Simplex® True*Alarm* Addressable Fire Alarm Control Panels

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

4008 Fire Alarm Control Panel for IDNet Addressable Devices and TrueAlarm Addressable Smoke Detection

Features

Control panel operator convenience features:

- Wide viewing angle 2 x 20 (40 character) alphanumeric LCD and dedicated LEDs provide convenient panel status information
- Operation is programmable using a multi-function keypad and the panel LCD or via service computer (PC)
- RS-232 service port provides upload/download PC access for panel configuration and event history logs
- Software updates are via PC download
- Convenient library of standard custom label terms
- Standard on-board DACT provides: Contact ID, 3/1, 4/2, BFSK, and SIA formats
- WALKTEST silent or audible system test
- Voltage and current for both the battery charger and the battery can be displayed at the front panel LCD

Addressable Devices:

- Using IDNet communications, up to 200 addressable TrueAlarm detection points or addressable device points are available (see page 3 for details)

Two Standard Notification Appliance Circuits (NACs):

- Class A or Class B outputs with solid state overcurrent protection per NAC, each rated for 2 A
- Selectable for Simplex® SmartSync two-wire horn/strobe control or synchronized strobe control

Standard Power Supply:

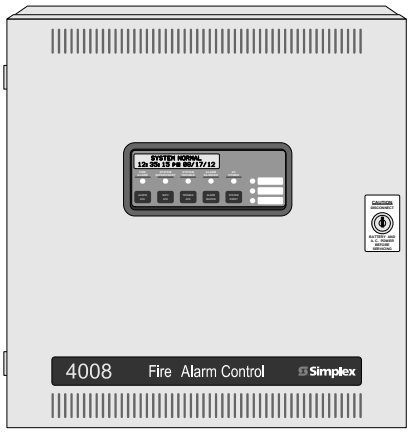
- Provides 3 A maximum @ nominal 24 DC
- Automatic input power selection operates with 120 VAC or 240 VAC, 50 or 60 Hz
- On-board temperature compensated battery charger for up to 12.7 Ah batteries in cabinet (UL and ULC) and up to 25 Ah batteries in separate cabinet (UL only)

Additional standard features:

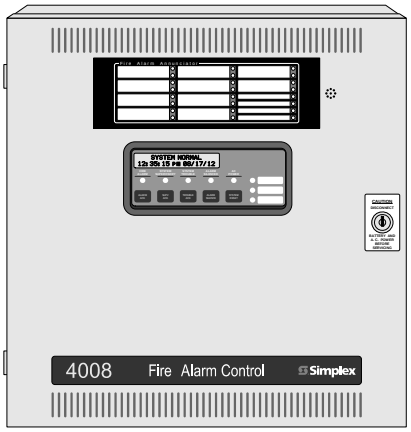
- Programmable Active Status Reminder
- Two auxiliary relays
- NACs, Relay outputs, and communications circuits are power limited (AC input, battery circuits, and City Circuit Module outputs are non-power limited)
- Available with beige or red cabinet
- UL listed to Standard 864

Available option modules:

- Door mounted 24 LED annunciator (standard on ULC models)
- 3 A Expansion Power Supply with two on-board 2 A NACs that operate the same as standard NACs
- City Interface Module and Auxiliary Relay Module
- Remote LCD and LED/Switch Annunciators



4008-9102 (Beige) Standard Control Panel



4008-9122 (Beige) Control Panel with 24 LED Annunciator (required for ULC applications)

Description

For areas requiring up to 200 addressable input devices and up to 4 NACs, the Simplex 4008 Series fire alarm control panels provide flexible initiating circuit monitoring, extensive programmable control capability, and LCD annunciated circuit-specific 20 character custom labels.

* See page 2 for additional ULC and MEA information. 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 7165-0026:318 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. 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.

Standard Feature Details

Addressable operation is provided by an IDNet signaling line circuit (SLC) capable of communicating to up to 200 addressable devices (points). Addressable devices include: TrueAlarm smoke detection, heat detection, and duct detection; supervised addressable modules for single and multiple contact monitoring, manual stations, isolation modules, and a remote signal module (see list on page 4.) (Please note that this panel provides a limited TrueAlarm operation feature set. For larger applications that require the full complement of TrueAlarm features, contact your local Simplex product supplier.)

Two, 2 A On-Board NACs provide conventional reverse polarity operation, selectable as Class A or Class B, with electronic control and overcurrent protection. Operation is selectable for synchronized strobe or SmartSync horn/strobe two wire operation. Horn control can be selected at the panel for: Temporal pattern coding, Steady On, Slow March Time of 20 beats per minute (BPM), or Fast March Time of 120 BPM. **Note:** When selected for SmartSync horn/strobe control, March Time produces 60 BPM.

The 24 VDC Auxiliary output provides up to 500 mA for system use. (Auxiliary output current is counted for total power supply capacity.)

Standard Auxiliary Relay Outputs. Two relay outputs are available, selectable as normally open or normally closed, rated 2 A @ 30 VDC per below:

Aux Relay 1 is normally assigned to General Alarm operation but is programmable (see page 7)

Aux Relay 2 (Trouble) is energized when Normal and is de-energized with a Trouble condition.

Standard Feature Details *(Continued)*

On-Board Dual Line DACT. Operation can be selected for Contact ID, SIA, 3/1, 4/2, and BFSK formats. Reporting includes Alarm, Supervisory, Trouble, and AC Failure. Operation includes automatic 24 hour test and programmable power fail report delay.

Power Supply and Battery Charger. DC power output is 3 A @ 24 VDC for panel use. The temperature compensated battery charger (sealed lead-acid batteries only) is rated for up to 25 Ah batteries per UL 864 and up to 12.7 Ah per ULC-S527. (Up to 12.7 Ah batteries fit in the cabinet, larger batteries require an external cabinet.) Panel electronics can measure and display voltage and current for the power supply, batteries and the battery charger (standard and expansion power supply). Depleted battery trouble is monitored and annunciated and depleted battery cutout can be selected. Active battery status monitor supervises charger operation.

Optional Feature Details

Expansion Power Supply. Provides 3 A total @ 24 VDC, two additional 2 A NACs, and an additional auxiliary power output of 500 mA. Output operation is the same as on the standard power supply.

Expansion Relay Module. Provides three relays, one each for Alarm, Supervisory, and Trouble conditions. Each is jumper selectable as N.O. or N.C. Contacts are rated 2 A @ 30 VDC. Location is the same as for the City Circuit Modules.

City Circuit Modules. These modules are available with or without on-board disconnect switches, depending on local requirements (either type can be disconnected through the front panel under password control). Connections are for Remote Station (reverse polarity) or Municipal Master (local energy). Reporting includes Alarm, Supervisory, and Trouble.

Product Selection

Control Panel

Model	Color	Description	Listings		Standard Feature Summary
4008-9102	Beige	Standard fire alarm control panel	MEA	UL, FM, & CSFM	SLC with 200 addressable points, 2 Class B/Class A NACs, 3 A power supply with battery charger; on-board DACT; for input voltage of 120/240 VAC, 50/60 Hz (autoselect)
4008-9101	Red				
4008-9122	Beige	Fire alarm control panel with 24 LED Annunciator on front door	ULC		
4008-9121	Red				

Option Modules

Model	Description	
4008-9801	Expansion Power Supply; 3 A, with 2 NACs, 120/240 VAC, 50/60 Hz	Select one if required
4008-9802	Expansion Relay Module; 3 relays selectable as either N.O. or N. C.	Select one if required
4006-9805*	City Circuit Modules with disconnect switch	
4006-9806*	City Circuit Modules without disconnect switch	

* These City Circuit modules are also used on the 4006 Series control panels.

Accessories

Model	Description
2975-9811	Beige semi-flush trim kit; 1 7/16" (37 mm) wide; includes four corners and trim pieces for top, bottom, and sides
2975-9812	Red semi-flush trim kit; 1 7/16" (37 mm) wide; includes four corners and trim pieces for top, bottom, and sides
4009-9801	Beige External Battery Cabinet for up to 25 Ah batteries; mounts close-nippled to control panel cabinet; dimensions = 16 ¼" W x 13 ½" H x 5 ¾" D (413 mm x 343 mm x 146 mm)

Batteries, 12 Volt (select one battery model per system standby requirements; order quantity of two)

Model	Size	Model	Size	Location	Model	Size	Location
2081-9272	6.2 Ah	2081-9288	12.7 Ah	For cabinet mount	2081-9275	18 Ah	Requires 4009-9801 External Battery Cabinet (UL listed only)
2081-9274	10 Ah				2081-9827	25 Ah	

TrueAlarm Smoke Detection

TrueAlarm Addressable Detection. IDNet addressable device compatibility includes Simplex TrueAlarm photoelectric smoke and temperature sensors. The 4008 fire alarm control panel provides a subset of the complete analog TrueAlarm features. TrueAlarm sensors appear to the panel essentially as addressable detectors and that term is used for 4008 documentation.

Approximately every four seconds the addressable smoke detectors transmit an output value based on their smoke chamber condition. The panel CPU internally maintains a current value, peak value, and an average value for each detector's output. Status is determined by comparing the current value to its average value. Tracking this average value as a continuously shifting reference point filters out environmental factors that cause shifts in sensitivity.

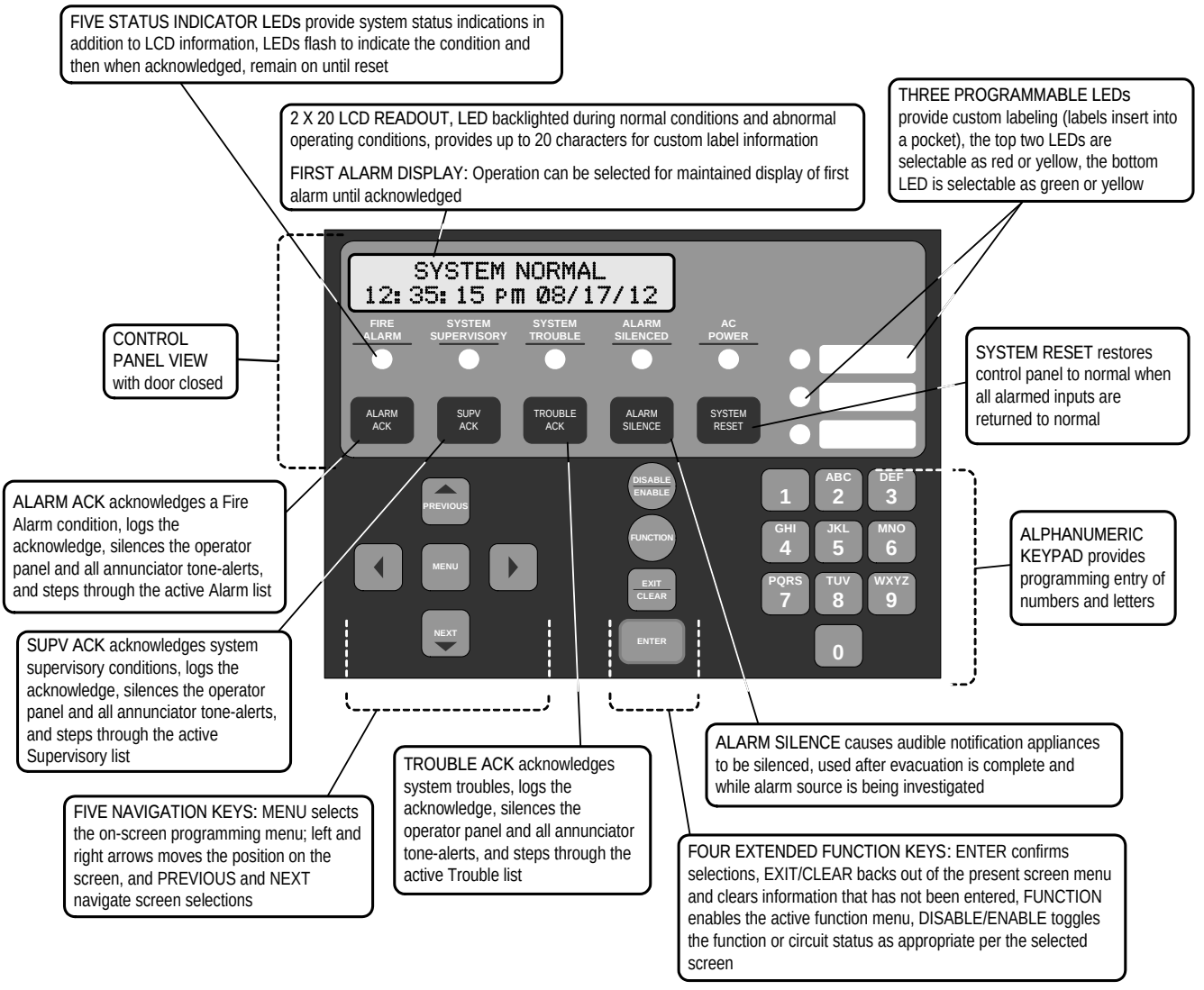
Alarm Determination. Photoelectric detection sensitivity is 2.5%/ft obscuration. All detectors can be selected for a reduced sensitivity detection mode that satisfies the city of Boston requirements. Addressable heat detectors provide a fixed temperature alarm at 135° F (57° C) and may be individually selected to also provide rate-of-rise alarm of 15° F (8.3° C) per minute where applicable.

Diagnostics and Default Device Type

Status Monitoring. 4008 TrueAlarm operation provides the ability to automatically indicate when an addressable detector is dirty or excessively dirty. The NFPA 72 (*National Fire Alarm and Signaling Code*) requirement for a test of the sensitivity range of the detectors is fulfilled by the TrueAlarm ability to maintain the sensitivity level of each addressable detector.

Modular Addressable Detector/Base Combination. Modular TrueAlarm addressable detectors use the same base which allows different detector head types (photoelectric smoke, or heat) to be easily interchanged to meet specific application requirements. This feature also allows intentional detector (sensor head) substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke detectors (causing them to be disabled), heat detector heads may be installed without reprogramming the control panel. Although the control panel will indicate an incorrect detector type, the heat detector will operate at a default setting to provide heat detection for building protection at that location.

Keyboard Reference



Compatible Simplex Peripherals (see specifications on page 5 for notification appliances)

Detector Heads and Addressable Bases (refer to page 3 for 4008 detector/sensor terminology)

Model	Detector Head Type	Compatible Addressable Base		Data Sheet
4098-9714 4098-9733	Photoelectric Heat, 135° F (57° C)	4098-9792, Standard detector base		S4098-0019
		4098-9789, Base for remote LED or relay		
		4098-9791, Features of 4098-9789 and remote supervised relay		
		4098-9794, Sounder base		S4098-0028
		4098-9793, IDNet Isolator base		S4098-0025
4098-9754	Photo and Heat	4098-9795, Dual address sounder base	**NOTE:** These bases require **two** addresses	S4098-0033
		4098-9796, Dual address standard base		

Duct Detection

Model	Description	Data Sheet
4098-9755	Addressable Duct Detector Housing with 4098-9714 detector, no relay control	S4098-0030
4098-9756	Addressable Duct Detector Housing with 4098-9714 detector, with remote relay control	

Addressable Devices

Model and Description	Data Sheet	Model and Description	Data Sheet	Model and Description	Data Sheet
4090-9001 Supervised IAM	S4090-0001	4090-9101 CL B ZAM	S4090-0003	4090-9007 Signal IAM	S4090-0010
4090-9051 Supervised IAM		4090-9106 CL A ZAM		4099-9001, 4099-9002, & 4099-9003 Manual Stations	S4099-0001
4090-9002 Relay IAM	S4090-0002	4090-9116 IDNet Isolator	S4090-0005		

Compatible System Expansion Panels

Model	Type	Description	Data Sheet
4003 Series	Voice Control Panel	Provides a remote voice control panel with on-board NACs, internal microphone, and remote microphone input	S4003-0002
4009 Series	Remote NAC Extender	Provides remote NACs; includes power supply and battery charger; **4 extenders** max/NAC; **4008 uses NAC output to provide control**	S4009-0002

Note: Contact your local Simplex Product Supplier for additional compatible peripherals.

Remote Annunciator Options

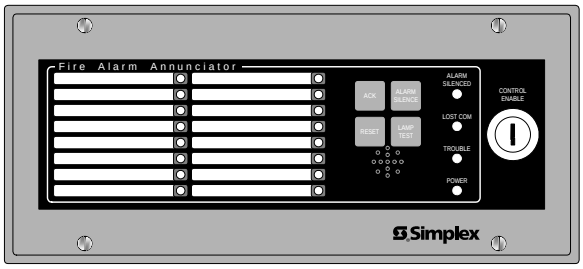
The 4008 supports up to four annunciator options including:

- Door Mounted 24 LED Annunciator
- 4610-9111 Remote LED/Switch Annunciators
- 4606-9101 Remote LCD Annunciators

Annunciators communicate at a rate of 9600 baud with power supplied by separate wiring.

4610-9111 LED Annunciator Features:

- 16 LEDs with programmable functions and dedicated LEDs for Alarm Silenced, Lost Communications, Trouble, and Power-on
- Keyswitch access controlled switches for Acknowledge, Alarm Silence, Reset, and Lamp Test
- Local tone-alert



4610-9111 LED/Switch Annunciator

4606-9101 LCD Annunciator Features:

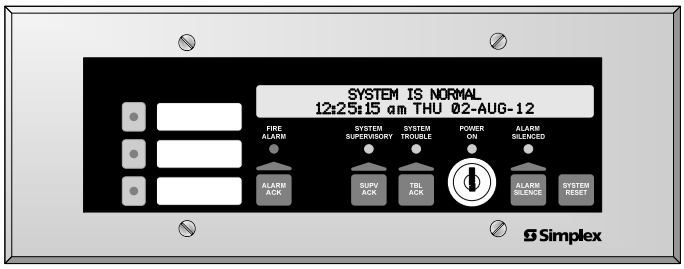
- LCD readout with two lines of 40 characters each and LED backlighting
- Wide viewing angle, super-twist design
- Keyswitch access controlled

Control switches and status LEDs for:

- Alarm, supervisory, or trouble acknowledge
- Alarm silence and 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



4606-9101 LCD Annunciator

Specifications (Refer to Installation Instructions 579-716 for additional information)

AC Input	Input Voltage	120 VAC, 60 Hz; 220/230/240 VAC, 50/60 Hz, auto-select
	Input Current, Standard	2 A maximum @ 120 VAC input; 1.5 A maximum @ 240 VAC input
	Input Current with Expansion Power Supply	4 A maximum @ 120 VAC input; 3 A maximum @ 240 VAC input
Power Supply Output		3 A maximum @ 24 VDC in alarm
Battery Charger		Temperature compensated charger is rated for up to 25 Ah per UL 864; up to 12.7 Ah per ULC-S527
Notification Appliance Circuits (NACs) (NOTE: Total DC current = 3 A maximum per power supply)		
General Rating		2 A maximum @ 24 VDC, per NAC; available as Class A or Class B; Class B end-of-line resistor = 10 kΩ, ½ W; Model 4081-9008 (P/N 733-894)
Special Application Rating = 2 A per NAC Strobe synchronization is UL listed across all four system NACs for these 4906 Series appliances		Simplex 4901 Series (horns) and 4906 Series Multi-Candela non-addressable strobes, horn/strobes, and speaker/strobes (contact your Simplex product representative for compatible appliances)
Regulated 24 VDC Rating = 1.5 A per NAC **NOTE:** Maximum strobe load on main power supply or expansion power supply is **1.35 A** per power supply (2.7 A total); remainder of power supply rating is available for other loading		Power for other UL listed appliances; use associated external synchronization modules where required
Standard Circuit Ratings (NOTE: Total DC current = 3 A maximum per power supply)		
Auxiliary Power Output		500 mA maximum @ 24 VDC
Standard Auxiliary Relay Outputs	Relay 1	Programmable operation — Contacts rated 2 A @ 30 VDC, 0.35 power factor; jumper selectable as N.O. or N.C.
	Relay 2	Trouble operation
Wiring Connections		Terminals rated for 18 AWG to 12 AWG (0.82 mm^2 to 3.31 mm^2)
IDNet Communications		
Quantity		Up to 200 addressable devices (see list on page 4)
Suppression		For wiring external to building, use Overvoltage Protector 2081-9044 at each end of the connection; refer to data sheet S2081-0016 for details
Wire Size		18 AWG (0.82 mm^2)
Wire Types	Unshielded twisted pair (UTP)	Acceptable for most applications; not for use with wiring in conduit with either NAC or AC power wiring (or similar)
	Shielded twisted pair (STP)	Shielded wire may provide protection from unexpected sources of interference and may be required for some applications; review system with your local Simplex product supplier
Distance from Control Panel to Farthest Device		Up to 4000 feet (1219 m) with 125 devices; 32 Ω
		Up to 2500 feet (762 m) with 200 devices; 51 Ω
Total Wire Length Allowed With "T" Taps for Class B Wiring		Up to 10,000 ft (3 km)
Total Capacitance Allowed		0.6 µF (600 nF)
Annunciator Communications		
Quantity Supported		Up to four annunciator modules per panel (see page 4 for details)
Wiring Size and Type		See description for IDNet wiring above
Wiring Distances	Bus-Style Wiring	Up to 4000 ft (1219 m); 0.58 µF (580 nF) maximum capacitance; 35 Ω max.
	"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, ½ W; 4081-9011; (part number 733-974)
	"T-Tap" Wiring	Connect one at panel and one at farthest device
Suppression		Use 2081-9044 Overvoltage Protectors where wiring leaves and enters a building (refer to data sheet S2081-0016)
Option Module Ratings		
Expansion Relay Module 4008-9802	Contact Ratings	2 A @ 30 VDC, 0.35 power factor; jumper selectable as N.O. or N.C.
	Wiring	Terminals rated for 18 AWG to 12 AWG (0.82 mm^2 to 3.31 mm^2)
Environmental Ratings		
Operating Temperature Range		32° to 120°F (0° to 49° C)
Operating Humidity Range		Up to 93% RH, non-condensing @ 100.4° F (38° C) maximum

Supervisory and Alarm Currents

Model	Module	Supervisory	Alarm
4008-9101 4008-9102	Standard fire alarm control panel	135 mA + 0.8 mA per IDNet device	190 mA + 1 mA per IDNet device
4008-9121 4008-9122	Control panel with 24 LED Annunciator	153 mA + 0.8 mA per IDNet device	240 mA + 1 mA per IDNet device
4008-9801	Expansion Power Supply	50 mA	60 mA
4008-9802	Expansion Relay Module	10 mA per energized relay	10 mA per energized relay
4006-9805	City Circuit Module with disconnect switch	30 mA	60 mA
4006-9806	City Circuit Module without disconnect switch	30 mA	60 mA
4606-9101	Remote LCD Annunciator (see data sheet S4606-0001)	65 mA	140 mA
4610-9111	Remote LED/Switch Annunciator (see data sheet S4610-0001)	40 mA	70 mA (all LEDs and tone-alert on)

**** Current Calculation Information:**

1. To determine total supervisory current, add currents of modules in panel to base system value **and** all auxiliary loads.
2. To determine total alarm current, add currents of modules in panel to base system alarm current **and** add all panel NAC loads **and** all auxiliary loads.

Addressable Device Information

The following addressable device types and hardware point types are provided. A combination of autoprogram, and either front panel or PC programming allows the operation to be selected per application.

Available Fire Detection Device Types

Device	Description	Options	
Photoelectric Addressable Detector	TrueAlarm operation with sensitivity = 2.5%/ft	Sounder base (selectable for single station operation)	With communications isolator
		With relay output	Selectable for all detectors to be at city of Boston sensitivity of 3.7%/ft
Heat Detector	Fixed temperature thermal detection at 135° F (57.2° C)	Sounder base (selectable for single station operation)	With communications isolator
		With relay output	Individually selectable to add rate-of-rise heat detection of 15° F/minute (8.3° C/minute)
Photoelectric Detector with Heat Detector	Combination detector, dual address base with options available per above		

Addressable Hardware Point Types

Function Type	Description	Function Type	Description
FIRE	Fire monitor device	WSO	Combination waterflow and water supervisory device
WATER	Waterflow monitor device	SUPV	Supervisory monitor
HEAT	Heat detector device	UTIL	Supervised utility monitor
DUCT	Duct detector device	TROUBLE	Trouble monitor
PULL	Manual (pull) station device	VSMOKE	Verified fire alarm; an alarm level causes the alarm verification cycle to start
SMOKE	Smoke detector device	STYLEC	Style C fire monitor
SO	Sprinkler Supervisory	LATSUPV	Latching supervisory monitor (supervisory latches until system is reset)
IAM	Individual Addressable Module	ISOL	Addressable Isolator
		MBZAM	Class B addressable IDC monitor module
SIGNAL	Signal IAM	MAZAM	Class A addressable IDC monitor module
RIAM	Addressable Relay	ADRPUL	Addressable manual station

NAC Operation Modes

Function Type	Description
SSIG	Alarm signal, on until silenced
RSIG	Alarm signal, on until reset
TROUBLE	Trouble signal
SUPV	Supervisory signal
QALERT	SmartSync 2-wire horn/strobe control; horn on until silenced, strobe on until reset
WHEELOCK	Provides Wheelock strobe synch protocol when using only Wheelock strobes on panel, not to be mixed with Simplex strobes
UTILITY	Utility signal, generic non-alarm

Relay Operation Modes

The following relay operations are selectable from either the front panel or the PC programmer.

Common Fire Alarm Operations

Function Type	Relay Activates Upon	Relay Deactivates Upon
SRELAY	General Alarm	Silence
RRELAY	General Alarm	Reset
SUPV	Supervisory condition	Clear
TRBL	Trouble condition	Clear

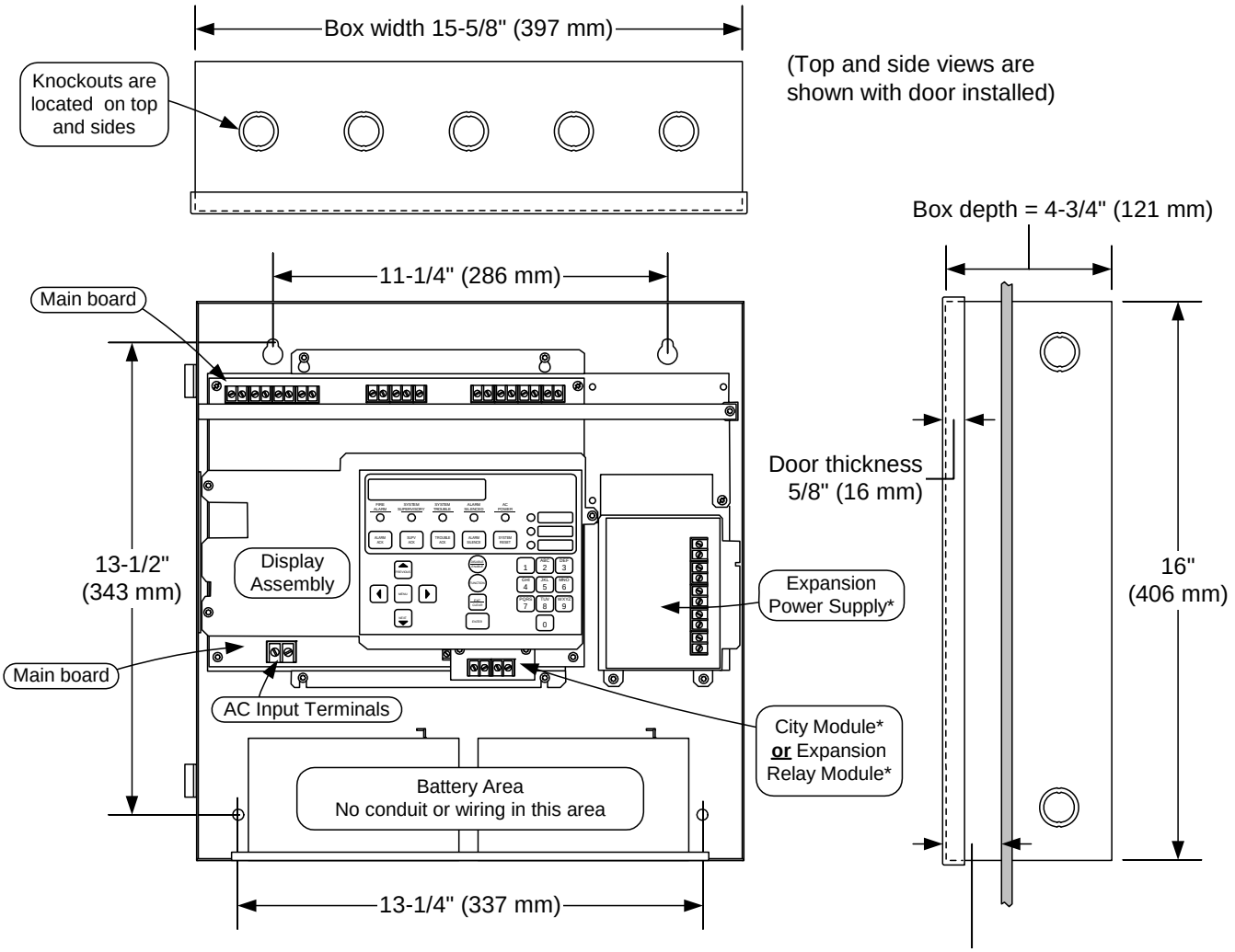
Special Functions

Function Type	Description
UTILITY	Utility input in the same alarm group activates
PRIMARY	General alarm; relay is tied to Primary Elevator Recall contacts
ALTERN	General alarm; relay is tied to Alternate Elevator Recall contacts
DRESET	Relay provides 24 VDC power to 4-wire addressable detectors; relay turns off for 5 seconds on System Reset
DHOLDER	Relay provides 24 VDC to larger door holder relay with separate power source; relay activates on general alarm to remove power to door holder relay and close doors

Additional Programming Feature Details

Function	Details								
Custom labels	Up to 20 characters per point; a built-in message library provides for commonly used words for easy front panel programming								
Message Library	For front panel label creation convenience, the following words can be selected as part of a custom label (_designates a built-in space; typing the first letter of a word/number will select the closest word in alphabetical/numerical sequence)								
	North South East West Front	Center rear 5th Flr_1 Flr_2	Flr_3 Flr_4 Flr_5 RM_	Basement Floor Garage Hallway HVAC_Room Kitchen	Lobby Office Patient upper lower	main first 2nd 3rd 4th	Boiler_RM Classroom Closet_ Corridor Elect_RM	Elevator Entrance Restroom Room Stairway	Storeroom Wing Zone
History logs	Three separate logs: Alarm (100 entries), Supervisory (100 entries), and Trouble (300 entries); logs can be queried separately, or as a combined log; logs can be downloaded for printing or archiving using the RS-232 service port								
Autoprogram	Automatically scans system for installed option modules and configures panel programming accordingly; modes are available to detect new modules only, recreate default programming and then add all modules found; Scans of addressable loop adds addressable devices, displays total added; checks for duplicate addresses and identifies errors								
Alarm Groups	Up to 99 alarm groups are available, any point may be in up to 3 alarm groups; this allows NAC and relay operation to be associated with inputs according to local response requirements								
WALKTEST	Allows one person to perform system testing; alarm or trouble tests are followed by automatic reset; the alarm zone is sounded out by associated audible notification or the response is silently logged into the Alarm log								
Manual Control	Allows selection of individual relays or NACs for system testing								
Passcode Protection (4-digit number)	Level 1 = Acknowledge, Silence, System Reset, View logs, View point information, and Lamp Test Level 2 = All Level 1 + Set Time/Date, Point Control, Enable/Disable points Level 3 = All Level 2 + Clear logs, Clear verification tallies, Custom label editing, and WALKTEST Level 4 = All Level 3 + Programming, Upload/Download; this is the Service access level								

Installation and Module Placement Reference



* Indicates optional modules

NOTE: For semi-flush mounting, cabinet must extend 1-1/2" (38 mm) minimum from wall surface

Door LED Annunciator Details