSFM FM				

**Note:** Model numbers ending in BA are assembled in the USA.

### Basic control unit model selection, two-bay units

Supervisory and alarm current specifications are for determining battery standby requirements. Current specifications include an active RUI channel. Models with IDNet channels include 20 IDNet device LEDs activated in alarm for each channel. Actual IDNet current is not included. See [Addressable device load specifications for battery standby](#) for details.

**Table 4: Basic Control Unit Model Selection - 2 Bay Units**

Model	Panel Color	Language & Voltage	Listings	Features	Available Option Blocks	Supv. Current	Alarm Current
4010-9421	Red	English 120 VAC	UL, FM	Basic control unit with <b>2x40 Operator Interface</b> , one two-loop isolated IDNet2 Communications Channel and one four-loop Isolated IDNet 2+2 Communications Channel Module, Class A or Class B operation, with support for up to 500 addressable IDNet points	10 4 in. x 5 in. blocks	391 mA	545 mA
4010-9422 4010-9422BA	Platinum	English 120 VAC					
4010-9423	Red	English 120 VAC	UL, ULC, FM	Same features as above with 48 LED annunciation		411 mA	610 mA
4010-9428	Platinum	English 120 VAC		Same features as above with 48 LED annunciation			
4010-9435	Red	120 VAC. Multiple languages are available, contact your local Simplex product supplier for details.	UL/ULC, CSFM	Basic control unit with <b>ES Touch Screen Operator Interface</b> and one two-loop Isolated IDNet2 Communications Channel, one four-loop Isolated IDNet 2+2 Communications Channel Module, Class A or Class B operation, with support for up to 500 addressable IDNet points		486 mA	661 mA

**Note:** Model numbers ending in BA are assembled in the USA.

## Miscellaneous accessories

**Table 5: LED kits**

Model	Description
4100-9843	8 Yellow LED Kit
4100-9844	8 Green LED Kit
4100-9845	8 Red LED Kit
4100-9855	8 Blue LED Kit
4100-0650	Battery shelf, required for 50 Ah batteries, in two-bay cabinets only

**Note:** LEDs are pluggable. Use LEDs to change color for local application requirements

**Table 6: Factory Programming Tools**

Model	Description
4010-0831	Custom labels and programming, requires 4010-8810
4010-8810	Factory programming (select)

## General specifications

**Table 7: General specifications**

Specification	Rating		
<b>AC input current</b>	120 VAC models	4 A maximum, 120 VAC at 60 Hz nominal	
<b>Power supply output ratings (nominal 28 VDC on AC, 24 VDC on battery backup)</b>	Total power supply output rating	Including module currents and auxiliary power outputs; 8 A total for Special Application appliances; 4 A total for Regulated 24 DC power, see below for details	Output switches to battery backup during mains AC failure or brownout conditions
	Auxiliary power tap	2 A maximum, rated 19.1 VDC to 31.1 VDC	
<b>Special application appliances, maximum of 70 appliances for each NAC</b>	Simplex 4901, 4903, 4904, and 4906 series horns, strobes, and combination horn or strobes and speaker or strobes. Contact your Simplex product representative for compatible appliances.		
<b>Regulated 24 DC appliances</b>	Power for other UL listed appliances; use associated external synchronization modules where required		
<b>Battery charger rating (sealed lead acid batteries)</b>	Battery capacity range	See data sheet <i>Batteries and Battery Cabinets; 110 Ah Sealed Lead-Acid Batteries and Compatible Battery Cabinet (without charger) (S2081-0012)</i> for further details.	
	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	
<b>Battery Current</b>	9 A maximum at 24 VDC (during battery operation)		
<b>Environmental</b>	Operating temperature	32°F to 120°F (0°C to 49°C)	
	Operating humidity	Up to 93% RH, non-condensing at 90°F (32°C) maximum	
<b>Additional technical reference</b>	Installation instructions	<i>4010ES Fire Alarm System Installation Guide (579-989)</i>	
	Operating instructions	<i>4010ES Fire Alarm Operator's Manual (579-969)</i>	

## Addressable device load specifications for battery standby

**Table 8: Addressable device load specifications for battery standby**

Addressable channel	Load	Supervisory current	Alarm current
IDNet2 and IDNet 2+2 Channel Device Currents. 20 device LEDs in alarm are included with control unit and module currents	With 250 devices add	200 mA	250 mA
	With 125 devices add	100 mA	125 mA
	With 50 devices add	40 mA	50 mA

**Table 9: Current draw for each IDNet device**

Condition	Current
Standby	0.8 mA
Alarm, with LED off	1.0 mA
Alarm, with LED on	3.0 mA

**Note:** A maximum of 20 devices with LED on is supported for each channel. Additional device LEDs do not turn on.

### Block space option card selection

**Note:** Maximum block option module quantities may require 2 bay cabinets, 1 bay cabinets are limited to 3 option block spaces total. See [Figure 10](#) for option module space availability. Supervisory and alarm current specifications for determining battery standby requirement consider no load on addressable channels except as noted, see [Addressable device load specifications for battery standby](#).

**Table 10: Single block option modules**

Model	Features	Supervisory current	Alarm current	Option block usage	
4010-2504	Connected Services Gateway with IP communicator	125 mA	125 mA	1 block	
4010-9912	Serial DACT <b>Note:</b> Must mount in Block D under Main System Supply 2	30 mA	40 mA	1 block (must mount in top bay, block D)	
4010-9916	Voltage Regulator Module, 22.8 VDC to 26.4 VDC (25 VDC nominal); isolated and resettable output; includes earth detection circuit and trouble relay for status monitoring. One 4010-6305 harness (see below) is required for each 4010-9935 or 4010-9936 module powered from the 4010-9916.	3 A maximum with 2.5 A load	4.9 A maximum with 4 A load	1 block (1 max)	
4010-9918	Dual RS-232 Module	60 mA	60 mA	1 block (3 max)	
4010-9915	BACpac Ethernet Portal Module; requires 4010-9918 RS-232 Module (no address required)	123 mA	123 mA	1 block (3 max)	
4010-9901	VESDA HLI	60 mA	60 mA	1 block (1 max)	
4010-9935	8-point z1/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 3.3 K end-of-line-resistors with four IDCs in alarm and four IDCs in standby. Standby current shown is for all eight IDCs in standby. Detector current is added separately. Refer to <i>Z1/Relay Module Installation Instructions 579-1236</i> for more information.	83 mA	295 mA	One block (11 maximum)	
4010-9936	4 DPDT Relays with feedback, 2A	18 mA	65 mA	1 Block (11 maximum)	
4010-6305	25 V regulator harness for 8 point z1/relay module. 1 required for each 8 point z1/relay module to be powered by the 4010-9916 25 V regulator module. A maximum quantity of five 8 point z1/relay modules can be powered from the 4010-9916 25 V regulator module.	N/A	N/A	N/A	
4010-9929	<b>IDNet 2+2 Module</b> , 250 point capacity; electrically isolated output with <b>four</b> short circuit isolating Class B or Class A output loops; alarm currents for 50 and above devices includes 20 device LEDs in alarm; see control unit model selection for individual device currents	No device	50 mA	60 mA	1 block (3 max)
		50 devices	90 mA	150 mA	
		125 devices	150 mA	225 mA	
		250 devices	250 mA	350 mA	

**Table 11: Dual vertical block (flat) modules, see note 2**

Model	Features	Option block usage	Supervisory current	Alarm current
4010-9928	<b>For 1 bay control units only:</b> Dual Vertical Block Card Mounting Kit, allows selecting two, dual Vertical Block (flat) modules from the list below; mounts at right angle to chassis (note the block usage details)	Two vertical blocks (mounts in top bay, block space A and B only)	N/A	N/A
4010-9923 See note 1.	SafeLINC Internet Interface	2 Vertical Blocks	115 mA	115 mA

**Note:**

1. UL,ULC, and CSFM Listed.
2. For details on other dual vertical block network options refer to data sheets S4100-0029, S4100-0056, S4100-0057, *ES Net Network Applications, Communications, Options and Specifications (S4100-0076)*, and *Building Network Interface Card (BNIC) (S4100-0061)*.

## Additional control unit feature selection - block space is not used

**Table 12: Additional control unit feature selection - block space is not used**

Model	Features	Supervisory current	Alarm current	Mounting requirements
4010-9909	City Connect Module w/ disconnect switches	20 mA	36 mA	Mounts on Main System Supply (1 max)
4010-9910	City Connect Module	20 mA	36 mA	
4010-9911	Alarm Relay Module	15 mA	37 mA	
4100-5128	Battery Distribution Terminal Block, mounts to side of box. Required when battery connection leaves the 4010ES box. Also used in the 4100ES fire alarm control unit.			
Refer to data sheet <i>TrueInsight Remote Service Overview and Hardware Reference (S4100-0063)</i> and contact your local Simplex product representative for more details.				

## Network interface and network media card product selection

4010ES fire alarm control units are compatible with Simplex ES Net network or 4120 network fire alarm products.

- Refer to datasheet *ES Net Network Applications, Communications, Options and Specifications (S4100-0076)* for additional information on compatible ES Net fire alarm products.
- Refer to datasheet *4120 Network Applications, Communications, Options and Specifications (S4100-0056)* for additional information on compatible 4120 network fire alarm products.
- Refer to datasheet *Building Network Interface Card (BNIC) Models 4100-6047 and 4010-9914 (S4100-0061)* for additional information on the BNIC.
- Refer to datasheet *Connected Services Gateway - Central Station Communication and SafeLINC Cloud Services (S2080-0091)* for additional information on the Connected Services Gateway.

## Additional 4010ES and network product reference data sheets

**Table 13: Additional 4010ES and network product reference data sheets**

Title	Doc. number
Serial DACT (SDACT) for 4100ES, 4010ES, 4007ES	S2080-0009
Connected Services Gateway - Central Station Communication and SafeLINC Cloud Services	S2080-0091
Seismic Battery Brackets Reference	S2081-0019
4003EC Voice Control Unit	S4003-0002
4009 IDNet NAC Extender	S4009-0002
4009 IDNAC Repeater	S4009-0004
4010ES Extinguishing Release Applications	S4010-0005
4010ES Panels with Conventional Notification (INTL)	S4010-0006
4010ES Extinguishing Release Applications (INTL)	S4010-0007
InfoAlarm Command Center for the 4010ES Panels	S4010-0008
InfoAlarm Command Center for the 4010ES Panels (INTL)	S4010-0009
4010ES Panels with Addressable Notification	S4010-0011
4010ES Panels with Addressable Notification (INTL)	S4010-0012
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
NDU with SPS Power Supplies for 4120 Network	S4100-0036
InfoAlarm Command Center with SPS Power Supplies	S4100-0045
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
ES Net Network Products and Specifications	S4100-0076
NDU with EPS Power Supplies for 4120 Network	S4100-0102
NDU with EPS Power Supplies for ES Net	S4100-0104
NDU with ES-PS Power Supplies for 4120 Network	S4100-1036
Remote ES Touch Screen Displays for 4100ES and 4010ES Panels	S4100-1070
NDU with ES-PS Power Supplies for ES Net	S4100-1077
TrueSite Workstation	S4190-0016
TrueSite Incident Commander	S4190-0020
24-Pin Dot Matrix Fire Alarm System Remote Printer	S4190-0027
SCU/RCU Annunciators	S4602-0001
4606-9102 Remote LCD Annunciator	S4606-0002

### 4010ES card address allocation

The 4010ES has a maximum internal and external card address limit of 20 card addresses. Use [Table 14](#) to calculate 4010ES card address allocation.

1. For the applicable control unit, write in the Card Address Consumption value in the Card Address Allocation column. Select one control unit only.
2. For the option cards to be installed on the 4010ES, write in the Card Address Consumption value in the Card Address Allocation column.
3. Add together the numbers in the Card Address Allocation column. The total must not exceed 20.

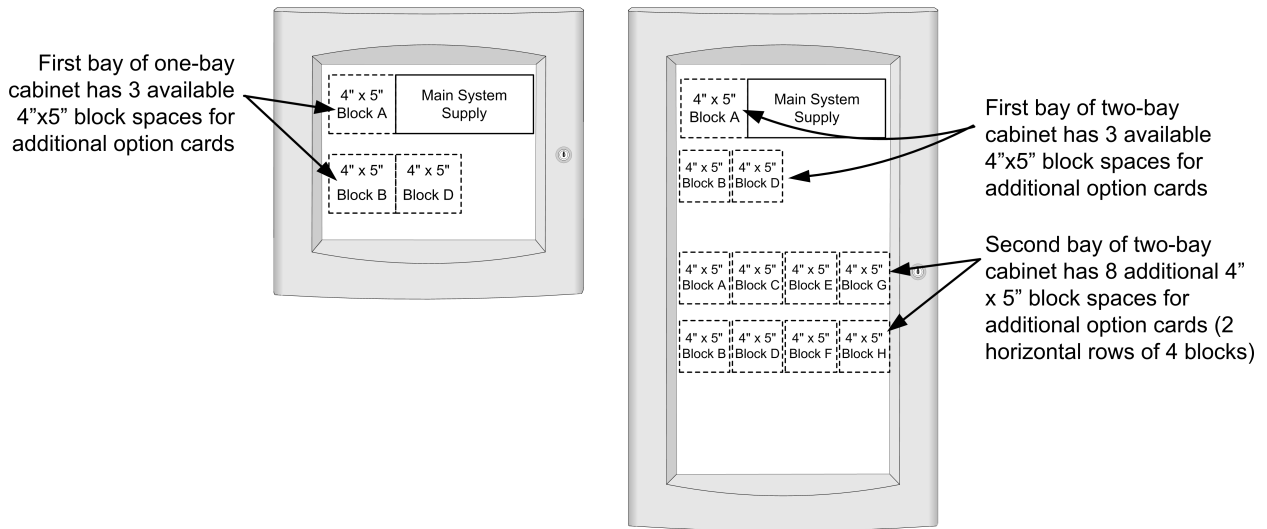
**Table 14: 4010ES card address allocation**

Model	Description	Card Address Consumption	Card Address Allocation
<b>Control units (select one)</b>			
4010-9401			
4010-9402	2x40 display, (1) IDNet 2 Communications Channel, 1-Bay box	2	
4010-9406			
4010-9404	2x40 Display, (1) IDNet 2 Communications Channel, 48 Pluggable LED Module, 1-Bay Box	3	
4010-9421			
4010-9422	2x40 Display, (1) IDNet 2 Communications Channels and one IDNet 2+2 Communications Channel, 2-Bay box	3	
4010-9422BA			
4010-9423			
4010-9428	2x40 Display, (1) IDNet2 Communications Channels and (1) IDNet 2+2 Communications Channel, 48 Pluggable LED Module, 2-Bay Box	4	
4010-9435	ES Color Touch Screen Display, (1) IDNet 2 Communications Channel and (1) IDNet 2+2 Communications Channel, 2-Bay Box	4	
<b>Control unit option cards (select as required)</b>			
4010-2504	Connected Services Gateway with IP communicator	1	
4010-9901	Flat VESDA HLI Card	1	
4010-9922	Flat 4120 Network Card	1	
4010-6310	Flat ES Net Network Interface Card	1	
4010-9912	Serial DACT	1	
4010-9923	SafeLINC Internet Interface Card	1	
4010-9914	Building Network Interface Card	1	
4010-9918	Dual RS-232 Module	1	
4010-9935	8 point zone/relay 4 in. x 5 in. flat module	1	
4010-9929	IDNet 2+2 Communications Module	1	
4010-9936	4-Point Auxiliary Relay Module with Feedback	1	
<b>Remote Annunciation (Select As Required)</b>			
4100-9404	Remote Red Cabinet	1	
4100-9405	ES Touch Screen Display Platinum Cabinet	1	
4606-9102	4010ES RUI LCD Annunciator, English	1	
4606-9102BA	4010ES RUI LCD Annunciator, English	1	
4606-9102CF	4010ES RUI LCD Annunciator, French	1	
4602-9101	Status Command Unit (SCU) LED Annunciator	1	
4602-9102	Remote Command Unit (RCU) LED Annunciator w/control	1	
4602-7101	Graphic I/O RCU/SCU Assembly for custom annunciator	1	
4602-7001	RCU for cabinet mount	1	
4602-6001	SCU for cabinet mount	1	
4100-7401	24 Point I/O Graphic Module (requires mounting cabinet)	1	
4100-7402	64/64 LED Switch Controller for custom annunciator	1	
4100-7403	32 Point LED Driver Module for custom annunciator	1	
4100-7404	32 Point Switch Input Module for custom annunciator	1	
	<b>Total Card Addresses (not to exceed 20)</b>	<b>TOTAL</b>	

**Note:** Products ending with BA are assembled in the USA.

**One-bay and two-bay cabinet loading reference**

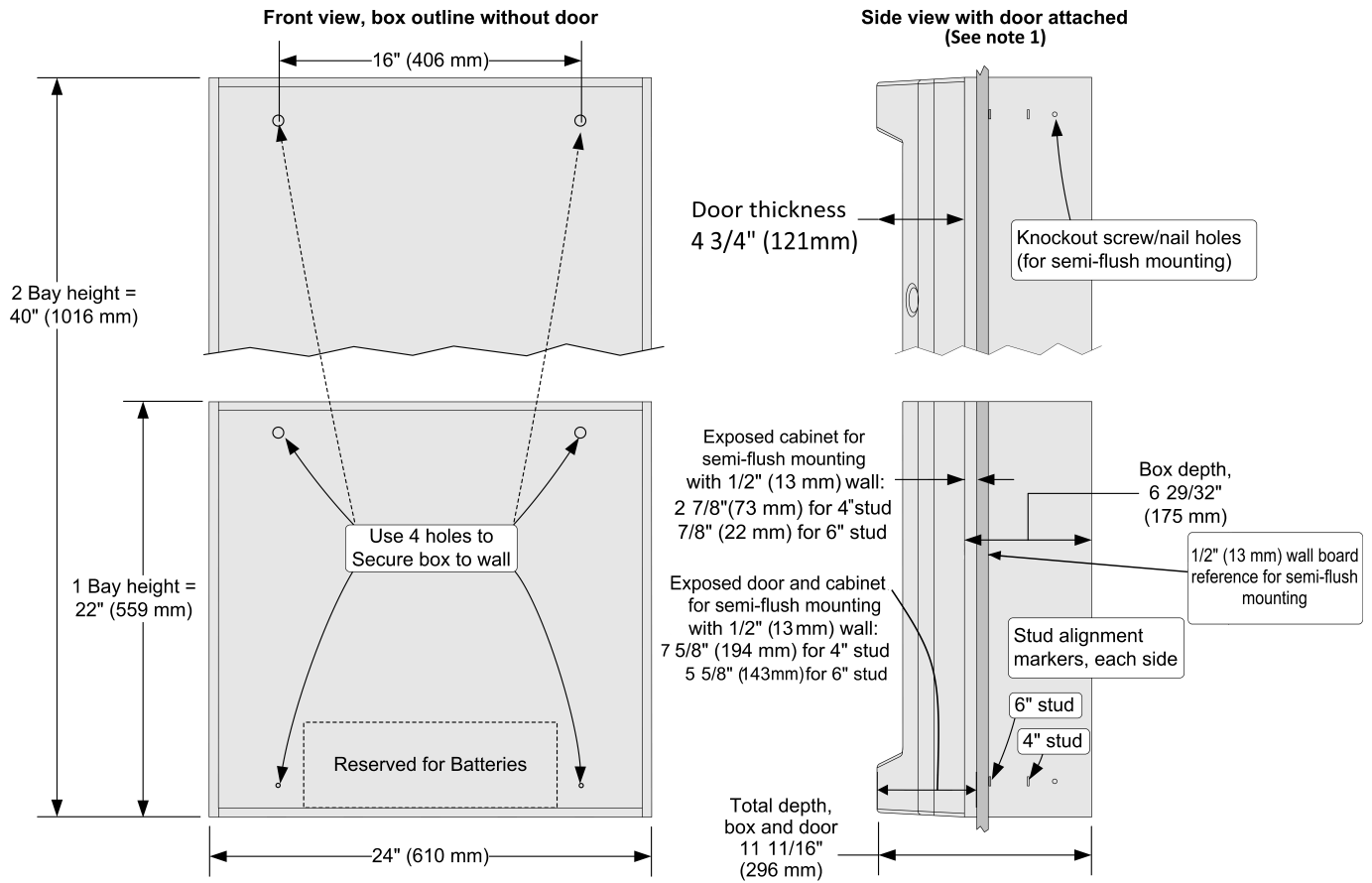
Figure 10: Loading reference



**Note:** Some spaces may be used by basic control unit features.

**Cabinet dimension reference**

Figure 11: Cabinet dimension reference



**Note:** 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.





## Features

- 120 VAC
- 10KA Short Circuit Current Rating
- ANSI/UL Listed 1449 4th Edition, Type 2
- CSA C22.2 No. 269.2-17 2nd edition, Type 2
- Acerbox ELOCK Circuit Lockout Kit included per NFPA 72 2013 10.6.5.2
- Surface or conduit mounting
- Diagnostic indicator light
- Self restoring
- 3 Wire device (18" length)

An ideal choice for your 120VAC applications, the E120V-GT maintains system integrity and protects against transients introduced into electrical lines via poor atmospheric and utility conditions as well as internally generated inductive loads.

Not only is the E-120V-GT robust enough to absorb a spike, but to also clamp long enough to trip the branch circuit breaker and still be functional for additional surges. Reduce downtime associated with power surges and lightning strikes, prevent interruption of recurring monthly revenue based systems, and eliminate non-billable service calls and expensive repairs by protecting your equipment with this invaluable device that satisfies NFPA72 10.6.5.5 and NFPA70 760.33.

## Applications

- Fire alarm control panels
- Mass notification systems
- Dedicated branch circuits
- Amplifiers, motors, pumps, and power boosters

## Specifications

All 120 VAC equipment will have Transient Voltage Surge Suppression (TVSS) protection manufactured by Space Age Electronics, Inc., part number E120V-GT. The unit shall be ANSI/UL listed to standard 1449, 4th edition and will be labeled clearly with indelible ink. Can be attached via the 3/4" rigid coupling, or surface mounted via the 2 external mounting holes. The unit shall have thermal fuses to protect against fire in short circuit conditions and will have 18" long, 14 gauge wires (3x) with a green ground wire. The enclosure will be a non dielectric material UL94 QMFZ2/8 grade material providing UV protection. The unit shall provide visual indication (LED) that unit is protecting and functioning.



## Performance Specifications

**Short Circuit Current Rating (SCCR):** 10kA  
**Enclosure Material:** UL94 QMFZ2/8 (green)  
**VPR=700 (L-N) 700 (L-G) 600 (N-G) Capacitance:** < 2,000 pf  
**Clamping Response Time:** < 5 nanoseconds  
**Current:** Non-Load Bearing  
**Max Operating Voltage (MCOV):** 140VAC, 50/60 Hz  
**Design:** Thermally Fused Hybrid  
**Operation Indicators:** LED  
**Max Surge Current:** 25kA  
**Energy Dissipation:** 500J  
**Clamping Voltage:** 230V RMS

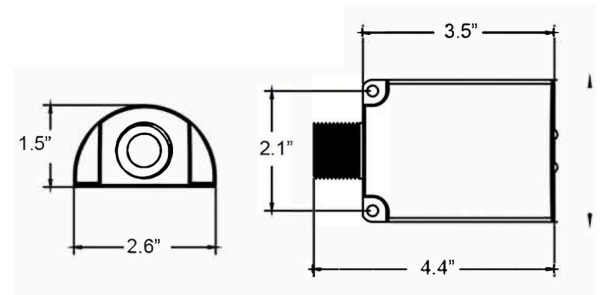
## Operating Specifications

**Service Voltage:** 120VAC Single Phase  
**Circuits Protected:** L-N L-G N-G  
**Connection Type:** Hardwired  
**Installation Configuration:** Parallel

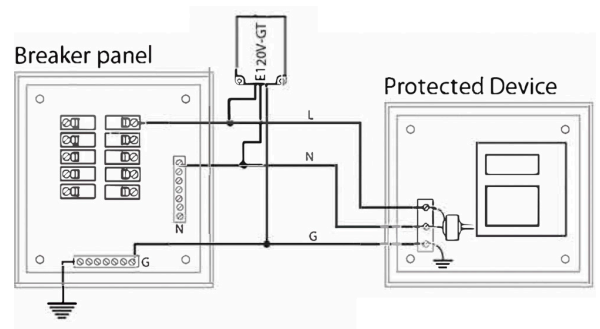
## Compliance Specifications

**UL Listed:** 1449 4th Edition - VZCA  
**File Number:** E319370 Vol. 1 Sec. 1

## Dimensions



## Wiring Diagram



## Ordering Information

**P/N# E120V-GT**  
120V Hybrid Surge Protection Device (ELOCK Circuit Lockout Kit included)

**P/N# ELOCK-FA**  
Acerbox ELOCK Circuit Lockout Kit

#### Features

##### Rechargeable, sealed lead-acid batteries:

- Lead-calcium grid structure with immobilized electrolyte in absorbent separator
- Low maintenance with no need to add water
- Low self-discharge characteristics
- One-piece, high-impact polystyrene cell cover with high reliability dual-seal construction
- UL 924 recognized pressure relief valves

##### Available in a variety of capacities:

- Batteries for internal mounting range from 6.2 Ah to 50 Ah, depending on control panel cabinet size
- Larger batteries, up to 110 Ah, mount in external battery cabinets with models available with internal chargers

##### Battery cabinets with chargers:

- Battery cabinets with charger communicate with their connected fire alarm control panel and are available for 4100ES/4010ES/4100U Series and 4010 Series panels

#### Description

Simplex rechargeable sealed-lead acid batteries provide reliable and repeatable discharge and recharge characteristics for use in fire alarm and other systems applications. They are designed with immobilized electrolyte in an absorbent separator, allowing them to provide rated capacity on the first cycle.

Because of their sealed construction, packaging is possible within the system electronics enclosure (see Figure 3). When this is applicable, the quantity of system cabinets and the battery wiring distances are minimized. Where required, external battery cabinets can be close-nipped to the control panel to house larger batteries with battery chargers available in some battery cabinet sizes.

#### Battery details

**Charging:** These batteries are for use with compatible Simplex battery chargers.

**Series connections:** Connect the batteries in series to produce 24 V system voltage. Battery sets must be of identical voltage, model number, appearance, and approximately the same date of manufacture for proper operation.

**Testing:** Perform battery capacity testing by using a sealed lead-acid battery tester to withdraw a minimum of battery charge. Testing is available through your local Simplex product supplier.

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

**Disposal:** Battery chemicals and materials can be recycled. Refer to information shipped with the battery or on its case. Return to the manufacturer or to a similarly qualified battery processing facility for proper disposal.

**Seismic activity applications:** Battery brackets are available for systems tested for compliance with specific batteries. Refer to data sheet *S2081-0019* for details.

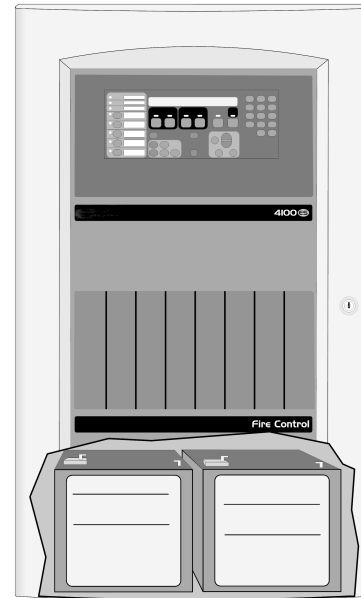


Figure 1: Compatible sealed lead-acid batteries can be installed inside fire alarm control panel cabinets

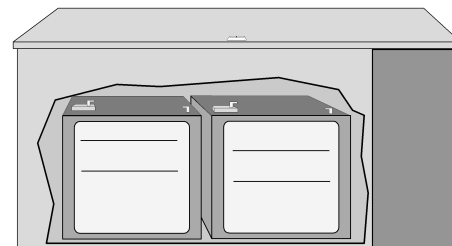


Figure 2: Remote battery cabinets are available for larger battery requirements

\* Refer to page 4 for battery charger and cabinet agency listings. The batteries detailed in this document meet the requirements of UL, ULC, and Factory Mutual for use with respective equipment battery chargers as listed below. Contact your local Simplex product supplier for proper battery selection per system requirements. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Fire Protection Products.

### Battery construction reference

Actual appearance will vary with battery size.

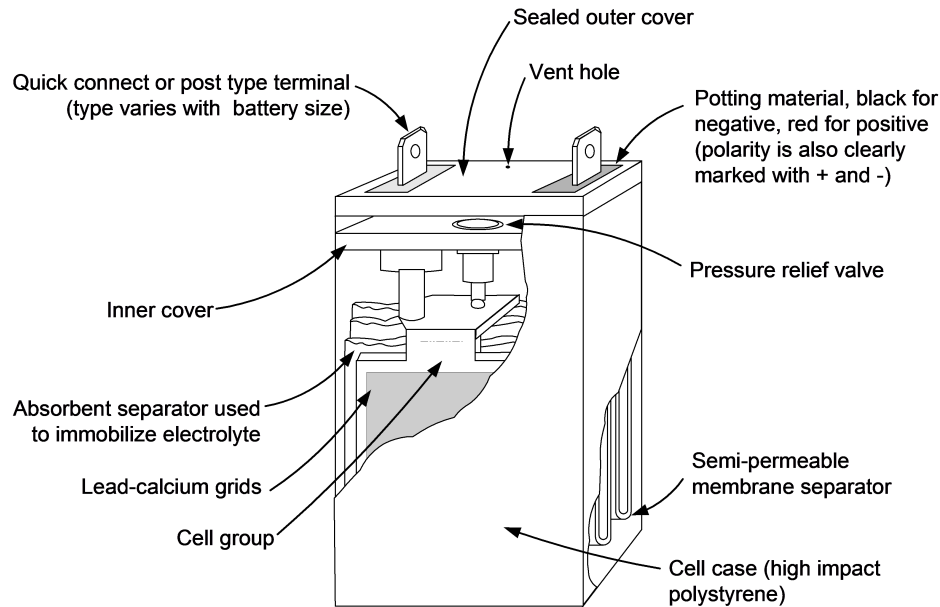


Figure 3: Battery construction reference

### Battery size specifications

Battery model	Capacity at 20 hour discharge rate	Width*	Depth*	Height with terminals	Approximate weight*
2081-9272	6.2 Ah	6 1/8 in. (156 mm)	2 5/8 in. (67 mm)	4 in. (102 mm)	5 3/4 lb (2.6 kg)
2081-9274	10 Ah	6 in. (153 mm)	4 1/16 in. (103 mm)	4 in. (102 mm)	9 1/5 lb (4.2 kg)
2081-9288	12.7 Ah	6 in. (153 mm)	4 in. (102 mm)	4 in. (102 mm)	9 lb (4.1 kg)
2081-9275	18 Ah	7 1/4 in. (184 mm)	3 3/8 in. (86 mm)	6 5/8 in. (168 mm)	14 3/10 lb (6.5 kg)
2081-9287	25 Ah	6 5/8 in. (168 mm)	5 in. (127 mm)	7 in. (178 mm)	19.4 lb (8.8 kg)
2081-9271 (rectangular case, typically for service)	33 Ah	12 1/2 in. (318 mm)	3 3/8 in. (86 mm)	7 1/16 in. (179 mm)	26 6/10 lb (12.1 kg)
2081-9276 (square case, use for new)	33 Ah	7 3/4 in. (197 mm)	5 1/4 in. (133 mm)	6 3/4 in. (171 mm)	26 1/2 lb (12 kg)
2081-9296	50 Ah	9 in. (229 mm)	5-1/2 in. (140 mm)	8 7/8 in. (225 mm)	41.8 lb (19 kg)
2081-9279	110 Ah	11 3/8 in. (284 mm)	10 1/2 in. (267 mm)	9 in. (230 mm)	82 lb (37 kg)

\* Dimensions and weight are per battery and are for reference only. Exact size may vary. Refer to [Battery compatibility for fire alarm control panel mounting](#) and [External battery cabinet compatibility reference](#) for mounting compatibility. Batteries are 12 V each and connected in series for 24 V system use.

**Note:** When wired in series for 24 V output, these batteries are to be of identical voltage, appearance, model number, and approximately the same date of manufacture.

### General battery specifications

Specifications	
Nominal Voltage Rating	12 V
Discharge Rating	20 hour rate
Typical Charge/Discharge Cycles	100 cycles to 150 cycles
Preferred Charge Temperature Range	60°F to 90°F (15.6°C to 32.2°C)

## Battery compatibility for fire alarm control panel mounting

**Note:** Refer to individual fire alarm control panel product data sheets for additional battery application information

**Table 1: Battery compatibility for fire alarm control panel mounting**

Simplex control panel model series										
Battery Model	Capacity	4003EC	4004R	4007ES & 4005	4006 & 4008	4009 (all models)	4010	4010ES	4100ES/4100U	4100 & 4120 (2, 4 or 6-Unit)
2081-9272	6.2 Ah	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2081-9274	10 Ah	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2081-9288	12.7 Ah	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2081-9275	18 Ah	Ext	Note 3	Yes	Ext	Ext	Note 2	Yes	Yes	Yes
2081-9287	25 Ah	Ext	Note 3	Ext	Ext	N/A	Yes	Yes	Yes	Yes
2081-9271 rectangular	33 Ah	Ext	Note 3	Ext	N/A	N/A	Note 3	Yes	Yes	Ext
2081-9276 "square"	33 Ah	Ext	Note 3	N/A	N/A	N/A	Note 3	Yes	Yes	Yes
2081-9296	50 Ah	N/A	Note 3	N/A	N/A	N/A	Note 3	Note 4	2 or 3 bay	Ext
2081-9279	110 Ah	Requires external battery cabinet, compatible with 4100ES, 4010ES, 4100, and 4120 Series only								

**Yes** = Can be placed in the respective equipment cabinet

**Ext** = External battery cabinet is required, refer to selection chart on page 4

**N/A** = Not applicable/not compatible

**Note:**

1. These batteries meet the requirements of UL, ULC, and Factory Mutual for use with respective equipment battery chargers listed above. Contact your local Simplex product supplier for proper battery selection per system requirements.
2. 4010 Cabinets will accommodate 2081-9275, 18 Ah batteries, but will not allow bottom entry conduit.
3. Use 4081 series companion cabinet and charger, refer to [External battery cabinet specification reference](#).
4. For two bay cabinets only, 50 Ah batteries will fit in the cabinet.

## External battery cabinet compatibility reference

**Table 2: External battery cabinet compatibility reference**

Battery cabinets without chargers (connects to charger in panel)							
Cabinet	Panel compatibility	Battery					
		2081-9275 18 Ah*	2081-9287 18 Ah*	2081-9271 Rectangular 33 Ah	2081-9276 Square 33 Ah	2081-9296 50 Ah	2081-9279 110 Ah
2081-9280	4100ES, 4010ES, 4100U, and 4100+	N/A	N/A	N/A	N/A	N/A	Yes
2081-9281	multiple	Yes	Yes	Yes	Yes	Yes	N/A
2081-9282		Yes	Yes**	N/A	N/A	N/A	N/A
4009-9801	multiple	Yes	Yes**	N/A	N/A	N/A	N/A
4009-9802	multiple	Yes	N/A	Yes	N/A	N/A	N/A

**Table 3: External battery cabinet compatibility reference**

Battery cabinets with chargers							
Cabinet	Panel compatibility	Battery					
		2081-9275 18 Ah*	2081-9287 18 Ah*	2081-9271 Rectangular 33 Ah	2081-9276 Square 33 Ah	2081-9296 Square 50 Ah	2081-9279 110 Ah
4081-9301	4004R and 4010	Yes	Yes	Yes	Yes	Yes	N/A
4081-9302		N/A	N/A	N/A	N/A	Yes	Yes
4081-9306	4100ES, 4010ES and 4100U	N/A	N/A	N/A	N/A	Yes	Yes
4081-9308		N/A	N/A	N/A	N/A	Yes	Yes

\* Batteries smaller than those listed are normally mounted in the product cabinet

\*\* 25 AH capacity is effective as of 7/2005

**Yes** = Can be placed in the respective equipment cabinet

**N/A** = Not applicable/not compatible

## External battery cabinet specification reference

**Table 4: Battery cabinets without chargers; shallow design with front door**

Model	Color	Listings	Description		Dimensions
2081-9281	Beige	UL and CSFM	2-Unit, 4100 style cabinet without charger; with locking solid door and battery shelf, primarily for use with 50 Ah batteries		25 3/4 in. W x 20 3/4 in. H x 6 3/4 in. D (654 mm x 527 mm x 171 mm)
2081-9282	Red	UL			
4003-9860*	Beige	FM	For use with 4003EC systems, for batteries up to 33 Ah (refer to 4003EC data sheet S4003-0002)		9 1/2 in. H x 24 in. W x 9 in. D (241 mm x 610 mm x 229 mm)
4009-9801*	Beige	UL, ULC, and FM	For batteries up to 25 Ah	External battery cabinet without charger, with locking solid door and battery harness; for close-nippled mounting to fire alarm control panel cabinet	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)*
4009-9802	Beige	N/A	For batteries up to 33 Ah		25 3/4 in. W x 20 3/4 in. H x 4 1/8 in. D (654 mm x 527 mm x 105 mm)

\* Depth increased for 25 Ah batteries effective 7/2005.

**Table 5: Battery cabinet without charger; deep design with hinged lid**

Model	Color	Listings	Description	Dimensions
2081-9270	Red	UL	Battery cabinet without charger; cabinet has vented front, and hinged lid with support rod and lock on top	26 1/2 in. W x 12 in. H x 12 in. D (673 mm x 305 mm x 305 mm)

**Table 6: Chargers for use with 4010 fire alarm control panels and 4004R suppression release systems (refer to data sheet S4081-0001)**

Model	Color	Listings	Input voltage	Description	Dimensions
4081-9301	Beige	UL and FM	120 VAC	Battery cabinet with charger for the 4010 and 4004R fire alarm control panel; for batteries up to 50 Ah; with front door	22 1/2 in. W x 16 3/4 in. H x 8 3/8 in. D (572 mm x 425 mm x 213 mm)
4081-9302	Red				

**Table 7: Battery cabinet without charger for 110 Ah batteries; for use with compatible panel mounted chargers (refer to data sheet S2081-0012)**

Model and listing	Color	Listings	Cabinet description	Compatible chargers	Charger description	Dimensions
2081-9280	Red	UL, ULC, CSFM	Battery cabinet without charger for 2081-9279, 110 Ah batteries; includes 80 A battery fuse, terminals and battery connection cables; see data sheet for details	4100-9xxx Series	4100ES/4100U Power Supplies for Master Controller/CPU Bays	26 1/2 in. W x 12 in. H x 12 in. D (673 mm x 305 mm x 305 mm)
				4100-5401	4100ES Additional ES Power Supply (ES-PS)	
				4100-5111	4100ES/4100U Additional SPS	
				4100-5311	4100ES Additional EPS+	
				4100-5313	4100ES Additional EPS	
				4100-5325	4100ES Additional EPS	
				4100-5327	4100ES/4100U Remote Power Supply (RPS)	
				4100-5125	4100ES/4100U Remote Power Supply (RPS)	
				4100-5127	4100ES/4100U TrueAlert Addressable Power Supply (TPS)	
				4100-5120	4100ES/4100U TrueAlert Addressable Power Supply (TPS)	
				4100-0104	4100 legacy power supplies	
4100-0114						
4100-0124						

**Table 8: Battery cabinet without charger for 110 Ah batteries; for use with compatible panel mounted chargers (refer to data sheet S2081-0012)**

Model	Color	Listings	Input voltage	Description	Dimensions
4081-9306	Red	UL, ULC, FM, MEA (NYC)	120 VAC	Battery cabinet with charger for batteries up to 110 Ah	27 7/8 in. W x 13 1/2 in. H x 14 5/8 in. D (708 mm x 343 mm x 371 mm)
4081-9308	Red	UL, ULC, FM	220/230/240 VAC, multi-tapped		
4100-9837	Green LED Power-on Indicator Kit, required for ULC listing, mounts above access panel using knockout provided				

**Features**

**Remote LCD annunciator for use with Simplex® model 4010, 4006, and 4008 fire alarm control panels**

**LCD readout provides:**

- Two lines of 40 characters each
- Wide viewing angle, super-twist design
- LED backlighting

**Control switches and status LEDs for:**

- Alarm, supervisory, or trouble acknowledge (keyswitch access controlled)
- Alarm silence
- System reset

**Three programmable LED indicators:**

- Two LEDs are selectable as red or yellow
- One LED is selectable as green or yellow
- With provisions for custom labeling

**Additional features:**

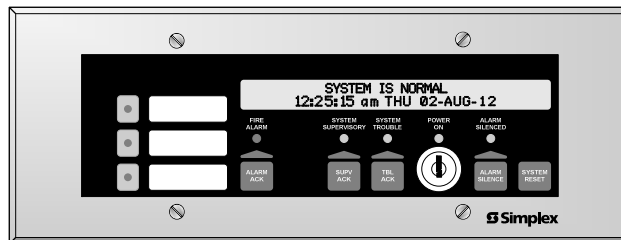
- Information is transmitted over a single twisted, shielded pair; separate wiring is required for 24 VDC control panel power
- Tone-alert sounder provides local audible indication
- Lamp and LCD are functionally tested each time the keyswitch is turned on
- Mounts flush on standard 6-gang electrical box

**Mounting and trim options:**

- Surface mount box model 2975-9206 (ordered separately, see additional information on page 3)
- Brushed stainless steel trim model 4603-9111 (ordered separately)

**Description**

**Local Annunciation.** 4606-9101 LCD Annunciators allow compatible fire alarm control panels to provide information and control switches at convenient locations away from the control panel. The LCD is an 80 character, back-lit, alphanumeric display with information presented in clear and descriptive English. Typical content includes: point status (alarm, trouble, etc.), alarm type (smoke detector, manual station, etc.), number of system alarms, supervisory conditions, troubles, and custom location labels up to 40 characters long. (Some 4006/4008 messages are limited to 20 characters, refer to the control panel documentation for additional information.)

**4606-9101 LCD Annunciator****Description (Continued)**

**Communications.** Data communications require a single twisted, shielded pair that supports other annunciators on the same communications channel. Model 4010 Series panels control up to six annunciators; model 4006 and 4008 Series panels control up to four annunciators.

**Indications.** Alarm, Supervisory, and Trouble conditions are also indicated by dedicated LEDs and a tone-alert audible indication. 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.

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

**Operation**

**Keyswitch Access.** All switches on the annunciator are controlled by the "ENABLE" keyswitch with a key that is removable only in the disabled position.

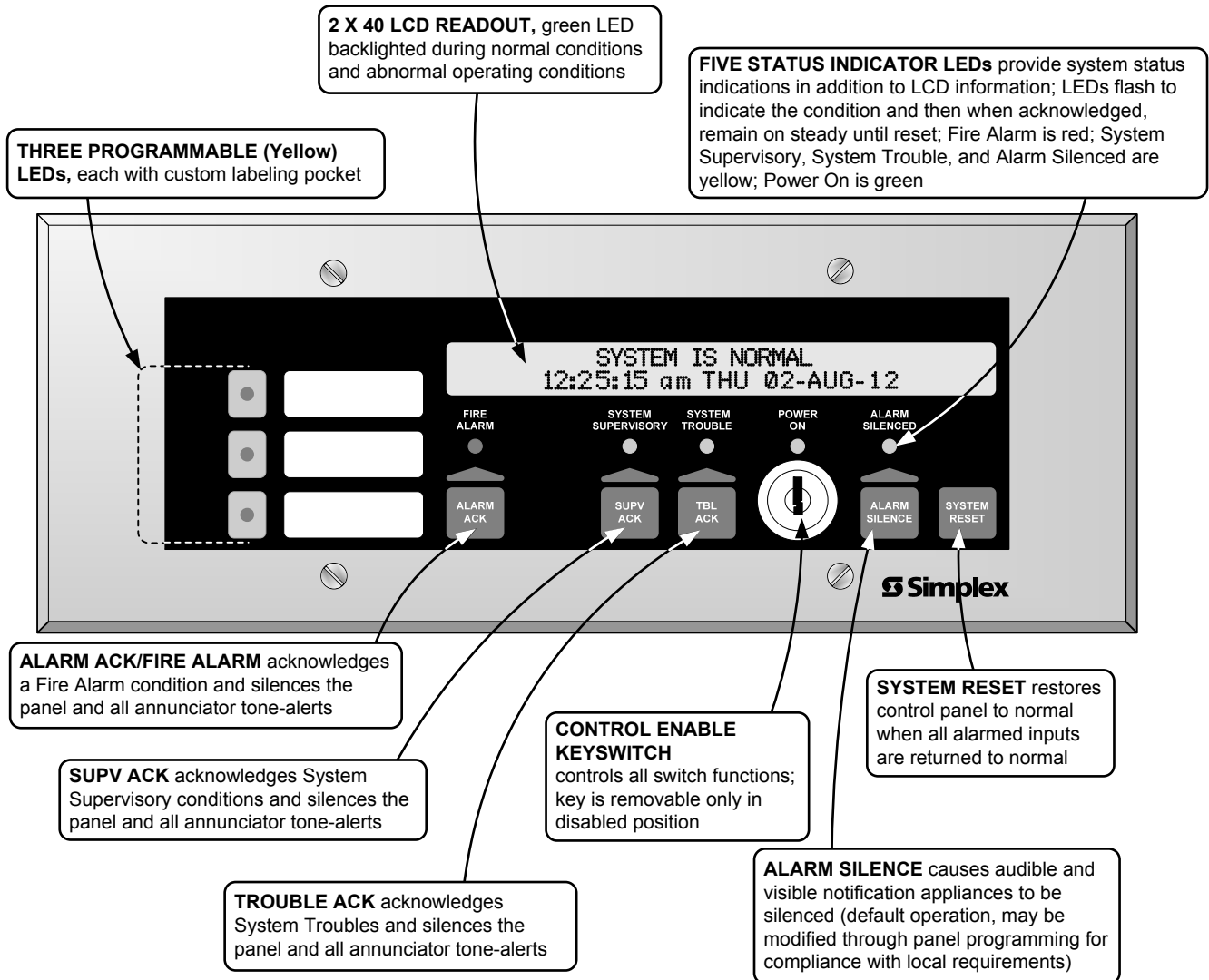
**Enabled Operations.** When enabled, notification appliances can be deactivated by pressing the "ALARM SILENCE" switch. Pressing the "SYSTEM RESET" switch restores the system to normal operation. When system activity is normal, the LCD displays the time, date, and "SYSTEM IS NORMAL."

\* 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 7120-0026:0225 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	
4606-9101	Remote LCD Annunciator with beige trim	Refer to specifications on page 3 for additional details
4603-9111	Brushed stainless steel trim option	
2975-9206	Matching surface mount box; ivory finish	
4081-9011	Line matching resistor harness; 100 Ω, 1/2 W; (reference no. 733-974)	
2081-9044	Overvoltage protector; required where annunciator communications and power wiring exits and enters a building; refer to data sheet S2081-0016 for details	

## 4606-9101 Operator Information



## 4606-9101 LCD Annunciator Specifications

### General Operating Specifications (refer to Installation Instructions 579-978 for additional information)

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

For 4010 Panels*	Type	N2 external annunciator communications line	
	Capacity	Up to 6 annunciator modules total, 4606-9101 or 4605 series, 24 point I/O modules	
For 4006 & 4008 Panels*	Type	N2 communications format but with different capacity	
	Capacity	Up to 4 annunciator modules total; compatible with 4606-9101, 4610-9111, and door mounted LED annunciator	
Wiring Requirements	Data	Single twisted, shielded pair, 18 AWG (0.82 mm <sup>2</sup> )	
	Power and Earth	18 to 12 AWG (0.82 mm <sup>2</sup> to 3.31 mm <sup>2</sup> ) wires for 24 VDC system power and Earth ground for electrical box (ground per local code)	
Distance	Bus-style wiring	Up to 4000 ft (1219 m); 0.58 µF (580 nF) maximum capacitance; 35 Ω maximum resistance	
	"T-Tap" wiring	Up to 10,000 ft (3048 m) total wiring; up to 2500 ft (762 m) to farthest device	
Line Matching Resistor	Bus-style wiring	Connect one at panel and one at end of line	100 Ω, 1/2 W; PID 4081-9011; (part number 733-974)
	"T-Tap" wiring	Connect one at panel and one at farthest device	

### Mounting Information

Trim Dimensions	4 ½" H x 11 13/16" W (114 mm x 300 mm)		
Assembly Depth	1 5/16" (33 mm), 1 ½" at terminal block location (38 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)	Masonry boxes	Six-gang box, Steel City GW-635-G, 3 ½" (89 mm) deep or equal	
	Single gang boxes	Six, single gang boxes, 3 ½" (89 mm) deep minimum, RACO # 590 or equal	
	Box selection note	Conduit entrance is box dependent, refer to additional mounting information on page 4 and Installation Instructions 579-978	

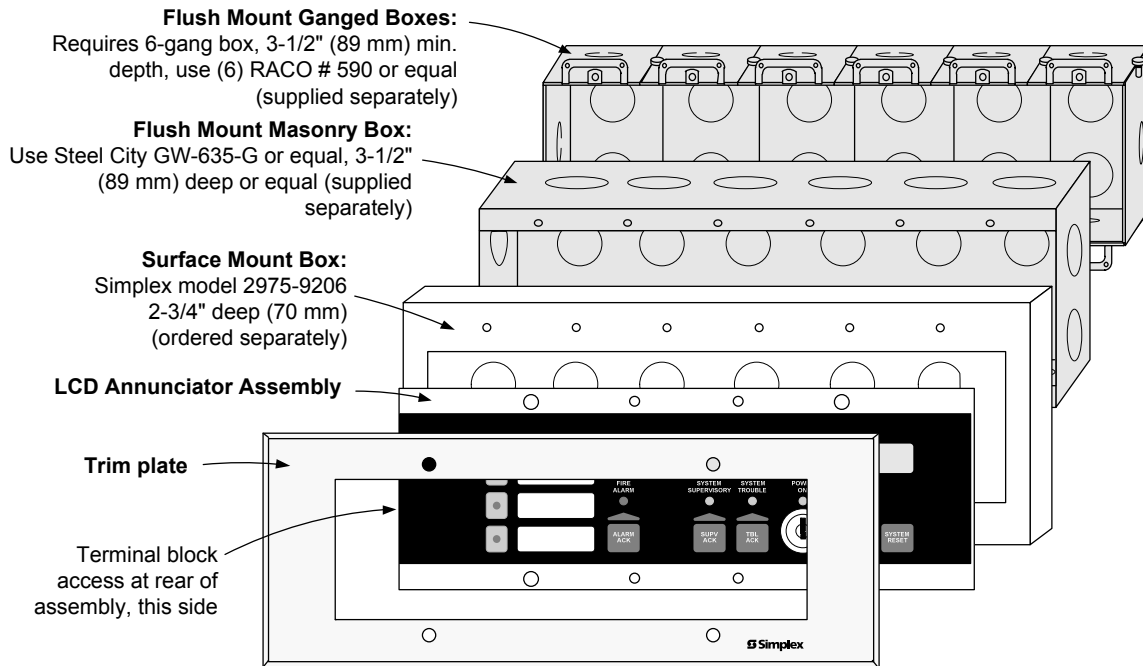
### 2975-9206, Surface Mount Box Option (ordered separately)

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

\* Refer to control panel data sheets S4010-0001, S4006-0001, and S4008-0001 for additional information.

## Mounting Information

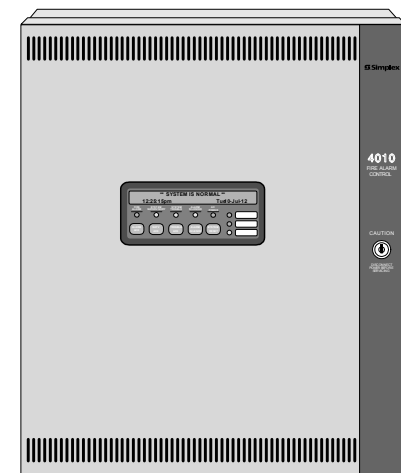
**Note:** Review box choice with assembly layout before selecting conduit entrance location to allow easy access to terminals



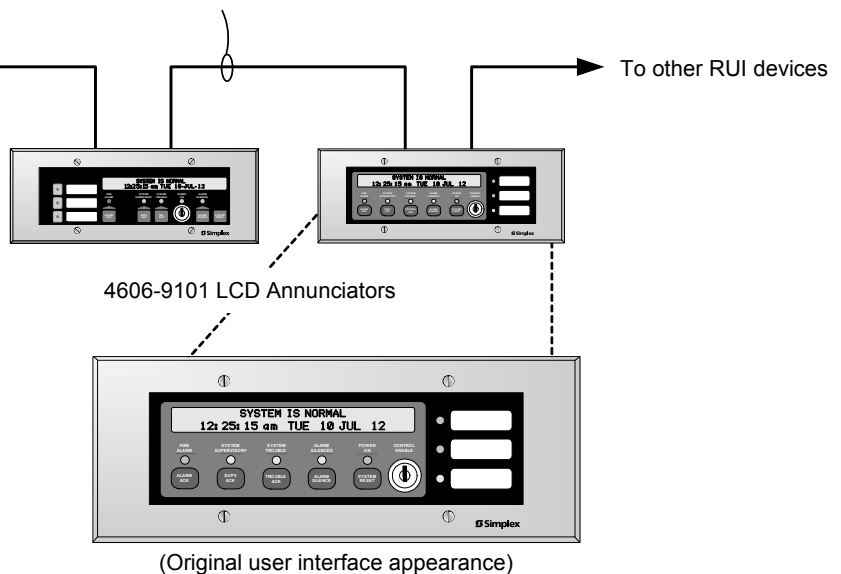
## Wiring Reference

### Interconnection Wiring Notes:

1. Communications require a single 18 AWG twisted, shielded 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 579-978 for additional information.



4010/4006/4008 Fire Alarm Control Panel  
(4010 shown for reference)



TYCO, SIMPLEX, and the product names listed in this material are marks and/or registered marks. Unauthorized use is strictly prohibited.



Tyco Fire Protection Products • Westminster, MA • 01441-0001 • USA  
www.simplexgrinnell.com

S4606-0001-8 8/2016

© 2016 Tyco Fire Protection Products. All rights reserved. All specifications and other information shown were current as of document revision date and are subject to change without notice.

## Features

### Individually addressable manual fire alarm stations with:

- Power and data supplied by IDNet or MAPNET II addressable communications using a single wire pair
- Operation that complies with ADA requirements
- Visible LED indicator that flashes during communications and is on steady when the station has been activated
- The NO GRIP Single Action Station and Retrofit Kit are available with a more easily operated pull lever for applications where anticipated users may find the standard station lever difficult to activate
- Pull lever that protrudes when alarmed
- Break-rod supplied (use is optional)
- Models are available with single or double action (breakglass or push) operation
- UL listed to Standard 38
- NEMA 1 rated. See [Addressable manual station product selection](#) for more information.

### Compatible with the following Simplex control panels:

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

### Compact construction:

- Electronics module enclosure minimizes dust infiltration
- Allows mounting in standard electrical boxes
- Screw terminals for wiring connections

### Tamper resistant reset key lock, keyed same as Simplex fire alarm cabinets.

### Multiple mounting options:

- Surface or semi-flush with standard boxes or matching Simplex boxes
- Flush mount adapter kit
- Adapters are available for retrofitting to commonly available existing boxes

## Description

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

## Operation

**Activation** of the 4099-9004 single action manual station requires a firm downward pull to activate the alarm switch. Completing the action breaks an internal plastic break-rod which is visible below the pull lever, use is optional. The use of a break-rod can be a deterrent to vandalism without interfering with the minimum pull requirements needed for easy activation. The pull lever latches into the alarm position and remains extended out of the housing to provide a visible indication.

**Single Action NO GRIP Station 4099-9021.** For applications such as California Building Code, Title 24, which requires "Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist" the model 4099-9021 station provides a more easily operated pull lever compared to standard stations. Retrofit of existing stations is available using the 4099-9805 Retrofit kit.

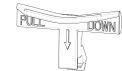
**Double Action Stations (Breakglass)** require the operator to strike the front mounted hammer to break the glass and expose the recessed pull lever. The pull lever then operates as a single action station.



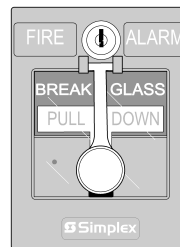
4099-9004  
Single action



4099-9021 NO  
GRIP Single action



4099-9805 NO  
GRIP Retrofit kit



4099-9005 Breakglass



4099-9006 Push



With 2099-9828  
Institutional Cover kit

**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 you use the break-rod, you must replace it.

**Station testing** is performed by physical activation of the pull lever. You can also perform electrical testing by unlocking the station housing to activate the alarm switch.

## Specifications

Refer to 4099 MAPNET II/ IDNet Addressable Manual Pull Station with LED Installation Instructions 579-1135 for additional information.

**Table 1: Specifications**

Specification	Rating
<b>Power and communications</b>	IDNet or MAPNET II communications, 1 address for each station
<b>Address means</b>	DIP switch, 8 position
<b>Wire connections</b>	Screw terminal for in/out wiring, for 18 AWG to 14 AWG wire (0.82 mm <sup>2</sup> to 2.08 mm <sup>2</sup> )
<b>UL listed temperature range</b>	32°F to 120°F (0°C to 49°C) intended for indoor operation
<b>Humidity range</b>	Up to 93% RH at 100°F (38°C)
<b>Housing color</b>	Red with white raised lettering
<b>Material</b>	Housing and pull lever are Lexan polycarbonate or equal
<b>Pull lever color</b>	White with red raised lettering
<b>Housing dimensions</b>	5 in. H x 3 3/4 in. W x 1 in. D (127 mm x 95 mm x 25 mm)

## Addressable manual station semi-flush mounting

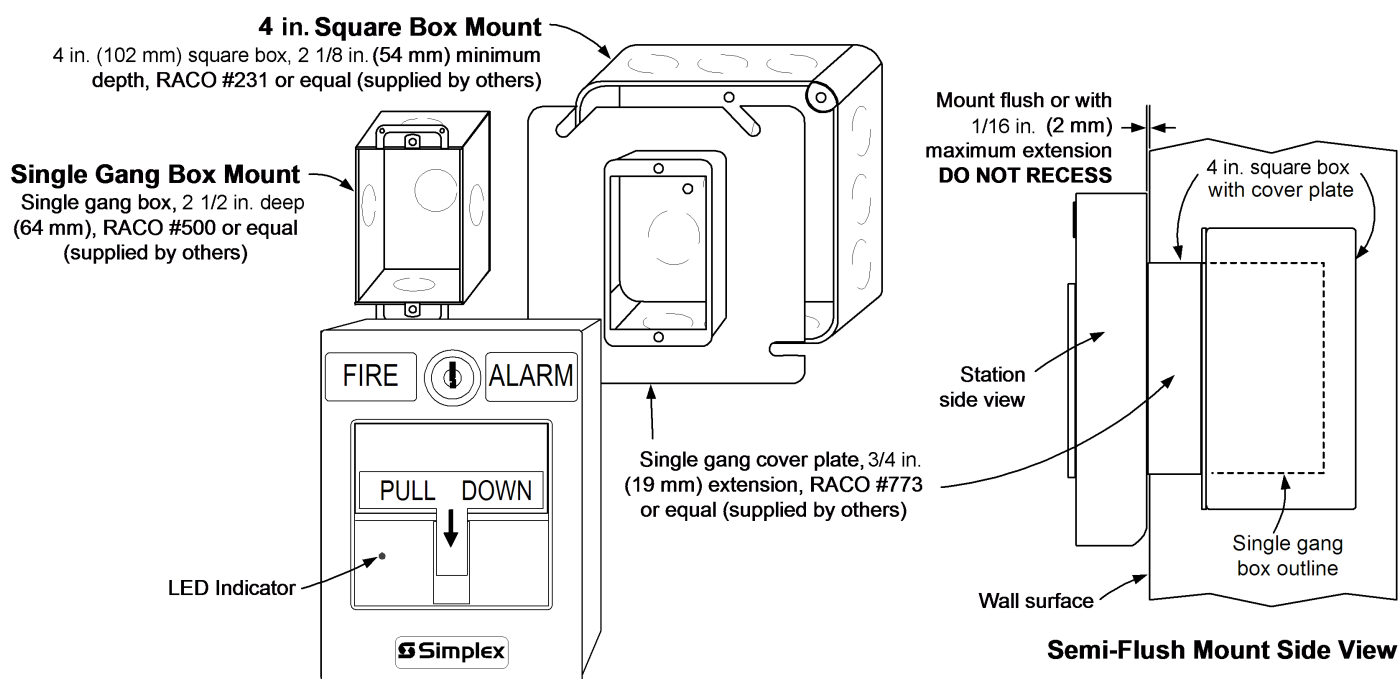


Figure 1: Addressable manual station semi-flush mounting

**Addressable manual stations surface mounting**

**Preferred mounting.** For surface mounting of these addressable manual stations, the preferred electrical boxes are shown in Figure 2.

**Additional mounting reference.** See [Addressable manual station, additional mounting information](#) for Wiremold box mounting compatibility.

Figure 2 shows the 2975-9178 box and the 2975-9022 cast box.

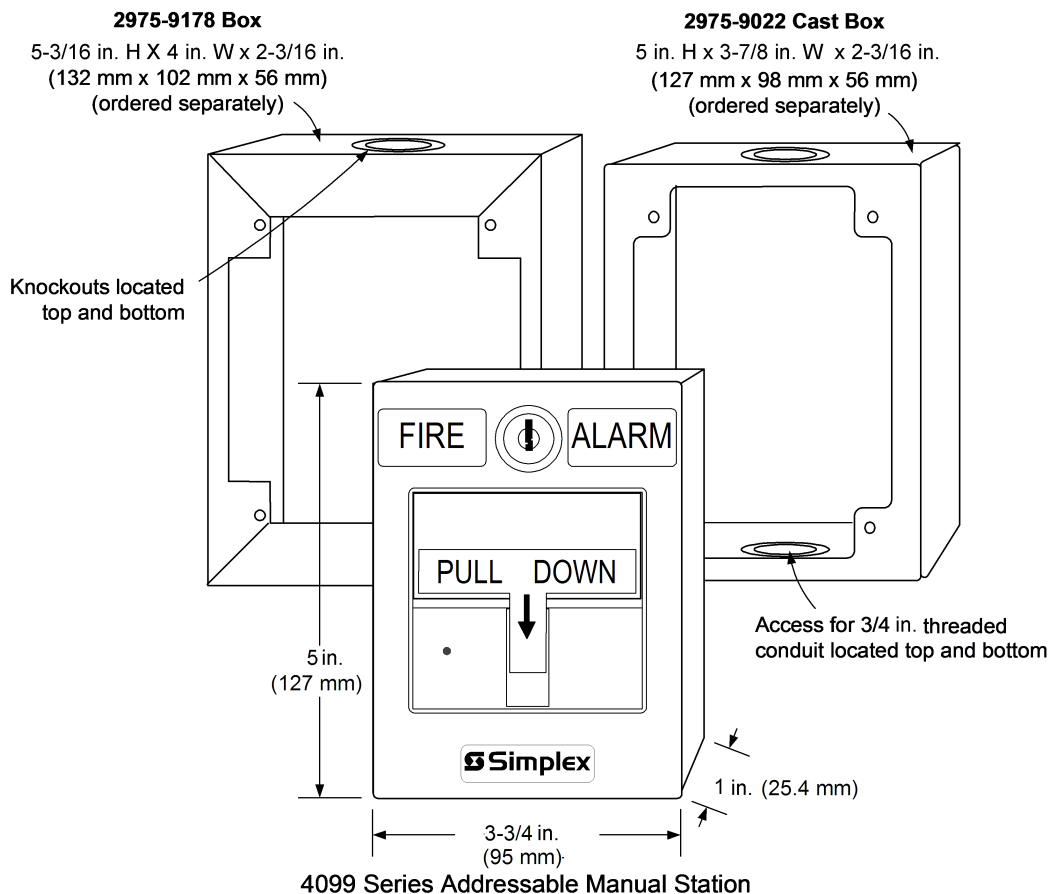


Figure 2: 4099 Series addressable manual station

**Surface mount side view with internal detail**

Figure 3 shows the 2975-9178 box.

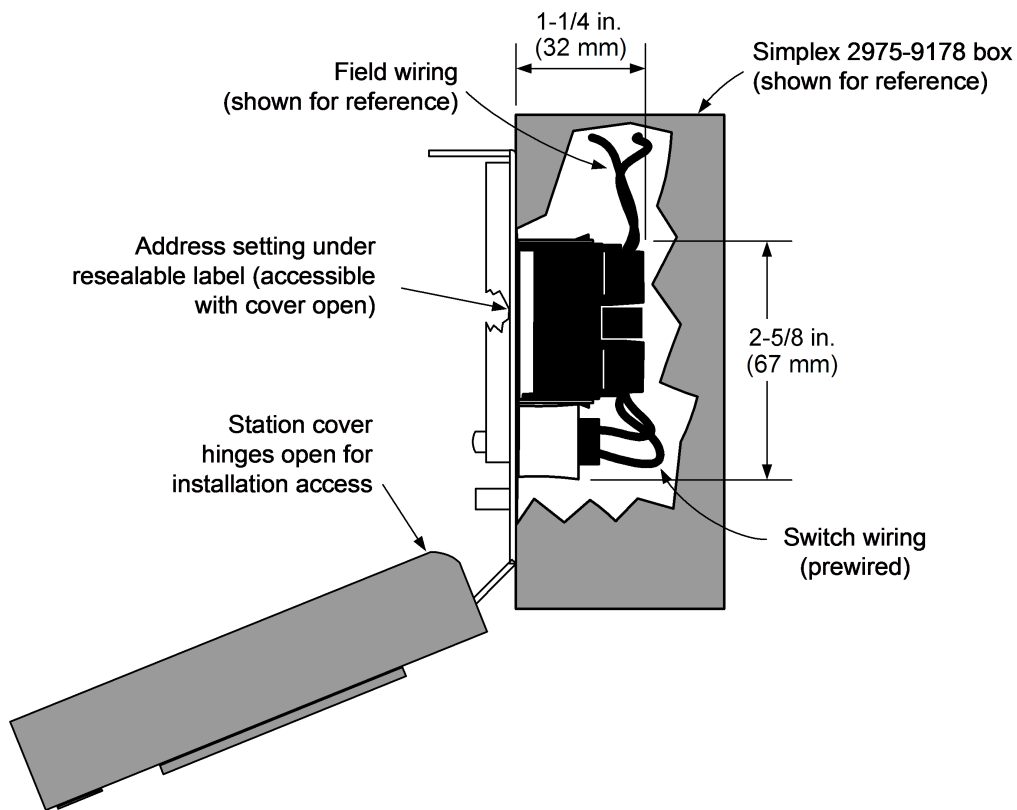


Figure 3: Surface mount side view with internal detail

**Application reference**

Refer to NFPA 72, the *National Fire Alarm and Signaling Code*, and all applicable local codes for complete requirements for manual stations. The following summarizes the basic requirements:

1. Stations shall be located in the normal path of exit and distributed in the protected area such that they are unobstructed and readily accessible.
2. Mounting shall be with the operable part not less than 42 in. (1.07 m) and not more than 48 in. (1.22 m) above floor level.
3. At least one station shall be provided on each floor. Additional stations shall be provided to obtain a travel distance not more than 200 ft (61 m) to the nearest station from any point in the building.
4. When manual station coverage appears limited in any way, additional stations should be installed.

**Addressable manual station, additional mounting information**

For retrofit and new installations, additional compatible mounting boxes and the required adapter plates are shown in Figure 4. Figure 4 shows the 2099-9814 surface trim for Wiremold boxes and the 2099-9813 semi-flush trim for 2 gang switch boxes.

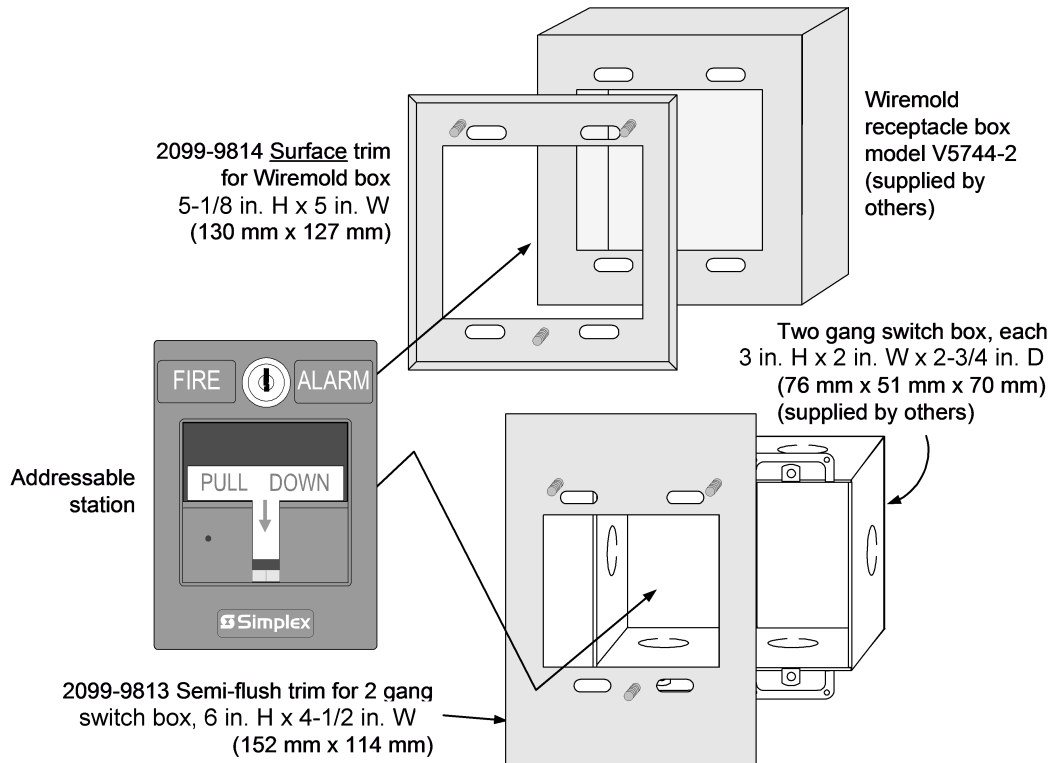


Figure 4: Addressable manual station, additional mounting information

**Addressable manual station, flush mounting information**

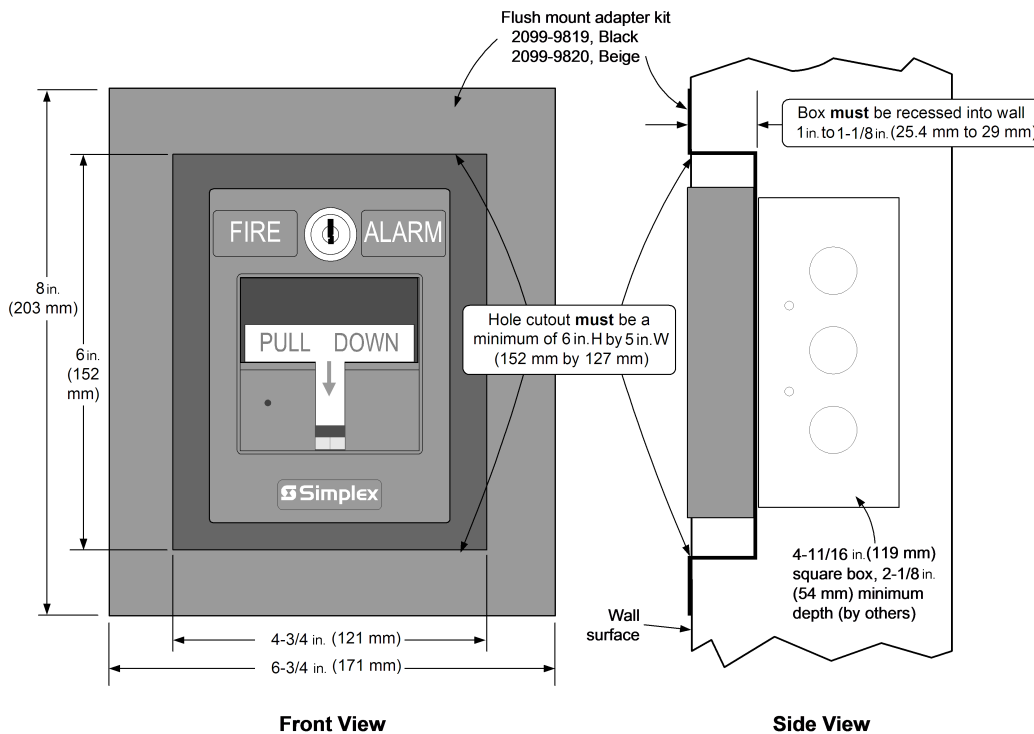


Figure 5: Addressable manual station, flush mounting information

The flush mount adapter kit is available in beige (2099-9820) or black (2099-9819).

## Addressable manual station product selection

**Table 2: Addressable manual station product selection red housing with white letters and white pull lever**

Model	Description	Housing	Pull lever	Listings
4099-9004, see note	Single Action, English	FIRE ALARM	PULL DOWN	UL, ULC, FM, CSFM
4099-9004CB, see note	Single Action, Bilingual English and French	FEU FIRE	TIREZ PULL	ULC
4099-9004CF, see note	Single Action, French	ALARME FEU	ABAISEZ	
4099-9004PO, see note	Single Action, Portuguese	FOGO ALARME	PUXE	UL, FM
4099-9004SP, see note	Single Action, Spanish	ALARMA FUEGO	JALE	
4099-9005, see note	Double Action, Breakglass operation, English	FIRE ALARM	PULL DOWN	UL, ULC, FM, CSFM
4099-9005PO, see note	Double Action, Breakglass operation, Portuguese	FOGO ALARME	PUXE	UL, FM
4099-9005SP, see note	Double Action, Breakglass operation, Spanish	ALARMA FUEGO	JALE	
4099-9006, see note	Double Action, Push operation, English	FIRE ALARM	PUSH PULL DOWN	UL, ULC, FM, CSFM
4099-9006PO, see note	Double Action, Push operation, Portuguese	FOGO ALARME	EMPURRE PUXE	UL, FM
4099-9006SP, see note	Double Action, Push operation, Spanish	ALARMA FUEGO	EMPUJE JALE	
4099-9021, see note	Single Action NO GRIP operation, English	FIRE ALARM	PULL DOWN	UL, ULC, FM, CSFM

**Note:** NEMA 1 rated when used with 2975-9178 back box.

**Table 3: Accessories**

Model	Description
2975-9022	Cast aluminum surface mount box, red
2975-9178	Surface mount steel box, red
2099-9813	Semi-flush trim plate for double gang switch box, red
2099-9819	Flush mount adapter kit, black
2099-9820	Flush mount adapter kit, beige
4099-9805	Retrofit Kit for field conversion of a single action station to a NO GRIP station; refer to the <i>NO GRIP Actuator (4099-9805) Installation Instructions 579-1007</i> for details
2099-9803	Replacement breakglass
2099-9804	Replacement break-rod
2099-9828	Institutional cover kit for field installation on 4099-9004; <b>Note:</b> Covers LED indicator
2099-9814	Surface trim plate for Wiremold box V5744-2, red
2099-9822	Replacement retaining clip for breakglass
252-019	B key for manual station reset.

## Features

### TrueAlarm analog sensing

You can use TrueAlarm analog sensing to digitally transmit analog sensor values with IDNet or MAPNET II two-wire communications.

You can use True Alarm analog sensing with the following Simplex products:

- 4007ES, 4010, 4010ES, 4100ES, and 4100U series fire alarm control units (FACUs), and 4008 series FACUs with reduced feature set.
- 4020, 4100, and 4120 series FACUs, Universal Transponders, and 2120 TrueAlarm CDTs equipped for MAPNET II operation

### Features compatible with the FACU

- Peak value logging with accurate analysis of each sensor for individual sensitivity selection
- Sensitivity monitoring meets NFPA 72 sensitivity testing requirements. The automatic individual sensor calibration check verifies sensor integrity
- Automatic environmental compensation, multi-stage alarm operation, and display of sensitivity directly in percent for each foot
- Display and print detailed sensor information in English

### Photoelectric smoke sensors features

- Sensitivity levels from 0.2% to 3.1%. See [TrueAlarm sensors](#) for more information.

### Heat sensors features

- 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

- Ceiling or wall mounting
- Listed to UL 268 7th Edition 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 testing
- Different bases support a supervised or unsupervised output relay, or a remote LED alarm indicator

### Additional base reference

- For isolator bases, refer to data sheet [S4098-0025](#)
- For isolator2 bases, refer to data sheet [S4098-0026](#)
- 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. The control unit analyses the data, determines an average value, and stores it. Comparing the sensor's present value against its average value and time, determines an alarm or other abnormal condition.

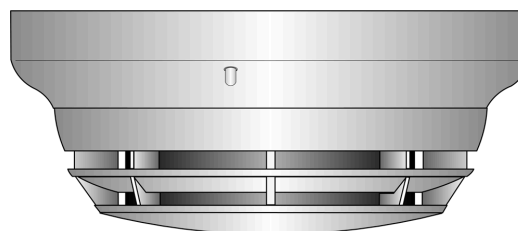
### Intelligent data evaluation

Monitoring each sensor's average value provides a continuously shifting reference point. A software filtering process compensates for environmental factors, such as dust and dirt, and component aging, to provide an accurate reference for evaluating new activity. This reduces the probability of false or nuisance alarms caused by shifts in sensitivity.

### Control unit selection

The control unit stores peak activity for each sensor for evaluating specific locations. The host control unit determines the alarm set point for each TrueAlarm sensor, 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

You can program the sensor alarm set points for timed automatic sensitivity selection, such as more sensitive at night or less sensitive during day. You can program the control unit to provide multi-stage operation for each sensor.

### Sensor alarm and trouble LED indication

Each sensor base's LED pulses to indicate communications with the unit. If the control unit determines a sensor is in alarm, is dirty, or has some other type of trouble, the details display at the control unit and the sensor's base LED turn on steadily. During a system alarm, an LED indicating a trouble returns to pulsing to help identify the alarmed sensors.

## TrueAlarm sensor bases and accessories

### Sensor base features

#### Base mounted address selection

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

#### General features

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

\* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listings 7272-0026:218, 7271-0026:231, 7270-0026:216, and 7300-0026:217 for allowable values and/or conditions concerning material presented in this document. 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.

## Sensor bases

### 4098-9792, standard sensor base

### 4098-9789, sensor base with wired connections

- 2098-9808 remote LED alarm indicator or 4098-9822 relay. The relay is unsupervised and requires separate 24 VDC.

### Supervised relay bases not compatible with 2120 CDT:

- **4098-9791, four-wire sensor base**, use with remote or locally mounted 2098-9737 relay, requires separate 24 VDC
- **4098-9780, two-wire sensor base**, use with remote or locally mounted 4098-9860 relay, no separate power required
- You can program supervised relay operation, and manually operate it from the control unit
- 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 or suppressed loads
- power limited rating of 3 A at 28 VDC
- non-power limited rating of 3 A at 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 at 30 VDC, resistive. Non-power limited rating of 0.5 A at 125 VAC, resistive

### 4098-9822, LED annunciation relay

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

### 4098-9832, adapter plate

- Required for surface or semi-flush mounting to 4 in. square electrical box and for surface mounting to a 4 in. octagonal box
- You can use the 4098-9832 adapter plate for cosmetic retrofitting to an existing 6 3/8 in. diameter base product

### 2098-9808, remote red LED alarm indicator

- Mounts on single gang box

Figure 2: Remote red LED alarm indicator



## Description

TrueAlarm sensor bases contain integral addressable electronics that monitor the status of the detachable photoelectric or heat sensors. The sensors transmit digitalized output to the system fire alarm control unit every four seconds.

You can change different TrueAlarm sensor types to meet location requirements. You can use this feature to substitute sensors during building construction. When conditions are temporarily dusty, you can install heat sensors without reprogramming the control unit. Although the control unit indicates an incorrect sensor type, the heat sensor operates at a default sensitivity and provides heat detection for building protection at that location.

## Mounting reference

Figure 3: 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

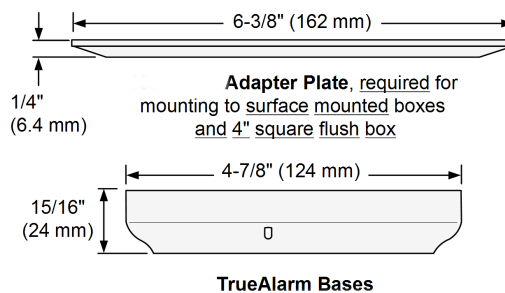
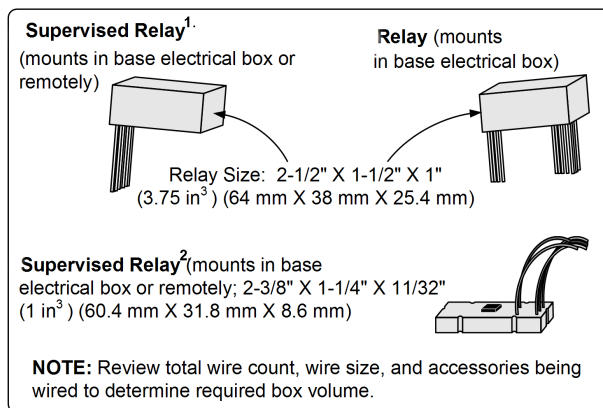
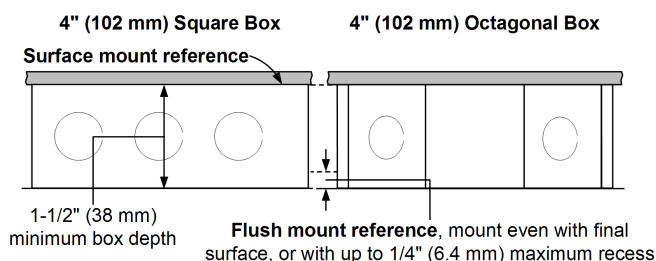


Table 1: Product mounting - SKU reference

Product	SKU
Relay	4098-9822
Supervised relay	Example 1 2098-9739 Example 2 4098-9860
Adapter plate	4098-9832
TrueAlarm bases	4098-9780, 4098-9789, 4098-9791, 4098-9792

## TrueAlarm sensors

### Features

- Sealed against rear air flow entry
- Interchangeable mounting
- EMI/RFI shielded electronics
- Heat sensors:
  - Selectable rate-compensated, fixed temperature sensing with or without rate-of-rise operation

**Table 2: Rated spacing distance between sensors**

Fixed Temp. Setting	UL and ULC Spacing	FM Spacing, Either Fixed Temperature Setting
135°F (57.2°C) 190°F (88°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 only apply to the 4098-9734 sensor.

### Smoke sensors

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

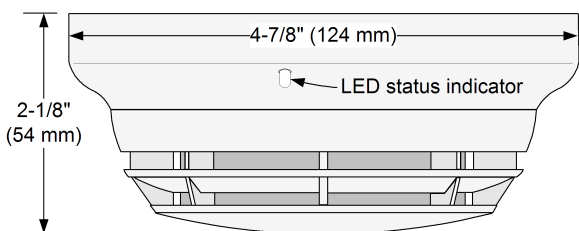
### 4098-9714 photoelectric sensor

TrueAlarm photoelectric sensors use a stable, pulsed LED light source and a silicon photodiode receiver to deliver low power smoke sensing. There are three user-selectable sensitivities for special applications for each individual sensor: 0.2%, 0.5%, and 1% for each foot. Standard sensitivity is 1.25% to 3.1% for each foot. The fire alarm control unit can vary the sensitivity for normal applications between 1.25% and 3.1% for each foot.

**Note:** Fixed sensitivity settings higher than 1.0% for each foot are not UL268 7th Edition compliant.

The sensor head design provides 360° smoke entry for 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

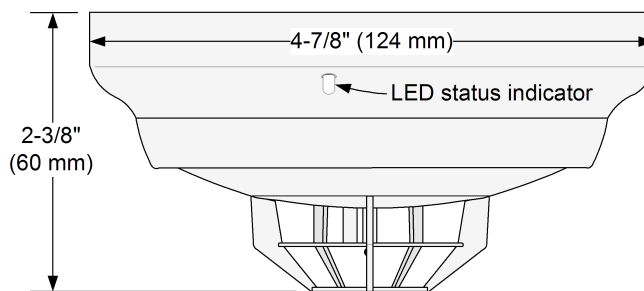
TrueAlarm heat sensors are self-restoring and provide rate-compensated, fixed temperature sensing with or without rate-of-rise temperature sensing. The sensor measures the local temperature for analysis at the fire alarm control unit.

You can select rate-of-rise temperature detection at the control unit for either 15°F or 20°F, (8.3°C or 11.1°C) for each minute. Fixed temperature sensing is independent of rate-of-rise sensing and you can program it to operate at 135°F or 155°F (57.2°C or 68°C). The 4098-9734 sensor provides an additional 190°F (88°C) set point.

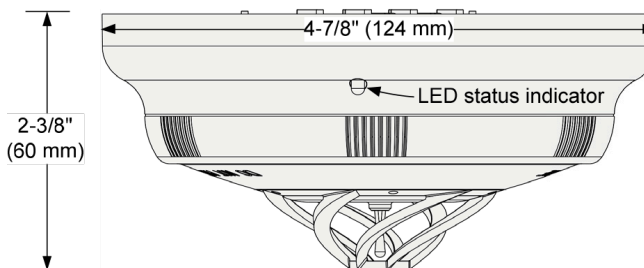
In a slowly developing fire, the temperature may not increase rapidly enough to operate the rate-of-rise feature. However, when the temperature reaches the rated fixed temperature setting, it triggers an alarm.

You can program TrueAlarm heat sensors as a utility device to monitor for temperature extremes in the range of 32°F to 155°F (0°C to 68°C). This feature can provide freeze warnings, or alert you to HVAC system problems. Refer to panel specifications 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

Only choose sensor locations after careful consideration of the physical layout and contents of the area that you want to protect. Refer to NFPA 72, *the National Fire Alarm and Signaling Code*. On smooth ceilings, you can use a smoke sensor spacing of 30 ft (9.1 m) as a guide.

For detailed application information including sensitivity selection, refer to *4098 Detectors, Sensors, and Bases Application Manual (574-709)*.

## TrueAlarm analog sensing product selection chart

**Table 3: TrueAlarm sensor bases, for use with sensors 4098-9714 and 4098-9733**

SKU	Color	Description	Compatibility	Mounting requirements
4098-9792	White	Standard sensor base	No options	4 in. octagonal or 4 in. square box, 1 1/2 in. min. depth, or single gang box, 2 in. min. depth
4098-9776	Black			
4098-9789	White	Sensor base with connections for remote LED alarm indicator <b>or</b> unsupervised relay	2098-9808 remote alarm indicator or 4098-9822 unsupervised relay	4 in. octagonal or 4 in. square box <b>Note:</b> Box depth requirements depend on total wire count and wire size. See Table 5
4098-9789IND	White			
4098-9775	Black			
4098-9791	White	Four-wire sensor supervised relay base with connections for LED indicator or unsupervised relay	2098-9737 supervised remote relay	
<b>Note:</b> NOT compatible with the 2120 CDT			2098-9808 remote alarm indicator or 4098-9822 unsupervised relay	
4098-9780	White	Two-wire sensor supervised relay base with connections for LED indicator or unsupervised relay	4098-9860 supervised remote relay	
<b>Note:</b> NOT compatible with the 2120 CDT			2098-9808 remote alarm indicator or 4098-9822 unsupervised relay	

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

Refer to *4098 Detectors, Sensors, and Bases Application Manual (574-709)* and *4098 Smoke/Heat Sensor Bases Installation Instructions (574-707)* for additional information.

**Table 4: TrueAlarm sensors**

SKU	Color	Description	Compatibility	Mounting requirements
4098-9714	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				
4098-9774	Black			
4098-9733	White	Heat sensor		
4098-9778	Black			
4098-9734	White	High temperature heat sensor		

**Note:**

- SKUs are NEMA 1 rated.
- The 4098-9734 Heat Sensor is only compatible with IDNet on the 4100ES, 4010ES, and 4007ES

**Table 5: TrueAlarm sensor and base accessories**

SKU	Description	Compatibility	Mounting requirements
2098-9737	Supervised relay, mounts remote or in base electrical box	4098-9791 base	Remote mounting requires 4 in. octagonal or 4 in. square box, 1 1/2 in. minimum depth
4098-9860	Supervised relay, mounts remote or in base electrical box	4098-9780 base	Base mounting requires 4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring
2098-9808	Remote red LED alarm indicator on single gang stainless steel plate	Bases 4098-9789, 4098-9791, and 4098-9780	Single gang box, 1 1/2 in. minimum depth
4098-9822	Unsupervised relay, tracks base led status. <b>Note:</b> Only mounts in base electrical box.	Bases 4098-9789, 4098-9791, and 4098-9780	4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring
4098-9832	Adapter plate	Bases 4098-9792, 4098-9789, 4098-9791, and 4098-9780	Required for surface or semi-flush mounted 4 in. square box and for surface mounted 4 in. octagonal box

**Note:** 2098-9808 is NEMA 1 rated.

## Specifications

**Table 6: General operating specifications**

Specification	Rating
Communications and sensor supervisory power	IDNet or MAPNET II communications, auto-selected, one address for each base
Communications connections	Screw terminals for in/out wiring, 18 to 14 AWG, 0.82 mm <sup>2</sup> to 2.08 mm <sup>2</sup>
Remote LED alarm indicator current	1 mA typical, no impact to alarm current
Remote LED alarm indicator and relay connections	Color coded wire leads, 18 AWG, 0.82 mm <sup>2</sup>
UL listed operating temperature range	32°F to 100°F, 0°C to 38°C

**Table 6: General operating specifications**

Specification		Rating
Operating temperature range	with 4098-9733 Heat Sensor	32°F to 122°F, 0°C to 50°C
	with 4098-9714 Smoke Sensor	15°F to 122°F, -9°C to 50°C
	with 4098-9734 Heat Sensor	32°F to 150°F, 0°C to 66°C
Storage temperature range		0°F to 140°F, -18°C to 60°C
Humidity range		10% to 95% RH
4098-9714 smoke sensor air velocity rating		0 to 4000 ft/min, 0 to 1220 m/min
Housing color		Frost white or black

**Table 7: 4098-9791 Base with supervised remote relay 2098-9737**

Specification		Rating
Externally supplied relay coil voltage		18 VDC to 32 VDC, nominal 24 VDC
Supervisory current		270 $\mu$ A, from 24 VDC supply
Alarm current with 2098-9737 relay		28 mA, from 24 VDC supply
<b>Note:</b> See <a href="#">Sensor base options</a> for contact ratings.		

**Table 8: 4098-9780 Base with supervised remote relay 4098-9860**

Specification		Rating
Power		Supplied from communications

**Table 9: 4098-9822 Unsupervised relay, requirements for bases 4098-9789, 4098-9791, and 4098-9780**

Specification		Rating
Externally supplied relay coil voltage		18 VDC to 32 VDC, nominal 24 VDC
Supervisory current		Supplied from communications
Alarm current		13 mA from separate 24 VDC supply
<b>Note:</b> See <a href="#">Sensor base options</a> for contact ratings.		



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)

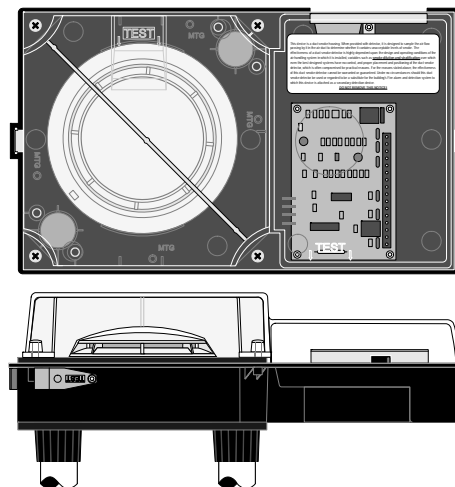
#### Sampling tubes (ordered separately):

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

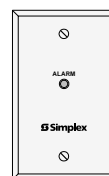
#### Remote module options (ordered separately):

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

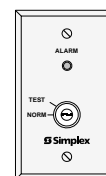
\* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 3240-0026.241 for allowable values and/or conditions concerning material presented in this document. Accepted for use – City of New York 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 <sup>2</sup> ) color coded wire leads	4098-9756 only; connect up to 15	Locate relays within 3 ft (1 m) of device being controlled per NFPA 72
4081-9008	End-of-Line Resistor Harness; 10 k $\Omega$ , 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)

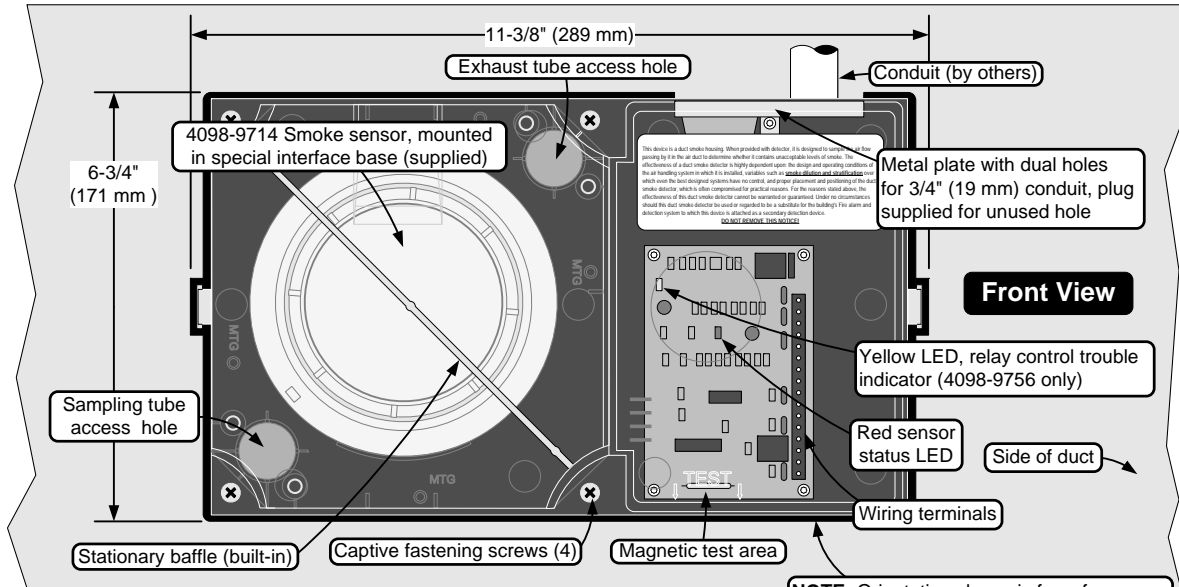
Typically duct sensor applications require less sensitive settings (such as 2.5% per foot obscuration) due to the ducts being a relative dirty environment. However, the standard seven levels of TrueAlarm sensor sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of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

## Fire Alarm Control Panel Features

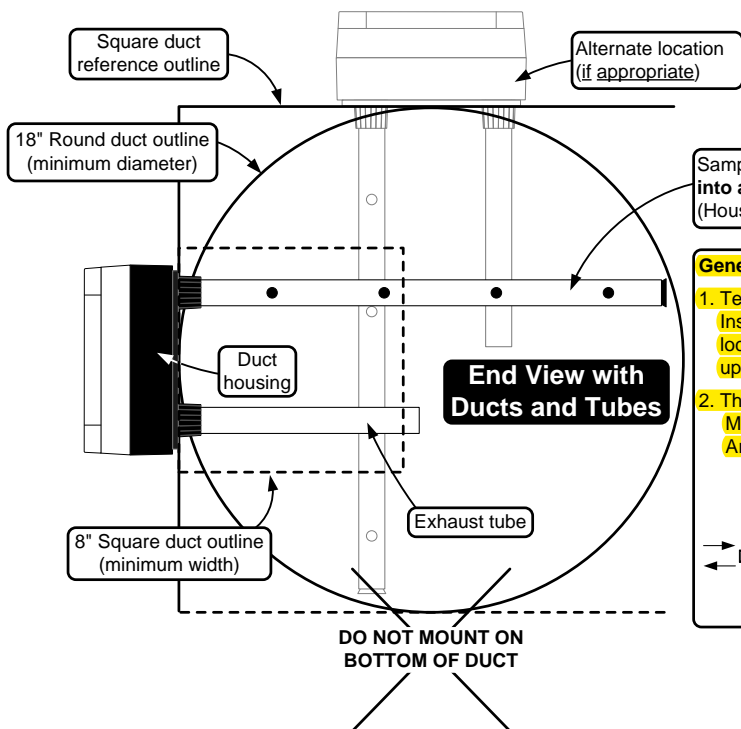
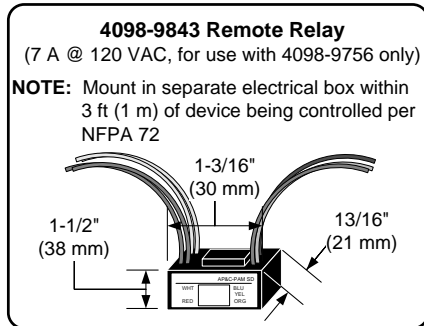
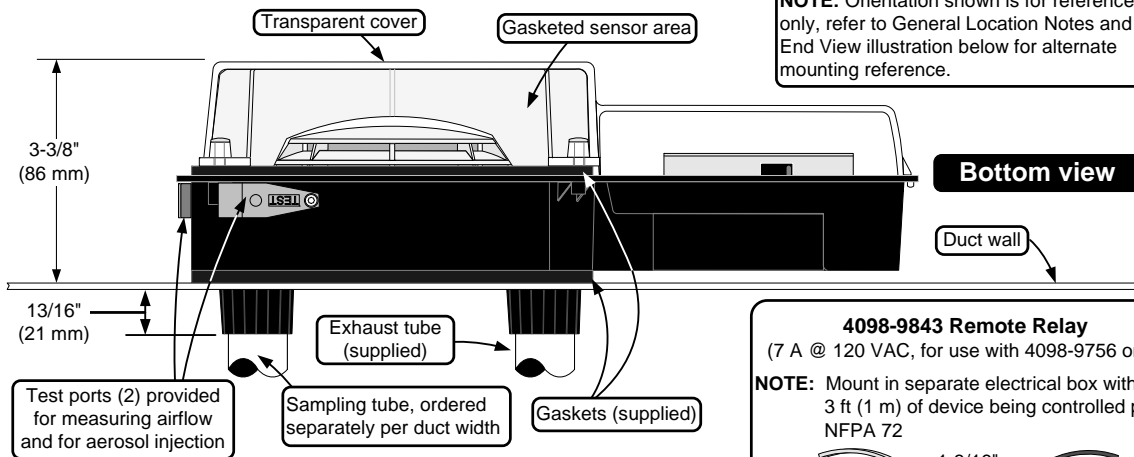
- Individual smoke sensitivity selection
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allows accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check verifies sensor integrity
- Automatic environmental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



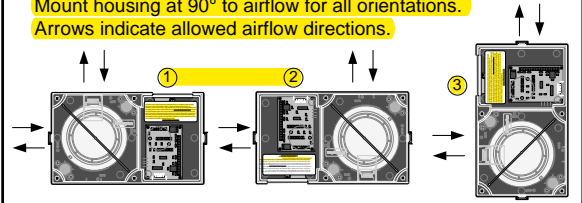
**NOTE:** Orientation shown is for reference only, refer to General Location Notes and End View illustration below for alternate mounting reference.



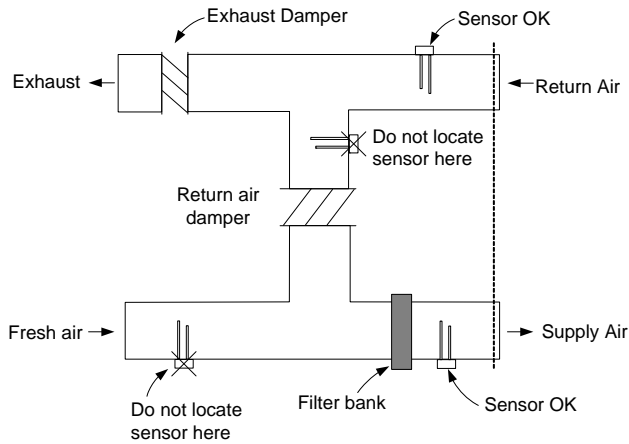
Sampling tube, keyed for proper hole alignment **with holes facing into airflow** (template is provided for proper tube installation). (Housing is shown as position 2 per note 2 below.)

**General Location Notes:**

- Testing performed under the auspices of the Fire Detection Institute (FDI) recommended when sampling tubes are not located vertically, that they be positioned horizontally in the upper half of the duct to account for possible stratification.
- Three duct side mounting options are available as shown below. Mount housing at 90° to airflow for all orientations. Arrows indicate allowed airflow directions.



## 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 <sup>2</sup> to 3.31 mm <sup>2</sup> )
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 $\Omega$ , 1/2 W end-of-line resistor

### 4098-9843 Relay Output Ratings, Single Form C, use with Model 4098-9756 Only

Coil Current	15 mA @ 24 VDC, up to 15 maximum per relay control output
Relay Contacts	7 A at 0.35 PF @ 28 VDC & 120 VAC; 250 $\mu$ A @ 5 VDC
Location Distance	500 ft (152 m) maximum to relay coils; locate relays within 3 ft (1 m) of device being controlled per NFPA 72

TYCO, SIMPLEX, and the product names listed in this material are marks and/or registered marks. Unauthorized use is strictly prohibited. NFPA 72 and National Fire Alarm and Signaling Code are registered trademarks of the National Fire Protection Association (NFPA).



Tyco Fire Protection Products • Westminster, MA • 01441-0001 • USA

S4098-0030-10 11/2014

[www.simplex-fire.com](http://www.simplex-fire.com)

© 2014 Tyco Fire Protection Products. All rights reserved. All specifications and other information shown were current as of document revision date and are subject to change without notice.

## 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:

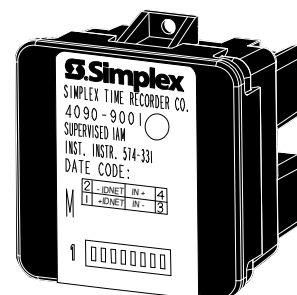
- Provides monitoring of tamper switch (supervisory) and waterflow switch (alarm) on same circuit using one point
- Available with IDNet communications only

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

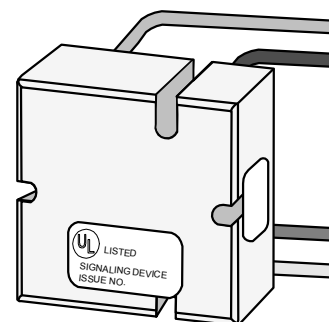
- Contact closure status can be tracked
- Momentary contact closure conditions can be selected at the panel to be latched or tracked (not available with the 2120 CDT)

#### 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
4090-9807	For surface mounted box
4090-9810	Mounting bracket, mounts IAM to electrical box and provides screw holes for trim plate, <b>required for optional trim plates</b>

Trim plate with LED viewing window, requires 4090-9810 mounting bracket, includes mounting screws; galvanized steel

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

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

Use for current limited monitoring applications

## Specifications

### Electrical

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

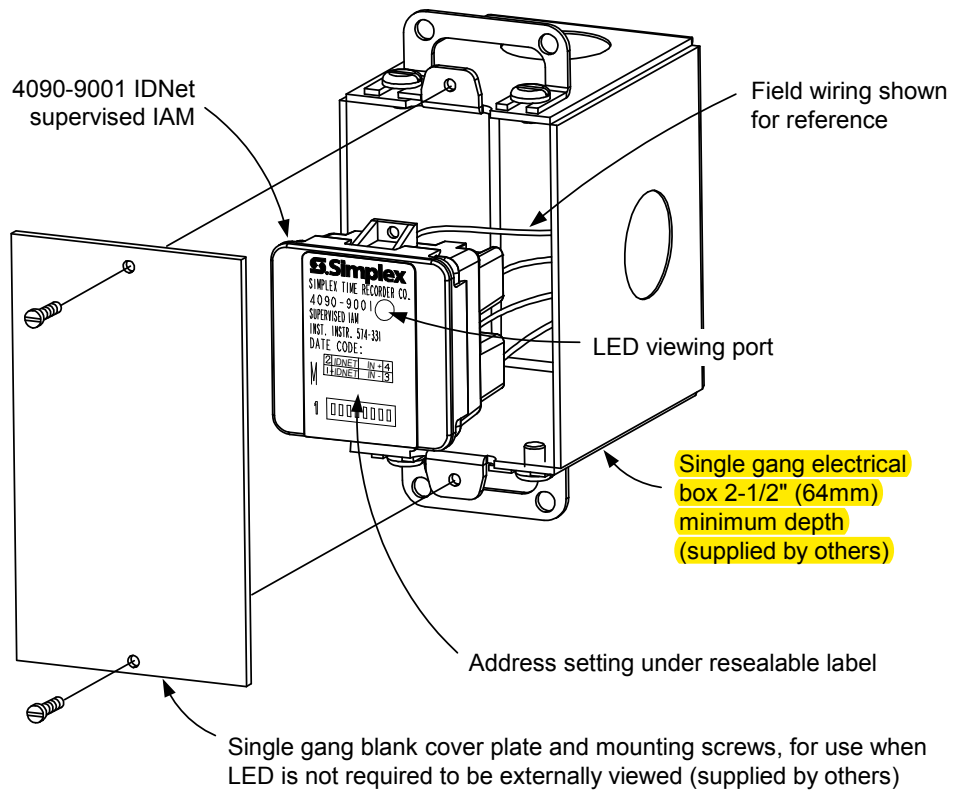
### Wiring Distances

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)

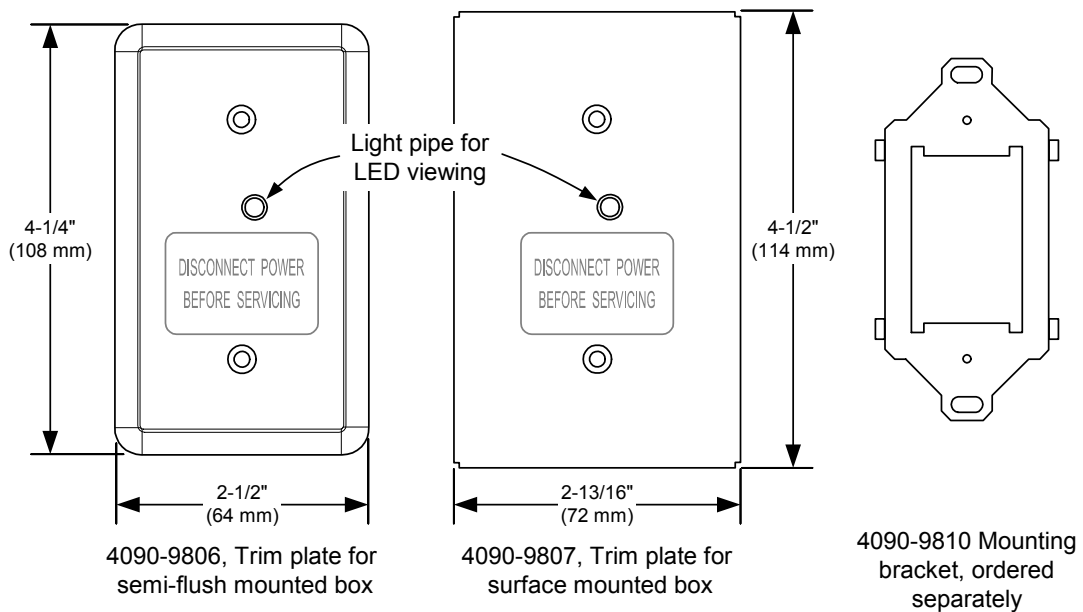
### Mechanical

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



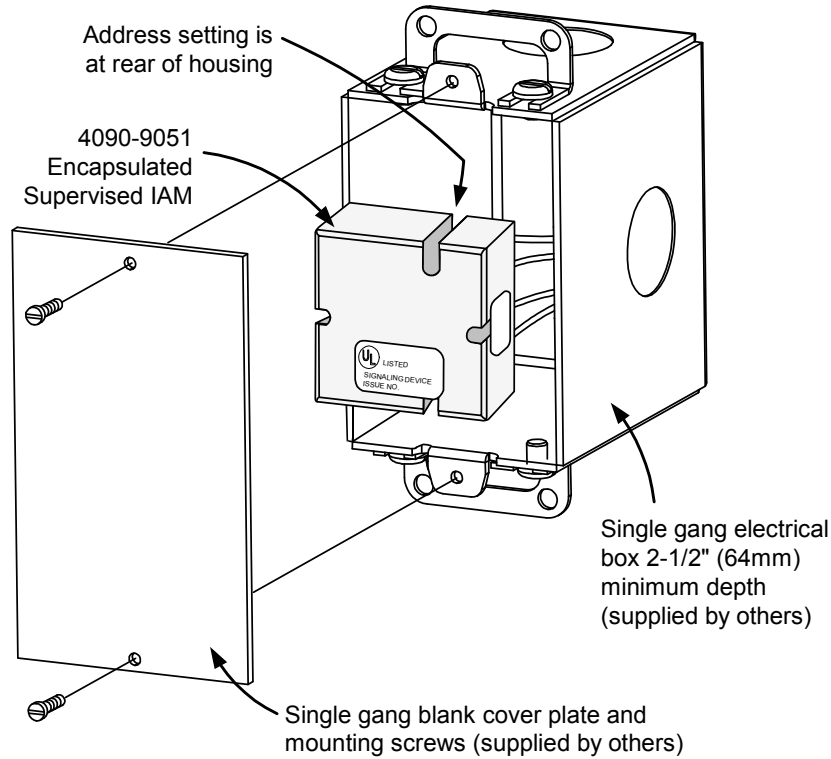
### Mounting Reference, Single Gang Blank Cover Plate



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

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

## 4090-9051 Mounting Information



### Features

**Designed specifically for protection of fire alarm circuits including:**

- DC power (200 mA maximum)
- Data communications
- Local energy city circuit connections
- Rugged epoxy encapsulated package
- Refer to page 2 for application details

**Multiple stages of protection include:**

- Line-to-Line protection and Line-to-Earth protection

**Listings Reference:**

- Listed as an Overvoltage Protector to UL 864, *Control Units and Accessories for Fire Alarm Systems*
- Listed as an Overvoltage Protector to ULC-S527, *Control Units for Fire Alarm Systems*
- Listed as an Isolated Loop Circuit Protector to UL 497B, *Protectors for Data Communications and Fire Alarm Circuits*
- Compatible with the requirements of the National Electrical Code (NFPA 70)

### Description

**Circuit Protection.** Electrical transients caused by lightning or by disturbances on high voltage power lines can cause damage to low voltage fire alarm circuits. Proper application of 2081-9044 Overvoltage Protectors can minimize the energy from those electrical transients to a level that can be safely handled by the circuits requiring protection. This protection is most effective when placed at the locations where the circuits leave and enter buildings.

The 2081-9044 Overvoltage Protector provides multiple stages of protection against electrical transients. The small package size allows it to be easily mounted at the location that achieves maximum protection.

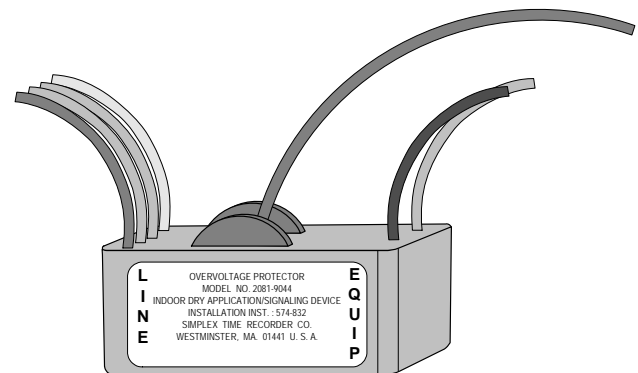
### External Wiring Requirements

Fire alarm system wiring that is run external to the building and is protected by 2081-9044 Overvoltage Protectors shall be installed in accordance with the individual system component's installation instructions including properly grounded, twisted and shielded wire pairs, and observance of the following precautions.

**Location.** To ensure optimized protection, the 2081-9044 Overvoltage Protector shall be located as close as possible to the point at which the circuits leave or enter the buildings and installed in dedicated metallic electrical boxes.

**Wiring distance** is limited to one contiguous property. The total maximum wire length is determined by the individual application's allowable limit as specified with overvoltage protectors, but must not exceed 3270 ft (1 km).

**The grounding conductor** shall be 12 AWG with a maximum length of 28 ft (8.5 m), run in as straight a line as possible and connected to the building grounding electrode system per NFPA 70, the *National Electrical Code*.



2081-9044 Overvoltage Protector

### Operating Specifications

Line-to-Line Voltage Rating	Continuous: 38 VDC, 28 VAC RMS Clamping: 47 V typical
Line-to-Earth Voltage Rating	Continuous: 45 VDC, 35 VAC RMS Clamping: 56 V typical
Shield-to-Earth Voltage Rating	Continuous: 48 VDC, 33 VAC RMS Clamping: 75 V typical
Line-to-Line Capacitance	0.006 $\mu$ F typical
Continuous Current Rating	200 mA maximum
Series Resistance	3 $\Omega$ /line
Response Time	Line-to-Line <1 Nanosecond ( $10^{-9}$ )
	Line-to-Earth <25 Nanosecond ( $10^{-8}$ )
Maximum Current	Line-to-Line 2000 A (10 x 50 $\mu$ sec pulse)
	Line-to-Earth 2000 A (8 x 20 $\mu$ sec pulse)
	Shield-to-Earth 5000 A (10 x 50 $\mu$ sec)

### Mechanical Specifications

Dimensions	2 $\frac{7}{16}$ " W x 1 $\frac{3}{8}$ " D x 1 $\frac{1}{16}$ " H (62 mm x 35 mm x 27 mm)
Package	Beige epoxy encapsulated
Electrical box requirement	4" (102 mm) square box, 2 $\frac{1}{8}$ " (54 mm) minimum depth
Temperature Rating	32° F to 120° F (0° C to 49° C)
Humidity Rating	10-95% RH, at 30° C
Signal Leads	Color coded, 18 AWG (0.82 mm <sup>2</sup> ), 10" long (245 mm)
Ground Lead	Green, 14 AWG, 10" long (254 mm)
Installation Instructions	574-832

\* 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 7300-0026:171 for allowable values and/or conditions concerning material presented in this document. This product was not FM or MEA (NYC) approved as of document revision date. 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.

## 2081-9044 Overvoltage Protector Application Reference

The 2081-9044 Overvoltage Protector is for fire alarm circuit use as listed below. These circuits may be standard or optionally available on the following Fire Alarm Control Panel Series: 4007ES, 4010, 4010ES, 4100ES, 4100U, 4020, 4100, and 4120. Applications listed for remote device output circuits include the applicable device model number below the description.

### Compatible Fire Alarm Control Panel Circuits

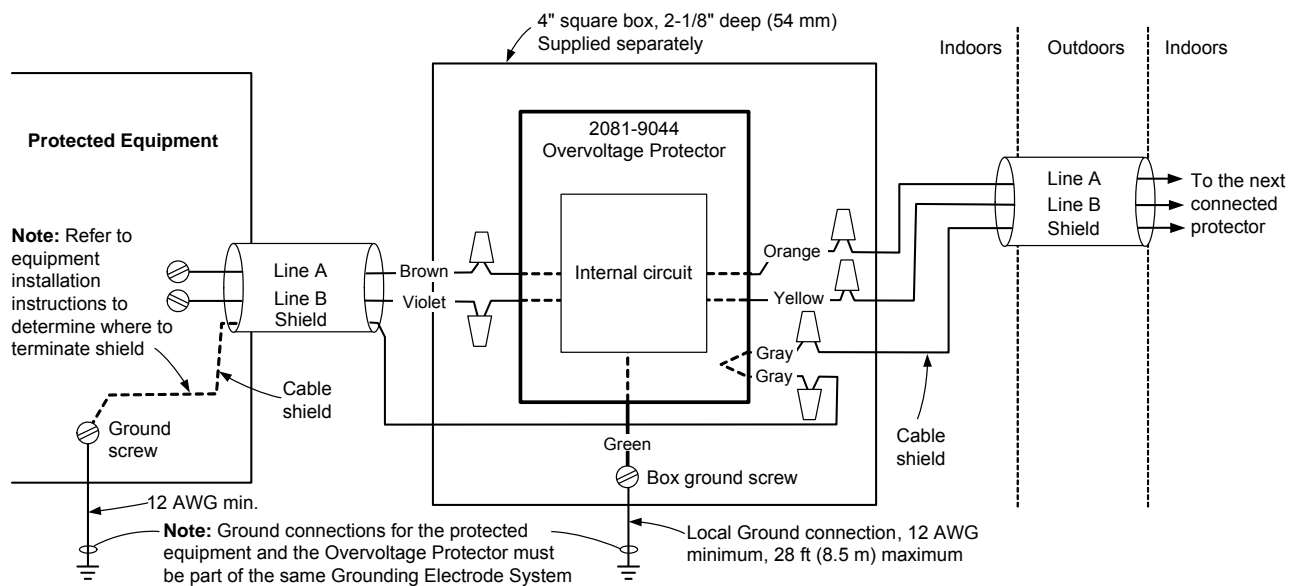
Circuit Type	Wiring Distance and Requirements
IDNet Communications	Two, 2081-9044's, 2500 ft (762 m) maximum Four, 2081-9044's, 1500 ft (457 m) maximum
Monitor ZAM IDC; 4090-9101 and 4090-9106	1400 ft (428 m) maximum
Supervised IAM Zone; 4090-9001 and 4090-9051	400 ft (122 m) maximum
RUI/RUI+ Communications	Reduce maximum line distance by 1000 ft (305 m) for first two suppressors; each additional suppressor reduces distance by 500 ft (152 m)
Fire Alarm Network, Wired Communications	Maximum of two per node-to-node connection, no impact to total distance limit
IDNAC and TrueAlert SLCs	200 mA maximum current, 2500 ft (762 m) total length on branch with suppressor; 6 Ω of line resistance must be accounted for in voltage drop calculations; Maximum of two suppressors on a branch ( <b>Note:</b> Do not mix with 2081-9028 Isolated Loop Circuit Protector (ILCP))
Phone/Audio risers	25 VRMS Audio only, limited to 200 mA
Local Energy City Circuit	3270 ft (1 km) maximum; ( <b>Note:</b> For Reverse Polarity City Circuits, use 2081-9045; refer to data sheet S2081-0007)
N2 Communications (4010 Series Models Only)	Two, 2081-9044's, 2500 ft (762 m) maximum Four, 2081-9044's, 1500 ft (457 m) maximum
MAPNET II Communications	Two, 2081-9044's, 1500 ft (457 km) maximum Four, 2081-9044's, 500 ft (152 km) maximum
MAPNET II ZAM Power; 2190-9153 through 2190-9164	3270 ft (1 km) maximum, 200 mA maximum

### General Precautions for All Circuit Types (subject to local codes)

**Underground wiring** must be in a wiring trough that is separate from commercial power distribution wiring.

**Overhead wiring** must be run on poles separate from those supporting any commercial power distribution wiring. Wiring shall be run in parallel with the commercial power distribution wiring and be separated by a minimum distance of either 100 ft (30 m) or the maximum span between any two adjacent poles of either the system's circuit or the commercial power distribution circuit.

### Typical Connection Reference (refer to Installation Instructions 574-832 for additional information)



TYCO, SIMPLEX, and the product names listed in this material are marks and/or registered marks. Unauthorized use is strictly prohibited. NFPA 70 and National Electrical Code are registered trademarks of the National Fire Protection Association (NFPA).



Tyco Fire Protection Products • Westminster, MA • 01441-0001 • USA  
www.simplex-fire.com

S2081-0016-4 12/2014

© 2014 Tyco Fire Protection Products. All rights reserved. All specifications and other information shown were current as of document revision date and are subject to change without notice.

# Eluxa chimes and chime strobes



## Description

The Wheelock Eluxa electronic chimes (ELCH) and chime strobes (ELCHS) by Eaton feature field selectable 1 Hz, 2 Hz, Coded, and Temporal 3 (T3) modes of operation. The chime strobe models include an advanced power saving LED technology with a full range of candela settings for indoor wall and ceiling-mount applications. Ideal for hospital and institutional applications, Eluxa is designed with a sleek, aesthetically pleasing low profile that blends with the building's interior décor.

## High efficiency, LED technology

Eaton's high energy efficient technology leads the industry in lowest current draw across the full candela range, which reduces overall power consumption and costs in fire alarm systems. As the first notification appliances in the industry to utilize LED as the light source, this breakthrough and patented optical design, resulting in best-in-class efficiency, enables material and system cost savings, allowing for a greater number of appliances on the notification appliance circuit and fewer power supplies. All strobe models feature six candela settings: 15, 30, 75, 110, 135, 185 cd on wall models and 15, 30, 75, 110, 150, 177 cd on ceiling models.

Eaton's unique 2-wire circuit has the ability to silence the audible while leaving the strobe active via Wheelock sync protocol. Alternatively, the device can use 4-wires providing independent control of the strobe and audible.

## Low profile design and rich feature set

Eluxa is feature rich with 6 candela settings in 1 device, field selectable modes of operation, adjustable volume, Anechoic sound levels up to 78 dB, pre-wire/pre-test via mounting plate with hinged feature for ease-of-installation. These products are suitable for indoor wall and ceiling mount applications. The ELCHS chime strobes and ELCH chimes are 24V operation.

## Approvals and synchronization

The Eluxa notification appliances are listed under UL Standards 1638 and 464 and under CAN/ULC-S525 and CAN/ULC-S526. Listings also include California State Fire Marshall (CSFM), and Factory Mutual (FM). The appliances are Restriction of Hazardous Substances (RoHS) compliant and contain no mercury or other hazardous substances.

In addition, the Eluxa product line has been UL/ULC listed as compatible with all Fire Alarm Control Panels (FACP) and accessories that have been determined to be compatible with Exceder LED3 and Wheelock RSS strobe-based products, including the RSS, CH, E, EH, ET, ST, HS, MT, S8, SA, STH and Z Series. The listing also includes the ability to install the Eluxa strobes in the same notification zone and field of view with any Wheelock RSS strobe models making them backward compatible with our installed base of existing notification devices.

**EATON**

Powering Business Worldwide

## Features

- Superior sound output
  - Adjustable volume
  - Anechoic sound level: up to 78 dB
  - 890 Hz preset tone
- Operation modes: 1 Hz, 2 Hz, Coded, or Temporal 3 (T3)
- Energy Efficient
  - LED technology provides industry's lowest current draw
  - Fewer power supplies required, smaller wire gage, reduced wire runs
- Low-Profile Design
  - Small footprint with sleek, modern aesthetics
- 6 Field Selectable Settings in 1 Device
  - Wall: 15, 30, 75, 110, 135, 185 cd
  - Ceiling: 15, 30, 75, 110, 150, 177 cd
- Easy-to-Install
  - Mounting plate included with all models: Convenient capture hinge allows installers to easily hold the device while fastening the single-mount screw in place
  - Pre-wire/pre-test capability to check for wiring and ground faults prior to appliance installation
  - Two or Four wire operation (separate horn and strobe circuits)
  - Built-in level adjustment feature and snap-on grille cover
  - IN/OUT screw terminals using #12 to #18 AWG wires
  - Mounting options include ELSPKBB backboxes and 4" square, 2 1/8" deep backboxes for wall models and LSPKBB-C backboxes and 4" square, 2 1/8" deep backboxes for ceiling models
- Strobe Synchronization Components
  - Meet synchronizing standards with Wheelock's DSM Sync Modules, PS or INC Power Supplies or SAFEPATH products
  - Ability to mix xenon and LED strobes in the same field of view
- Compliance
  - NFPA 72 2016 - 20 ms flash duration requirements
  - UL 1638, UL 464, ULC-S525, ULC-S526
  - California State Fire Marshal (CSFM)
  - Factory Mutual (FM)
  - ADA/NFPA/ANSI/OSHA

**Note:** Please read these specifications and associated installation instructions, before using, specifying, or installing this product. Visit [Eaton.com/Lifesafetynotification](http://Eaton.com/Lifesafetynotification) for current installation instructions.

## General Notes

- Strobes are designed to flash at 1 flash per second minimum over their "Regulated Voltage Range." Note that NFPA-72 specifies a flash rate of 1 to 2 flashes per second and ADA Guidelines specify a flash rate of 1 to 3 flashes per second.
- All candela ratings represent minimum effective strobe intensity.

## Drawings

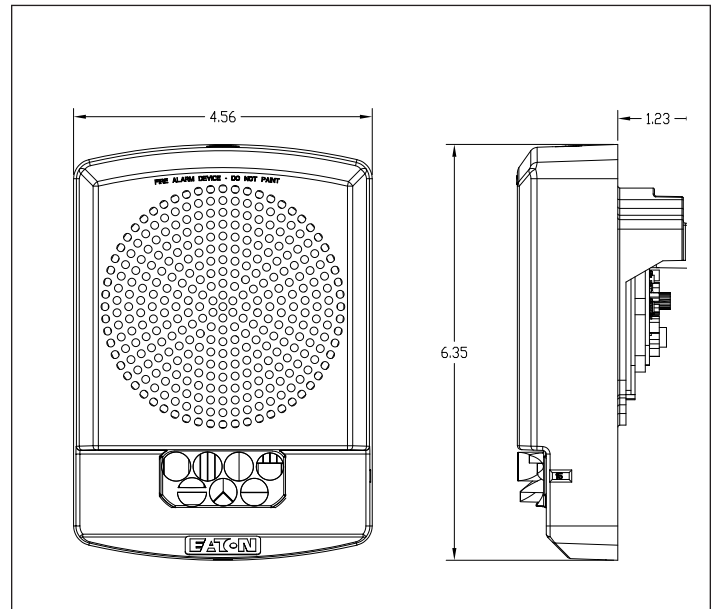


Figure 1. Wall chime strobe

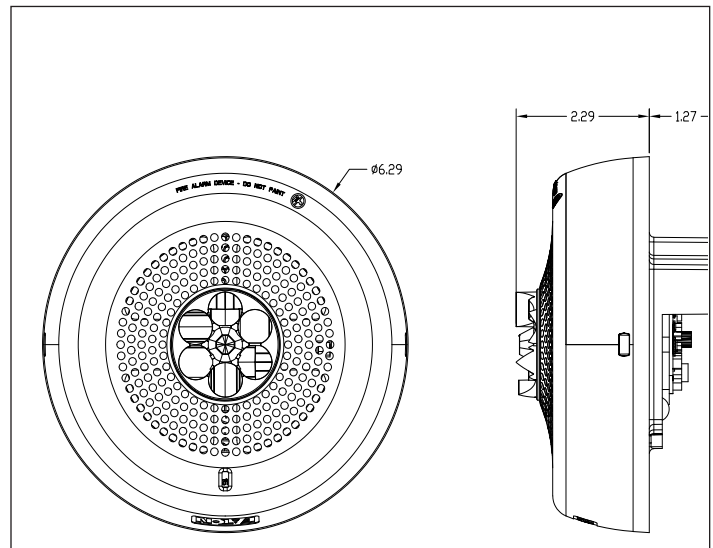


Figure 2. Ceiling chime strobe

## Mounting plate images



**Table 1. Current Ratings**

Model	Regulated Voltage Range VDC	Chime	UL/ULC Max Current ①							
			24VDC							
			15cd	30cd	75cd	110cd	135cd	150cd	177cd	185cd
<b>Chime</b>										
ELCH wall	16.0-33.0	0.022								
ELCHC ceiling	16.0-33.0	0.022								
<b>Chime strobes</b>										
ELCHS	16.0-33.0	0.022	0.044	0.052	0.082	0.108	0.147			0.207
ELCHSC	16.0-33.0	0.022	0.044	0.052	0.082	0.108		0.147	0.207	

**Table 2. Chime dBA Ratings**

Model	Sound Level	Peak dBA @ 10ft. anechoic		dBA @ 10 ft. reverberant	
		MIN	MAX	MIN	MAX
Eluxa chime (all)	78			51	68

**Table 3. Specification & Ordering Information**

Model	Strobe Candela	Red	White	Lettering	Wall/Ceiling	Sync w/ DSM or Wheelock Power Supplies
<b>Chime strobes</b>						
ELCHSR	15/30/75/110/135/185	X		FIRE	Wall	X
ELCHSW	15/30/75/110/135/185		X	FIRE	Wall	X
ELCHSRC	15/30/75/110/150/177	X		FIRE	Ceiling	X
ELCHSWC	15/30/75/110/150/177		X	FIRE	Ceiling	X
<b>Chimes</b>						
ELCHR		X		"N" (no lettering)	Wall	
ELCHW			X	"N" (no lettering)	Wall	X
ELCHRC		X		"N" (no lettering)	Ceiling	X
ELCHWC			X	"N" (no lettering)	Ceiling	X
<b>Backboxes</b>						
ELSPKBB-R		X			Wall	
ELSPKBB-W			X		Wall	
LSPKBB-CR		X			Ceiling	
LSPKBB-CW			X		Ceiling	

**Physical**

Material	Red or white textured UV stabilized, colored impregnated engineered plastic. Exceeds 94V-0 UL flammability rating
Weight	Wall chime strobe: 1.54 lbs (700g); Ceiling chime strobe: 1.54 lbs (700g); Speaker Backbox: .44 lb (200g)
Lens	Light Emitting Diode (LED) in a rugged Lexan lens
Dimensions	ELCH: 6.35" H x 4.56" W x 1.54" D; ELCHS: 6.35" H x 4.56" W x 1.54" D; ELCHC: 6.27" Diameter x 1.9" D; ELCHSC: 6.27" Diameter x 2.29" Depth
Operating Temperature	Indoor: 32°F to 122°F (0°C to 50°C) and maximum humidity of 93%

**Mounting & Wire Connections**

Mounting (indoor only)	Mounting plate included with all models. ELCHS chime strobes are for wall-mount applications, and ELCHSC chime strobes are for ceiling-mount applications. ELCH chimes can be used for wall or ceiling-mount applications. Mounting options include ELSPKBB backboxes and 4" square, 2 1/8" deep backboxes for wall models and LSPKBB-C backboxes and 4" square, 2 1/8" deep backboxes for ceiling models.
Wire Connections	#12 through #18 AWG

**Power & General**

Operating voltage	24VDC/24VFWR
Strobe Output Rating	UL 1971, UL 1638, ULC S526: Wall: Selectable 15, 30, 75, 110, 135, 185 candela output; Ceiling: Selectable 15, 30, 75, 110, 150, 177 candela output
Synchronization Models	Strobes can be synchronized with Wheelock's DSM Sync Modules, PS Power Supplies or SAFEPATH products, using Wheelock patented sync protocol. Chime may be synchronized using T3 setting and Wheelock sync (DSM or PS).
Chime frequency	890 Hz fixed

## Architects and Engineers Specifications

The LED chime appliances shall be Wheelock® ELCH chimes and ELCHS chime strobes for wall-mount applications and ELCHC chimes and ELCHSC chime strobes for ceiling-mount applications with a low-profile design or approved equals. The chime shall be UL Listed under Standard 464 for Audible Signal Appliances and chimes equipped with strobes shall be listed under UL Standard 1638. In addition, the chime strobes shall meet the requirements of FCC Part 15 and ICES-003. All inputs shall be compatible with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP) with the ability to operate from 16 to 33 VDC/FWR.

All chimes shall use solid state components and shall provide field selectable 1 Hz, 2 Hz, Coded, or Temporal 3 (T3) with volume control. ELCH chimes models shall have a peak Anechoic sound output of 78 dB at 10 feet and a frequency of 890 Hz. All inputs shall employ terminals that accept #12 to #18 AWG wire sizes.

The series ELCHS/ELCHSC chime strobe appliances shall produce a flash rate of one (1) flash per second over the Regulated Voltage Range and shall incorporate a Light Emitting Diode (LED) as the light source with a rugged Lexan® lens. The series shall be of low current design. The LED strobe flash duration shall be 20 ms. Where Multi-Candela appliances are specified, the strobe intensity shall have 6 field selectable settings at 15, 30, 75, 110, 135 and 185 candela for wall mount applications and 15, 30, 75, 110, 150 and 177 for ceiling applications. The selector switch for selecting the candela shall be tamper resistant. Appliances with candela settings shall show the candela selection in a visible location at all times when installed.

The series ELCH/ELCHC and ELCHS/ELCHSC shall be designed for indoor surface or flush mounting and include a mounting plate. Mounting options shall include ELSPKBB backboxes and 4" square,

2 1/8" deep backboxes for wall models and LSPKBB-C backboxes and 4" square, 2 1/8" deep backboxes for ceiling models. The chime and chime strobe shall incorporate a mounting plate with a snap-on grille cover and shall mount to standard electrical hardware requiring no additional trimplate or adapter. Removal of an appliance shall result in a supervision fault condition by the Fire Alarm Control Panel (FACP).

The ELCH wall model shall have a low profile measuring 6.35" H x 4.56" W x 1.54" D. The ELCHS wall model shall have a low profile measuring 6.35" H x 4.56" W x 1.54" D. The ELCHC and ELCHSC ceiling models shall have a low profile measuring 6.27" diameter with 1.9" depth (profile) for ELCHSC and 2.29" depth (profile) for ELCHSC models. Finish shall be red or white. Special lettering shall be available.

When synchronization is required, the appliance shall be compatible with Wheelock®'s DSM Sync Modules, PS or INC Power Supplies, SAFEPATH products or other manufacturer's panels with built-in Wheelock® Patented Sync Protocol. The strobes shall not drift out of synchronization at any time during operation. If the sync protocol fails to operate, the strobe shall revert to a non-synchronized flash-rate and still maintain (1) flash per second over its Regulated Voltage Range.

UL 1638, UL 464, ULC-S525, ULC-S526, CSFM, FM, FCC, ICES

① RMS current ratings are per UL maximum RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units). For strobes the UL max current is usually at the minimum listed voltage (16v for 24v units). For audibles the max current is usually at the maximum listed voltage (33v for 24v units). For unfiltered FWR ratings, see installation instructions.

**Note:** Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Cooper Wheelock Inc., dba Eaton standard terms and conditions.



WE ENCOURAGE AND SUPPORT NICET CERTIFICATION  
3 YEAR WARRANTY



**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com

Life safety & mass notification solutions  
273 Branchport Ave.  
Long Branch, NJ 07740  
Eaton.com/Lifesafetynotification

© 2023 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. TD450180EN  
April 2023  
Eaton is a registered trademark.

All other trademarks are property  
of their respective owners.

# Eluxa horns, horn strobes, & strobes



## Description

The Wheelock Eluxa horns, horn strobes, and strobes by Eaton feature an advanced power saving LED technology with a full range of low and high candela settings for indoor wall and ceiling-mount applications. Designed in sleek, modern enclosures, Eluxa's aesthetically pleasing low profile will blend with the building's interior décor.

## High efficiency, LED technology

Eaton's high energy efficient technology leads the industry in lowest current draw for a combined high and low candela device, which reduces overall power consumption. As the first notification appliances in the industry to utilize LED as the light source, this breakthrough optical design, resulting in best-in-class efficiency, enables material and system cost savings, allowing for a greater number of appliances on the notification appliance circuit and fewer power supplies. This reduces installation and operating costs. All strobe models feature six candela settings: 15, 30, 75, 110, 135, 185 cd on wall models and 15, 30, 75, 110, 150, 177 cd on ceiling models.

## Low profile design and rich feature set

With the industry's smallest footprint, the Eluxa horns, horn strobes, and strobes are aesthetically pleasing to building owners as the low profile design does not detract from the interior decor. Eluxa is feature rich with 6 candela settings and 3 horn patterns (Continuous, T3, T3/T4) in 1 device, pre-wire/pre-test via mounting plate with hinged feature for ease-of-installation, single-gang design (wall models), and no tools needed for setting changes. The ELST strobe, ELHS horn strobe, and the ELHN horn are for 24V operation. ELHN is suitable for 12V applications.

## Approvals and synchronization

Eaton's Eluxa strobes meet the 20 millisecond light pulse duration requirements of the 2016 edition of NFPA 72. By meeting this latest requirement, xenon and LED devices can now be in the same field of view.

The Eluxa notification appliances are listed under UL Standards 1971, 1638, and 464 and under CAN/ULC-S525 and CAN/ULC-S526. The appliances are Restriction of Hazardous Substances (RoHS) compliant and contain no mercury or other hazardous substances.

In addition, the Eluxa product line has been UL/ULC listed as compatible with all Fire Alarm Control Panels (FACP) and accessories that have been determined to be compatible with Exceder LED3 and Wheelock RSS strobe-based products including the RSS, CH, E, EH, ET, ST, HS, MT, S8, SA, STH and Z Series. The listing also includes the ability to install the Eluxa strobes in the same notification zone and field of view with any Wheelock RSS and Exceder LED3 strobe models.

**EAT•N**

Powering Business Worldwide

### Features

- Energy efficient
  - LED technology provides industry’s lowest current draw
  - Fewer power supplies required, smaller wire gage, reduced wire runs
- Low-profile design
  - One of the smallest, most compact single-gang designs
  - Sleek, modern aesthetics with no visible mounting screws
- Special lettering available
- 6 Field selectable settings in 1 device
  - Wall: 15, 30, 75, 110, 135, 185 cd
  - Ceiling: 15, 30, 75, 110, 150, 177 cd
- 3 horn patterns
  - Continuous, T3, and T3/T4; Fire and CO signaling in 1 device
- Sound pressure (Anechoic) dBA
  - Low 86, High 91 (for Continuous, T3, and T4)
- Easy-to-install
  - Mounting plate included with all models: Convenient capture hinge allows installers to easily hold the device while fastening the single-mount screw in place.
  - Pre-wire/pre-test capability to check for wiring and ground faults prior to appliance installation
  - Finger slide switches–No tools needed for setting changes
  - IN/OUT screw terminals using #12 to #18 AWG wires
  - Mounting options include ELSBB, any single-gang backbox and to 4” square with adapter kit for wall models and LSPKBB-C backboxes and 4” square, 1 1/2” or 2 1/8” deep for ceiling
- Strobe synchronization
  - Meet synchronizing standards with Wheelock’s DSM Sync Modules, PS Power Supplies or SAFEPATH products
  - Ability to mix xenon and LED strobes in the same field of view
- Compliance
  - NFPA 72 2016 - 20 ms flash duration requirements
  - UL 1971, UL 1638, UL 464, ULC-S525, ULC-S526
  - California State Fire Marshal (CSFM)
  - Factory Mutual (FM)
  - RoHS
  - FCC Part 15, ICES

**Note:** Please read these specifications and associated installation instructions, before using, specifying, or installing this product. Visit Eaton.com/Lifesafetynotification for current installation instructions.

### General Notes

- Strobes are designed to flash at 1 flash per second minimum over their “Regulated Voltage Range.” Note that NFPA-72 specifies a flash rate of 1 to 2 flashes per second and ADA Guidelines specify a flash rate of 1 to 3 flashes per second.
- All candela ratings represent minimum effective strobe intensity based on UL 1971.

### Drawings

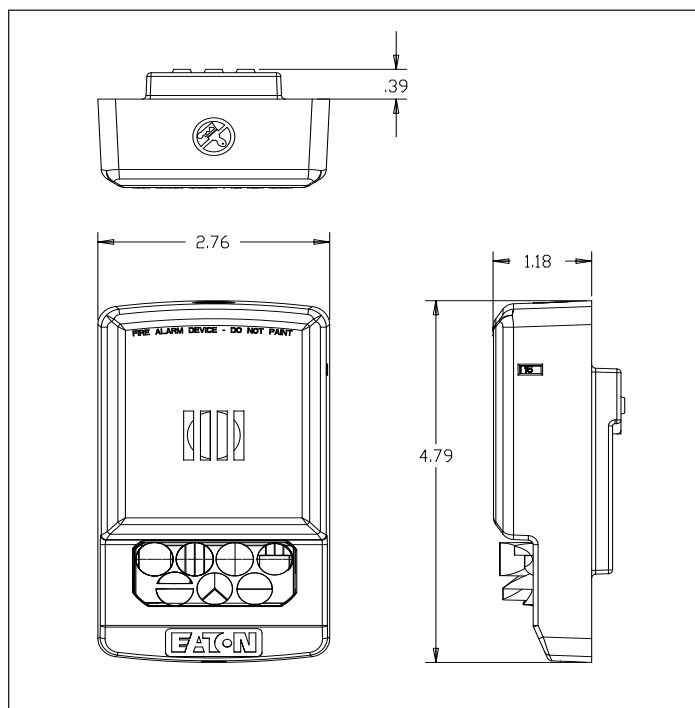


Figure 1. Wall, horn strobe

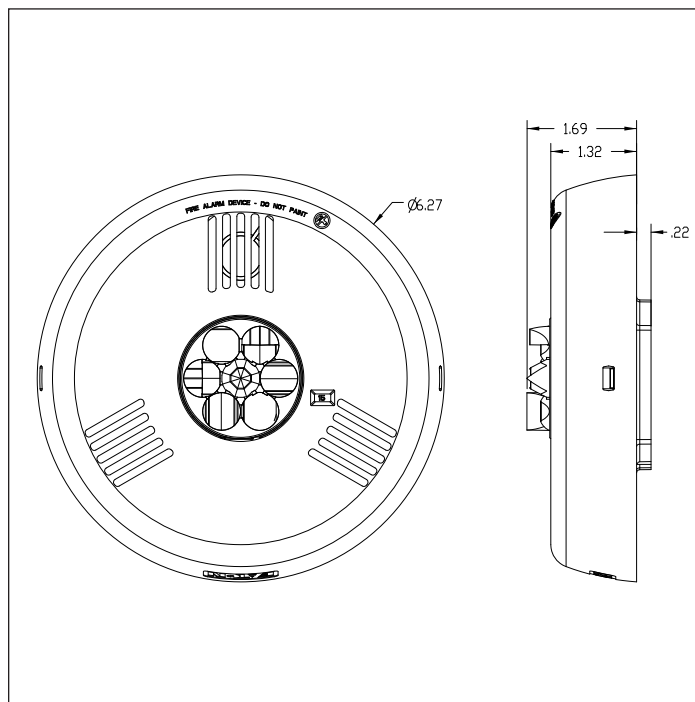


Figure 2. Ceiling, horn strobe

Table 1. Horn ratings per UL/ULC Anechoic

Eluxa Horns			
Model	Regulated Voltage Range VDC	High dB	Low dB
ELHN/ELHNC	8.0 - 17.5	0.025	0.020
ELHN/ELHNC	16.0 - 33.0	0.028	0.021

**Table 2. Strobe ratings**

Model	Regulated Voltage Range VDC	UL/ULC Max Current ①							
		24VDC							
		15	30	75	110	135	150	177	185
ELST	16.0-33.0	0.022	0.030	0.060	0.086	0.125			0.185
ELSTC	16.0-33.0	0.022	0.030	0.060	0.086		0.125	0.185	

**Table 3. Code 3 horn strobe ratings**

Eluxa Horn Strobes	Model	Regulated Voltage Range VDC	UL/ULC Max Current ① at Anechoic High continuous							
			24VDC							
			15	30	75	110	135	150	177	185
	ELHS	16.0-33.0	0.037	0.046	0.077	0.109	0.146			0.208
	ELHSC	16.0-33.0	0.037	0.046	0.077	0.109		0.146	0.208	

Eluxa Horn Strobes	Model	Regulated Voltage Range VDC	UL/ULC Max Current ① at Anechoic Low continuous							
			24VDC							
			15	30	75	110	135	150	177	185
	ELHS	16.0-33.0	0.030	0.039	0.070	0.102	0.139			0.201
	ELHSC	16.0-33.0	0.030	0.039	0.070	0.102		0.139	0.201	

**Table 4. Specification & Ordering Information**

Model	Mounting	Strobe Candela	Red	White	Lettering	Sync w/ DSM or Wheelock Power Supplies
<b>Horn strobes</b>						
ELHSR	Wall	15/30/75/110/135/185	X		FIRE	X
ELHSW	Wall	15/30/75/110/135/185		X	FIRE	X
ELHSR-A	Wall	15/30/75/110/135/185	X		AGENT	X
ELHSR-N	Wall	15/30/75/110/135/185	X		No Lettering	X
ELHSW-A	Wall	15/30/75/110/135/185		X	AGENT	X
ELHSW-AL	Wall	15/30/75/110/135/185		X	ALERT	X
ELHSW-N	Wall	15/30/75/110/135/185		X	No Lettering	X
ELHSW-EV	Wall	15/30/75/110/135/185		X	EVACUATE	X
ELHSRC	Ceiling	15/30/75/110/150/177	X		FIRE	X
ELHSWC	Ceiling	15/30/75/110/150/177		X	FIRE	X
ELHSWC-N	Ceiling	15/30/75/110/150/177		X	No lettering	X
<b>Strobes</b>						
ELSTR	Wall	15/30/75/110/135/185	X		FIRE	X
ELSTW	Wall	15/30/75/110/135/185		X	FIRE	X
ELSTR-A	Wall	15/30/75/110/135/185	X		AGENT	X
ELSTR-AL	Wall	15/30/75/110/135/185	X		ALERT	X
ELSTW-A	Wall	15/30/75/110/135/185		X	AGENT	X
ELSTW-AL	Wall	15/30/75/110/135/185		X	ALERT	X
ELSTW-N	Wall	15/30/75/110/135/185		X	No Lettering	X
ELSTR-N	Wall	15/30/75/110/135/185	X		No Lettering	X
ELSTW-EV	Wall	15/30/75/110/135/185		X	EVACUATE	X
ELSTRC	Ceiling	15/30/75/110/150/177	X		FIRE	X
ELSTWC	Ceiling	15/30/75/110/150/177		X	FIRE	X
ELSTRC-AL	Ceiling	15/30/75/110/150/177	X		ALERT	X
ELSTWC-AL	Ceiling	15/30/75/110/150/177		X	ALERT	X
ELSTWC-EV	Ceiling	15/30/75/110/150/177		X	EVACUATE	X
<b>Horns</b>						
ELHNR	Wall		X		No Lettering	X
ELHNW	Wall			X	No Lettering	X
ELHNR-C	Ceiling		X		No Lettering	X
ELHNWC	Ceiling			X	No Lettering	X
<b>Accessories</b>						
ELSBB-R	LED Backbox, wall		X			
ELSBB-W	LED Backbox, wall			X		
ESB-KIT-R	Trim Plate, wall		X			
ESB-KIT-W	Trim Plate, wall			X		
LSPKBB-CR	Backbox, ceiling		X			
LSPKBB-CW	Backbox, ceiling			X		

① RMS current ratings are per UL maximum RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units). For strobes the UL max current is usually at the minimum listed voltage (16v for 24v units). For audibles the max current is usually at the maximum listed voltage (33v for 24v units). For unfiltered FWR ratings, see installation instructions.

② Regulated Voltage Range- VDC

**Note:** Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Cooper Wheelock Inc., dba Eaton standard terms and conditions.

**Table 5. Specifications**

<b>Physical</b>	
Material	Red or white textured UV stabilized, colored impregnated engineered plastic. Exceeds 94V-0 UL flammability rating
Weight	Wall: 0.35 lbs; Ceiling: 0.55 lbs
Lens	Light Emitting Diode (LED) in a rugged Lexan lens
Dimensions	Wall: 4.79" H x 2.76" W x 1.18" D, Trimplate: 5.25" H x 4.58" W x 0.32" D; Ceiling: 6.27" Diameter x 1.69" D
Operating Temperature	Indoor: 32°F to 122°F (0°C to 50°C) and maximum humidity of 93%
<b>Mounting &amp; Wire Connections</b>	
Mounting (indoor only)	Mounting plate included with all models. ELHS and ELST are for wall-mount applications only. ELHN can be used for wall and ceiling-mount applications. Wall mounting: Single-gang, ELSBB backboxes or to 4" square with adapter kit. ELHN can be used for wall and ceiling-mount applications. ELHSC and ELSTC are for ceiling mount applications only. The ELHNC can also be used for wall-mount applications. Ceiling mounting: LSPKBB-C backboxes or to 4" square, 1 1/2" or 2 1/8"
Wire Connections	#12 through #18 AWG
<b>Power &amp; General</b>	
Operating voltage	12 VDC/VFWR: 8 - 17.5 VDC/VFWR; 24 VDC/VFWR: 16 - 33 VDC/VFWR (12 VDC ELHN/ELHNC models only)
Strobe Output Rating	UL 1971, UL 1638, ULC S526: Selectable 15, 30, 75, 110, 135, 185 candela output for wall models; Selectable 15, 30, 75, 110, 150, 177 candela output for ceiling models
Synchronization Models	Strobes can be synchronized with Wheelock's DSM Sync Modules, PS Power Supplies or SAFEPATH products, using Wheelock patented sync protocol

### Architects and Engineers Specifications

The LED notification appliances shall be Wheelock® ELHS audible visual strobe appliances, ELST visual strobe appliances and ELHN audible appliances for wall and ceiling-mount applications with a low-profile design or approved equals. Special lettering, including AGENT, ALERT, EVACUATE, and no lettering, shall be available. The ELHS and ELST strobes shall be listed for UL Standard 1971 (Emergency Devices for the Hearing-Impaired) for Indoor Fire Protection Service and UL 1638 (Visible Signaling Devices). The ELHS and ELHN Audibles shall be UL Listed under Standard 464 (Fire Protective Signaling). All models shall meet the requirements of FCC Part 15 and ICES-003. All inputs shall be compatible with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP) with the ability to operate from 16 to 33 VDC/VFWR.

The ELHS audible strobe and ELST strobe appliances shall produce a flash rate of one (1) flash per second over the Regulated Voltage Range and shall incorporate a Light Emitting Diode (LED) as the light source with a rugged Lexan® lens. The appliances shall be of low current design. The LED strobe flash duration shall be 20 ms. Where Multi-Candela appliances are specified, the strobe intensity shall have 6 field selectable settings at 15, 30, 75, 110, 135 and 185 candela for wall mount applications and 15, 30, 75, 110, 150 and 177 for ceiling applications. The selector switch for selecting the candela shall be tamper resistant. Appliances with candela settings shall show the candela selection in a visible location at all times when installed.

The audible shall have a choice of three (3) horn patterns (high & low

output): Continuous, T3, and T3/T4 for fire (T3) and CO (T4) signaling.

The ELHS audible strobe, ELST strobe, and ELHN audible shall include a hinged mounting plate. Mounting options shall include LED backboxes, single-gang backbox and to 4" square with adapter kit for wall-mount models and LED Ceiling backboxes and 4" square, 1 1/2" or 2 1/8" deep for ceiling models. Two wire appliance wiring shall be capable of directly connecting to the mounting base. Removal of an appliance shall result in a supervision fault condition by the Fire Alarm Control Panel (FACP). All notification appliances shall be backwards compatible.

The ELHS, ELHN and ELST wall models shall have a low profile measuring 4.79" H x 2.76" W x 1.18" D. The ELHSC, ELHNC and ELSTC ceiling models shall have a low profile measuring 6.27" Diameter with 1.69" D.

When synchronization is required, the appliance shall be compatible with Wheelock®'s DSM Sync Modules, PS Power Supplies, SAFEPATH products or other manufacturer's panels with built-in Wheelock® Patented Sync Protocol. The strobes shall not drift out of synchronization at any time during operation. If the sync protocol fails to operate, the strobe shall revert to a non-synchronized flash-rate and still maintain (1) flash per second over its Regulated Voltage Range. The appliance shall also be designed so that the audible signal may be silenced while maintaining strobe activation when used with Wheelock® patented sync protocol.

NFPA 72 2016, UL 1971, UL, 1638, UL 464 ULC-S525-16, ULC-S526-16, CSFM, FM, FCC, RoHS, ICES



WE ENCOURAGE AND SUPPORT NICET CERTIFICATION  
3 YEAR WARRANTY

**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com

Life safety & mass notification solutions  
273 Branchport Ave.  
Long Branch, NJ 07740  
Eaton.com/Lifesafetynotification

© 2022 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. TD450157EN  
August 2022  
Eaton is a registered trademark.

All other trademarks are property  
of their respective owners.

