Sigma A-CP

Conventional Fire Control Panel Installation and Operation Manual

Man-1194 Issue 02.00 January 2025



Underwriters Laboratories (UL)

File number (S 8485)

Fire Alarm Equipment

Kentec Electronics Ltd.

Models K1842-XY, K1844-XY and K1848-XY of the Sigma A-CP Fire Control Panel are suitable as follows:

- Without integrated dialer and conventional detection for 2, 4 or 8 zones.
- Non-coded Signaling, DACT requires Integrated Dialer
- Local Signaling Unit
- Commercial protected-premises control unit
- Style Y for Notification Appliance Circuits
- Types of signaling services are NFPA 72 conventional IDC Class B and Style C or Class B, Style B, automatic fire alarm, manual fire alarm
- Compatibility APC0110
- Install detectors with spacing as specified in section 90.19 of UL 864, 9th edition where units employing the multiple detector operation shall include guidelines for installing of a minimum of two detectors in each protected space and to reduce the detector installation spacing to 0.7 times the linear spacing in accordance with National Fire Alarm Code, NFPA 72. Also reference 55.3.1 and 55.3.2 of UL 864, 9th edition for these detector spacing requirements.

"X" shown in the model numbering denotes a variable for color where red is "1" and gray is "4".
"Y" shown in the model numbering denotes a variable for input voltage where 115 VAC is "0" and 230 VAC is "1".

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Sigma A-CP Fire Control Panel - Installation and Operation Manual
Man-1194 (K1861-00), Revision E02.00

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Section 1

Introduction

This manual describes conventional detection models of the Sigma A-CP Fire Control Panel. These models can include or exclude dialer communication.

Models *including* dialer communication are the 2 zone K1852, 4 zone K1854 and 8 zone K1858.

Models *excluding* dialer communication are the 2 zone K1842, 4 zone K1844 and 8 zone K1848.

Power supply options of these models are available for 115 VAC or 230 VAC and cabinet colors are available in red or gray.

Reference Appendix B, Equipment list of this manual for a complete description of features available for the Sigma A-CP Fire Control Panel.

This section describes:

- Using This Manual
- Related Documentation
- Document Conventions
- If You Need Help
- Contacting Kentec For Repair

The figure below illustrates the Sigma A-CP Fire Control Panel:

Figure 1-1
Sigma A-CP Fire Control Panel



Using This Manual

The following sections provide instructions for installing, testing and troubleshooting the Sigma A-CP Fire Control Panel:

Section 1	Introduction provides document conventions, the technical help-line, repair and return information.
Section 2	Overview provides a summary of features for describing the operation of the Sigma A-CP Fire Control Panel.
Section 3	Installation describes how to setup, install, test and troubleshoot the Sigma A-CP Fire Control Panel.
Section 4	Operation describes how to open security functions for Access Level 2 or Access Level 3, identify Alarm Conditions, Controls and Indicators, understand Relay Contacts and how to Configure Ancillary Circuit Boards.
Section 5	Maintenance and Repair describes how to maintain and repair the Sigma A-CP Fire Control Panel.
Appendix A	Specifications provide characteristics of the Sigma A-CP Fire Control Panel.
Appendix B	Equipment List provides model numbers for Kentec Sigma A-CP Fire Control Panels, loop devices, accessories, replacement parts and compatible Notification Appliances.
Appendix C	Calculations provides calculations for determining load capacity, battery rating, and wiring length of the Sigma A-CP Fire Control Panel.
Appendix D	Operating Instructions provides an overview of Sigma A-CP Fire Control Panel status and control instructions.

Document Conventions

This document contains conventions for part numbers and writing style.

Part Numbers

Part numbers are provided in Section 1, Appendix B and Appendix D of this manual. Refer to Appendix D, Door Label for a diagram summary of this manual. Refer to Appendix B, Equipment List for a complete list of part numbers required for completing this installation.

Writing Styles

Before you begin using the Sigma A-XT Fire Control Panel, familiarize yourself with the stylistic conventions used in this manual:

Italic type	Denotes a displayed variable, a variable that you must type, or is used for emphasis.
`Courier font`	Indicates text displayed on a computer screen.

If You Need Help

If you need technical support contact Kentec at + 44 (0) 1322 222121 or e-mail the department, techsupport@kentec.co.uk. Kentec technical support is available Monday through Friday, 8:00 AM to 5:00 PM and Saturday 8:00 AM to 12:00 PM.

Limited Returns and Repairs Policy

In-Warranty Items

All equipment supplied by Kentec Electronics Ltd is provided with a warranty, as defined in Section 8 (Warranties & Liability) of the Terms and Conditions of Sale. These warranties are between Kentec Electronics Ltd (the Seller) and the company that placed the order upon the seller (the Buyer). The warranty period is valid for 36 months from the delivery date and is non-transferable.

Damaged Goods

In the event of damage to equipment during transit or any defect in the quality of goods, the Buyer shall notify Kentec Electronics Ltd within seven days of delivery as detailed in Section 8.5 of the Terms & Conditions of Sale. The goods may then be returned to the Customer Service Department of Kentec Electronics Ltd. for repair, or replacement parts may be supplied (by arrangement).

Component Failure

In the event of a defect of the supplied equipment during the warranty period, due to defective materials or workmanship, then replacement parts shall be supplied to the Buyer using the Service Replacement Item (SRI) scheme.

Service Replacement Items

The Buyer shall request the replacement part(s) required from the Customer Service Department. This request shall be made by fax to +44 (0)1322 291794 or e-mail to sales@kentec.co.uk and shall include the parts required, the panel Works Order (W/O) Number and the required delivery address.

If the Buyer is not aware of the required replacement part(s), additional advice may be obtained from the Technical Support Department of Kentec Electronics Ltd. Once the SRI has been approved, items are normally dispatched for next day delivery within the mainland UK, subject to stock availability. SRI parts are supplied on the following terms and conditions:

- SRI parts are loan items and are not available for resale.
- At all times, Kentec Electronics Ltd. retains the title of SRI parts supplied, as detailed in Section 7.4 of the Terms and Conditions of Sale.
- All SRI parts must be returned to the Customer Service department of Kentec Electronics Ltd within 14 days of delivery.
- Any SRI parts that have not been returned within 28 days of delivery will be invoiced at the price given in the Kentec Price List, less discount.
- Any returned items that are found to have failed due to fair wear and tear, willful damage, negligence, abnormal working conditions, misuse or alteration or repair without the Suppliers approval or failure to follow the sellers instructions will be subjected to a repair fee of up to the price given in the Kentec Price List, less discount.
- Any returned items that are not part of the original equipment or are not in warranty will be invoiced at the price given in the Kentec Price List, less discount where applicable.
- All SRI parts shall be returned in the same packaging as the replacement parts were supplied in. Failure to ensure that adequate anti-static precautions are taken during the replacement of parts, or in the return of SRI parts may result in an invoice of up to the price given in the Kentec Price List, less discount.
- Any SRI parts returned without the completed SRI delivery report or any SRI reference documentation will be invoiced at the price given in the Kentec Price List, less discount.

The right to receive Service Replacement Items is regularly reviewed and may be withdrawn from persistent abusers of this facility. Kentec reserve the right not to supply SRI items without prior notice.

Out of Warranty Items

Kentec Electronics Ltd provides a test and repair facility for most standard and special build products. This facility can also recondition control panels, subject to availability of components.

Customer Repairs

Items for repair shall be returned to the Customer Service Department of Kentec Electronics Ltd. Any items returned for repair must be accompanied with the following:

- A request for repair work to be undertaken.
- A customer contact name.
- Details of the company requesting the repair.

Failure to supply the required information will result in the returned items being quarantined for a period not exceeding 60 days. If the items are not identified within 60 days of receipt, then Kentec Electronics Ltd reserves the right to dispose of these items or return them.

A written quotation will be provided for all items to be repaired that are not included in the repair prices section of the Kentec Price list. No repairs or refurbishment will be undertaken without prior authorisation from the customer and a written order for the repair work. Returned equipment will be held awaiting authorisation for a period not exceeding 60 days from the date of quotation. After this period, Kentec Electronics Ltd. reserves the right to dispose of these items or return them.

Repair Warranties

Repaired items are not covered by the normal Warranties and Liability conditions in the Terms and Conditions of Sale. Subsequent failures of repaired items will only be covered if the failure is due to a material or workmanship defect directly associated with the repair and for a period not exceeding three months from the date of the repair.

Kentec Electronics Ltd are under no liability if the repaired or replaced components are found to have failed due to fair wear and tear, willful damage, negligence, abnormal working conditions, misuse or alteration or repair without approval or failure to follow the sellers instructions.

Items Returned For Credit

Items shall only be accepted for credit by written approval with the Operations Manager or Directors of Kentec Electronics Ltd. Items will only be eligible for credit in the first 3 months from the supply date.

Before any items are returned for credit, an RMA reference number must be obtained from the Sales / Operations Department. This number must be used for any correspondence relating to the goods. All goods returned for credit must be approved before receipt.

Written approval will then be issued using a Goods Return Application Form (KENQA196.03.03). A copy of this form must be supplied with the returned goods. The RMA reference number must be clearly marked on the outer packaging when returning goods to the company.

Goods must be returned to Kentec Electronics Ltd within 30 days of the issue of the Goods Return Application Form. Only items listed on this from must be returned under the RMA reference. Items returned without prior request for an RMA reference may be returned to the customer.

Failure to supply the required information will result in the returned items being quarantined for a period not exceeding 60 days. If the items are not identified within 60 days of receipt, then Kentec Electronics Ltd reserves the right to dispose of these items.

Any items returned for credit will be tested and returned to a production release condition. Any material and labour costs associated with this process shall be deducted from the credit amount in accordance with the Returned Goods Policy in the Kentec price list and at the discretion of the Managing Director.

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Section 2

Overview

The Sigma A-CP Fire Control Panel is a conventional fire control panel with features for operating detection zones, Notification Appliance Circuits (NACs), relays and auxiliary 24 volt power.

Models of the Sigma A-CP Fire Control Panel support synchronization protocols from Wheelock, Gentex, Amseco and System Sensor.

These models are UL864 listed for operating:

- Detection devices from Apollo, Hochiki, Kentec and System Sensor
- UL listed conventional initiation devices
- Notification devices from Gentex, Wheelock, System Sensor and Amseco

The fire control panel provides Class B zone detection under default conditions and Class A loop detection on one zone when configured. Default zones of the Sigma A-CP Fire Control Panel can operate as NFPA 72 Class B, Style C or NFPA 72, Class B, Style B.

The functions of Style C provide *trouble conditions* for direct-shorts and opens on zone loops. The functions of Style B provide *alarm conditions* for direct-shorts and *trouble conditions* for opens on zone loops.

A Dialer Board can be installed as an optional feature to provide alarm and trouble reporting. The Optional Dialer Board provides Contact ID or SIA format reporting through a standard POTS connection.

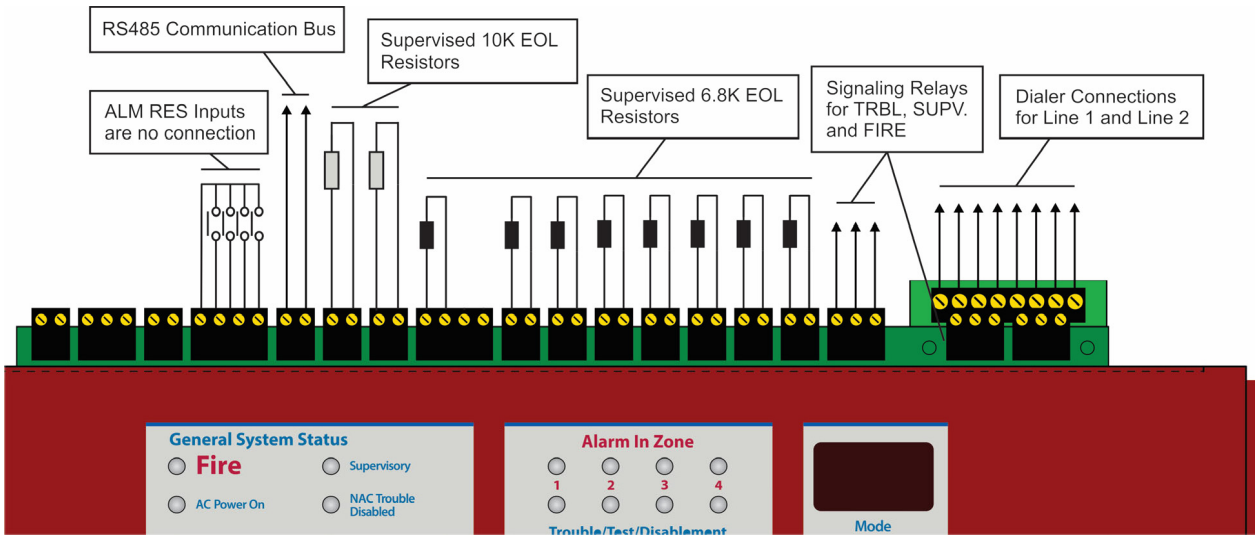
Models of the Sigma A-CP Fire Control Panel provide a resettable, unregulated and special application 24 VDC power output suitable for powering 4 wire detectors on eight zones. These models also include two unregulated solid state NAC outputs.

Relays are provided on these fire control panels for Trouble, Supervisory and Fire.

Access levels are provided for controls and programming on the Sigma A-CP Fire Control Panel. Access Level 1 provides restricted controls, Access Level 2 provides less restricted controls with limited programming and Access Level 3 provides unrestricted controls and programming.

The figure below illustrates Class B field wiring terminations of the Sigma A-CP Fire Control Panel:

Figure 2-1
Field Wiring Terminations



Models of the Sigma A-CP Fire Control Panel provide:

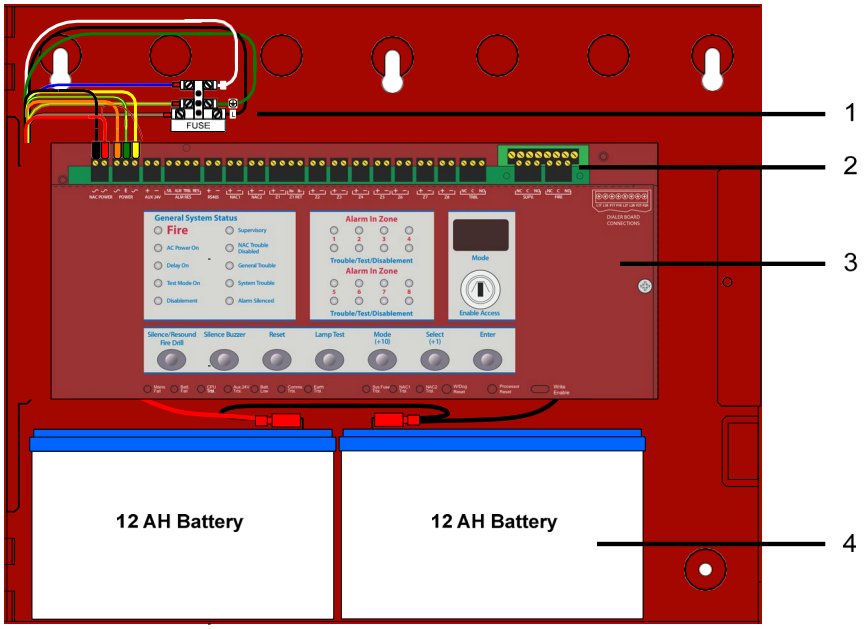
Zone Testing	Zone testing provides the automatic resetting of zones in alarm for testing purposes.
NAC Delay	Delay on NAC outputs allows alarm to be verified before premises is evacuated.
Voltage Free Relay Contacts	Voltage free relay contacts provide fire, supervisory and trouble reporting for local control and signaling.
Power	All models accept standby-batteries and contain a power supply with an internal battery charger.

Models of the Sigma A-CP Fire Control Panel accept 7 AH or 12 AH valve-regulated, lead-acid batteries and operate in special application modes for power inputs of 115 VAC or 230 VAC.

Hardware Features

The figure below illustrates hardware features of the Sigma A-CP Fire Control Panel:

Figure 2-2
Hardware Features



Key	Item	Description
1	**Main Terminal Block and Fuse Holder**	The Main Terminal Block accepts input power and transformer primary connections. The Main Terminal Block contains a 3.15 Amp slow-blow fuse rated for 250 VAC. Connections from the primary of the transformer to the Main Terminal Block are pre-wired at the factory. Terminals of the Main Terminal Block are designated Line, Neutral and Ground.
2	**Field Terminals**	Field terminals provide connections for Zones, NACs, Relay Outputs and AUX 24V.
3	**Fascia**	The front fascia of the Sigma A-CP Fire Control Panel is populated with controls and indicators for programming and operating the fire control panel.
4	**Standby-Batteries**	The Sigma A-CP Fire Control Panel accepts two 12 VDC, 7 AH or 12 AH batteries for operating during an AC power failure.

Internal Power Supply

The internal power supply of the Sigma A-CP Fire Control Panel meets UL 864, 9th edition and provides a 4 Amp, linear power-source for operating FACP functions as well as charging the standby batteries.

Reference Appendix C, Calculations to determine load current limitations of the 4 Amp power supply.

Features of the internal power supply include:

Battery-Backup	Provides battery power to the load when the AC input of the power supply falls below the rated level. The voltage at the load remains within the specified range during these switching-transitions.
Short-Circuit Protection	Provides a shut down on the load side of the power supply when the load-current exceeds the maximum level.
Status	The AC input to the power supply is supervised by the Sigma A-CP Fire Control Panel. The control panel provides an LED status display for normal and trouble conditions. Normal conditions occur when the power supply is operating in an acceptable range. Trouble conditions occur when the power supply is not operating in an acceptable range.

Power Outputs

The Sigma A-CP Fire Control Panel provides power outputs to the terminals of NAC 1, NAC 2, and AUX 24V terminals.

Reference Section 3, Installation and Appendix A, Specifications for further information concerning NAC and AUX 24V outputs of the Sigma A-CP Fire Control Panel.

NAC Outputs

NAC outputs of the Sigma A-CP Fire Control Panel are programmable and can be operated in regulated or special application mode.

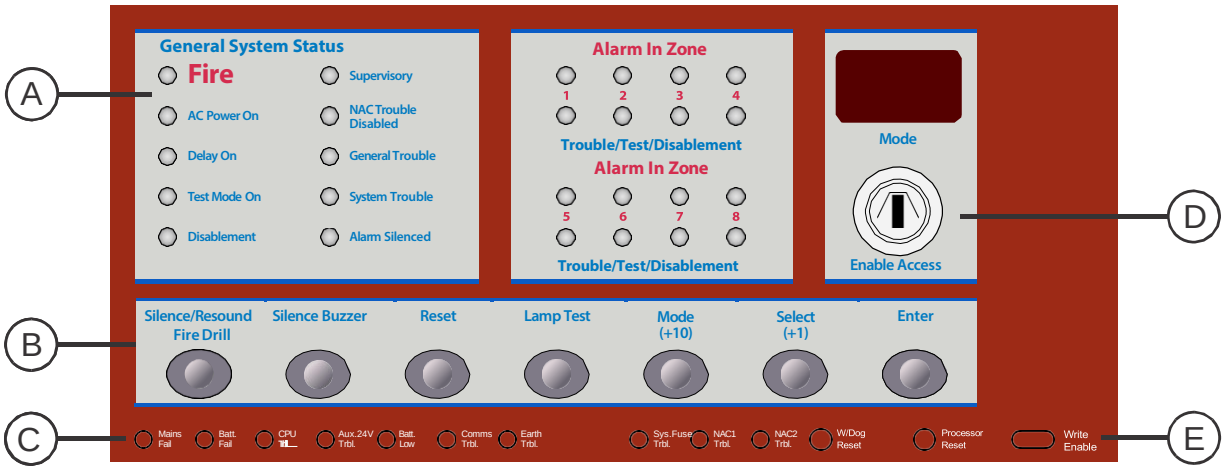
Reference Appendix A, Specifications for constraints and operating levels of these NAC output modes.

Panel Controls and Indicators

The fascia of the Sigma A-CP Fire Control Panel is divided into sections for controls and indicators.

The figure below illustrates controls and indicators of the Sigma A-CP Fire Control Panel:

Figure 2-3
Controls and Indicators

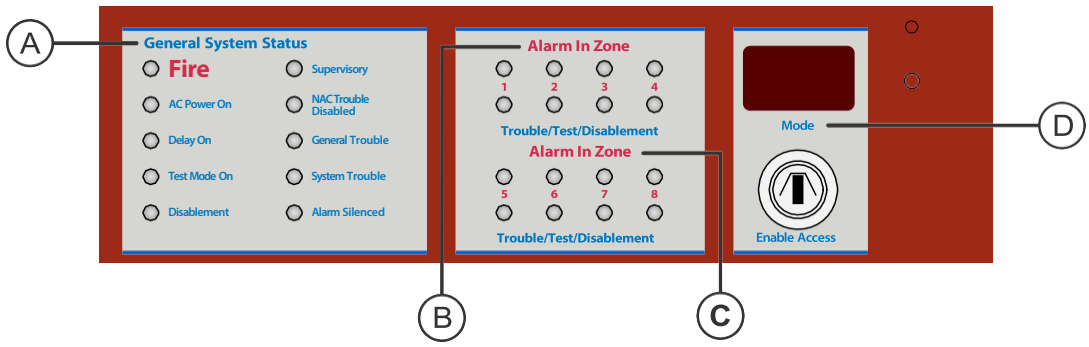


Key	Description	Key	Description
A	Upper Indicators	**D**	Upper Controls
B	Central Controls	**E**	Lower Controls
C	Lower Indicators		

Upper Indicators

The figure below illustrates upper indicators of the Sigma A-CP Fire Control Panel:

Figure 2-4
Upper Indicators



The table below describes upper indicators of the Sigma A-CP Fire Control Panel:

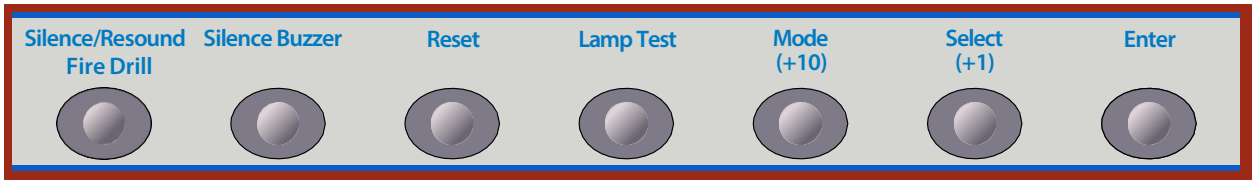
Key	Upper Indicators	LED Color
A	**General System Status**	
	Fire	Red
	AC Power On	Green
	Delay On	Yellow
	Test Mode On	Yellow
	Disablement	Yellow
	Supervisory	Yellow
	NAC Trouble Disabled	Yellow
	General Trouble	Yellow
	System Trouble	Yellow
	Alarm Silenced	Yellow

Key	Upper Indicators	LED Color
B	**Alarm In Zone**	
	1 Trouble/Test/Disablement	Yellow
	Alarm	Red
	2 Trouble/Test/Disablement	Yellow
	Alarm	Red
	3 Trouble/Test/Disablement	Yellow
	Alarm	Red
	4 Trouble/Test/Disablement	Yellow
	Alarm	Red
C	**Alarm In Zone**	
	5 Trouble/Test/Disablement	Yellow
	Alarm	Red
	6 Trouble/Test/Disablement	Yellow
	Alarm	Red
	7 Trouble/Test/Disablement	Yellow
	Alarm	Red
	8 Trouble/Test/Disablement	Yellow
	Alarm	Red
D	**Two Seven-Segment LEDs**	
	Mode	The Mode display contains two seven-segment LEDs for programming configurations and identifying status conditions.

Central Controls

The figure below illustrates central controls of the Sigma A-CP Fire Control Panel:

Figure 2-5
Central Controls



The table below describes central controls of the Sigma A-CP Fire Control Panel:

Central Controls	Modes
Silence/ Resound Fire Drill	Silences all NACs during a fire alarm or silences a fire drill when in a standby condition. Resounds all NACs and activates the FIRE relay when in alarm or in a fire drill condition after receiving authorization through Access Level 2.
Silence Buzzer	Silences the internal buzzer of the Sigma A-CP Fire Control Panel after receiving authorization through Access Level 2.
Reset	Resets latching inputs such as fire and pre-alarm events after receiving authorization through Access Level 2. Trouble events are non-latching inputs and cannot be cleared by the Reset button. Non-latching inputs are cleared when faults are cleared.
Lamp Test	Tests fascia indicators and the internal buzzer of the Sigma A-CP Fire Control Panel by illuminating all LEDs while sounding the buzzer.
Mode (+10)	Changes the tenths position on the numeric Mode display for programming configuration codes. Reference Section 4, Operating and Programming for instructions regarding configuration codes of the Sigma A-CP Fire Control Panel.
Select (+1)	Changes the ones position on the numeric Mode display for programming configuration codes. Reference Section 4, Operating and Programming for instructions regarding configuration codes of the Sigma A-CP Fire Control Panel.
Enter	Enables the menu selection to function on the Sigma A-CP Fire Control Panel.

Lower Indicators

The figure below illustrates the lower indicators of the Sigma A-CP Fire Control Panel:

Figure 2-6
Lower Indicators



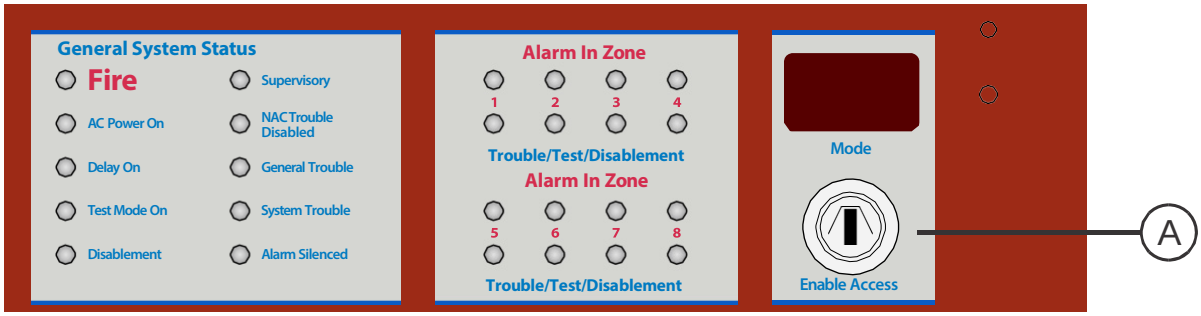
The table below describes lower indicators of the Sigma A-CP Fire Control Panel:

Lower Indicators	LED Color
Mains Fail	Yellow
Batt. Fail	Yellow
CPU Trbl.	Yellow
Aux 24V Trbl.	Yellow
Batt. Low	Yellow
Comms. Trbl.	Yellow
Earth Trbl.	Yellow
Sys Fuse Trbl.	Yellow
NAC1 Trbl.	Yellow
NAC2 Trbl.	Yellow

Upper Controls

The figure below illustrates upper controls of the Sigma A-CP Fire Control Panel:

Figure 2-7
Upper Control



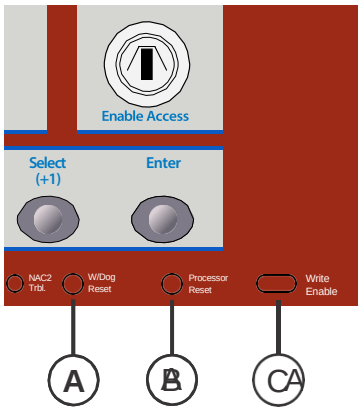
The table below describes upper controls of the Sigma A-CP Fire Control Panel:

Key	Upper Controls	Description
A	**Enable Access**	Insert the key in the Enable Access lock and turn it the right to open ACCESS LEVEL 2.

Lower Controls

The figure below illustrates lower controls of the Sigma A-CP Fire Control Panel:

Figure 2-8
Lower Controls



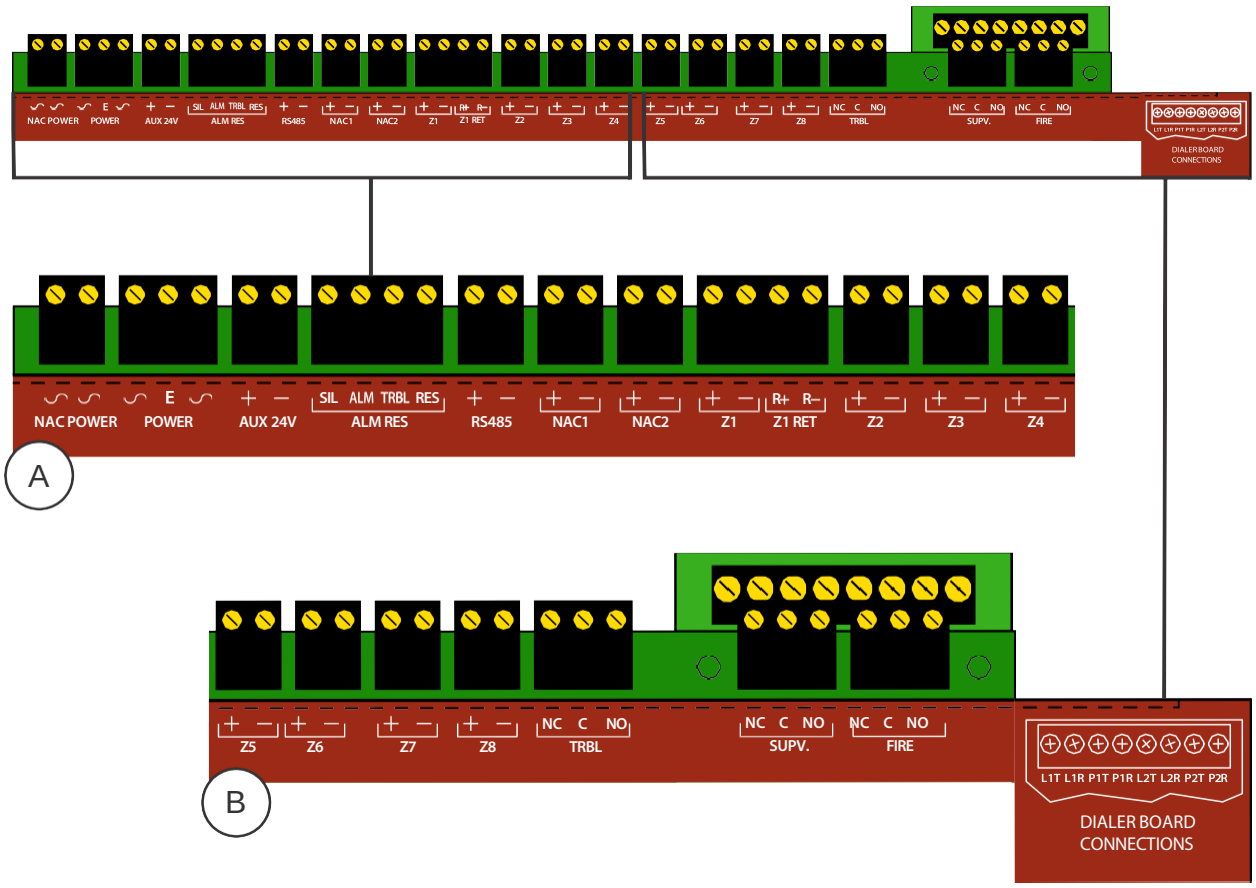
The table below describes lower controls of the Sigma A-CP Fire Control Panel:

Key	Lower Controls	Description
A	**W / Dog Reset**	Clears the watchdog event caused when the fire control panel failed to carry out an operation.
B	**Processor Reset**	Resets processors and restores operation of the fire control panel.
C	**Write Enable**	Slide-switch used in conjunction with the Enable Access switch to configure the fire control panel in Access Level 3.

Field Terminals

The figure below illustrates field terminals of the Sigma A-CP Fire Control Panel:

Figure 2-9
Field Terminals



The table below describes field terminals of the Sigma A-CP Fire Control Panel:

Field Terminals	Description
Group A	
NAC POWER	No user connections, pre-wired connections from the factory, unused user function
POWER	No user connections, pre-wired connections from the factory, unused user function
AUX 24V	24 VDC, 500 mA maximum, unregulated and special application
ALM RES	No connection, unused function
RS485	No Connection. Reserved for future use.
NAC1 and NAC2	Notification Appliance terminals provide outputs containing 24 VDC, supervision and special application.
Z1 and Z2 through Z4	These conventional inputs accept only authorized conventional detectors that provide two-wire smoke and closed contacts.
Z1 RET	Class A loop return connections for Z1 terminals only.
Group B	
Z5 through Z8	These conventional input terminals accept only authorized conventional detectors that provide two-wire smoke and closed contacts.
TRBL	Contacts of the trouble relay (TRBL) support a maximum load of 1 Amp with voltage free change-over.
SUPV.	Contacts of the supervisory relay (SUPV.) support a maximum load of 1 Amp with voltage free change-over.
FIRE	Contacts of the fire relay (FIRE) support a maximum load of 1 Amp with voltage free change-over.
DIALER BOARD CONNECTIONS	Provides two pairs of connections for line and phone with tip and ring features. *The Dialer Board is an optional feature on models of the Sigma A-CP Fire Control Panel.*

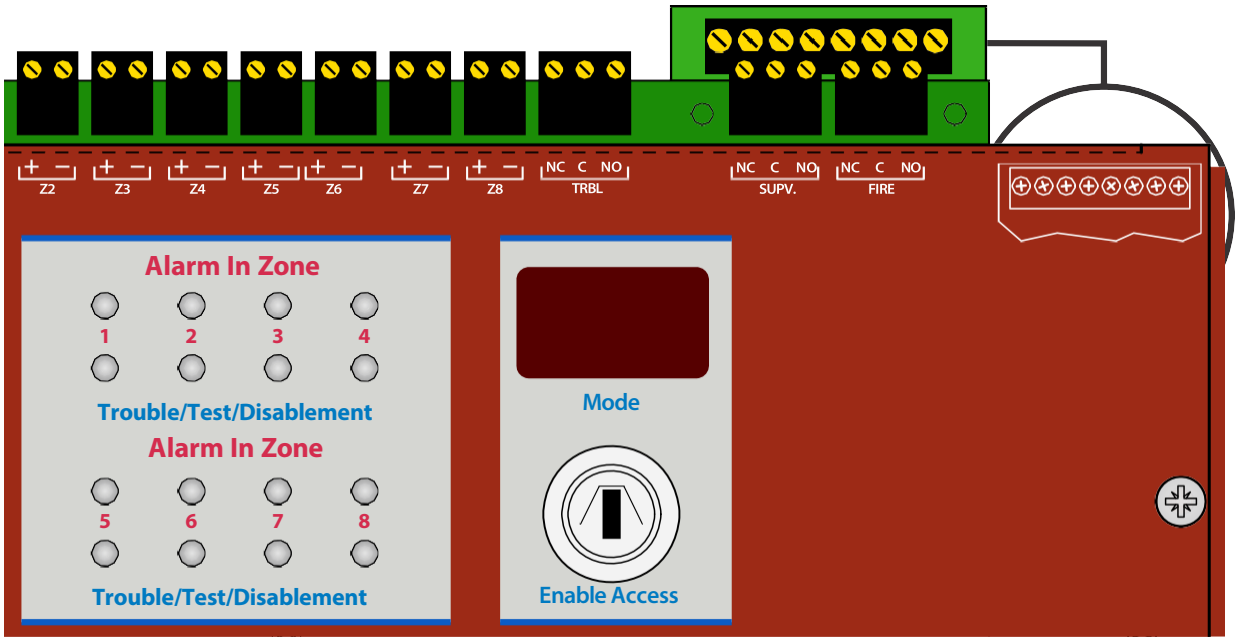
Reference Appendix A, Specifications for operating characteristics of these terminals.

Optional Dialer Board

The Dialer Board is an optional DAC (Digital Alarm Communicator) feature provided on specific models of the Sigma A-CP Fire Control Panel. The Optional Dialer Board connects to the Main Board of the fire control panel and communicates status and alarm conditions to digital receivers.

The figure below illustrates field terminals of the Optional Dialer Board:

Figure 2-10
Field Terminals of the Optional Dialer Board



Section 3

Installation

This section provides instructions for connecting cables, mounting and testing the Sigma A-CP Fire Control Panel for installation.

Install this product in accordance with NFPA 72, the National Electrical Code and all local codes.

General Installation Checklist

To complete the installation:

1 Create a plan for the fire alarm system and provide a checklist for installing the fire control panel.

2 Identify the operating constraints of the fire alarm system and then determine the battery capacity of the fire control panel.

3 Check the contents of the shipping package containing the Sigma A-CP Fire Control Panel.

4 Remove the cabinet-door of the Sigma A-CP Fire Control Panel.

5 Remove the fascia from the cabinet-box of the Sigma A-CP Fire Control Panel.

6 Remove the standby-batteries from the base of the cabinet-box.

7 Mark the location for anchoring the cabinet-box to the premises-wall.

8 Mount the cabinet-box of the fire control panel to the premises-wall.

9 Feed, secure and connect cabling for AC power and field terminals.

10 Replace the standby-batteries in the base of the cabinet-box.

11 Reattach the fascia to the cabinet-box of the Sigma A-CP Fire Control Panel.

12 Reattach the cabinet-door to the cabinet-box.

13 Connect the standby-batteries to the Sigma A-CP Fire Control Panel.

14 Apply AC power from the main AC power source.

15 Test the Sigma A-CP Fire Control Panel installation.

Before You Begin

Before you begin the installation, take a few minutes to review the installation information, gather the required items, and complete the tasks listed below to make the installation as quick and easy as possible.

1 Create a plan and checklist before beginning the installation process. Planning can reduce the number of problems that can occur during installation.

2 Select a mounting site that is a suitable operating environment for the Sigma A-CP Fire Control Panel. The mounting site chosen should be clean, dry and not subject to shock or vibration.

3 Remove the Sigma A-CP Fire Control Panel from the shipping package and check the contents to determine if the order has been satisfied.

Contact Kentec technical support if material is missing from the shipping package.

CAUTION!



Electronic components within the Sigma A-CP Fire Control Panel are vulnerable to damage caused by electrostatic discharge. Ground straps must be worn by installers before handling electronic components to prevent this damage.

4 Acquire the following items that are not included with the Sigma A-CP Fire Control Panel, but may be required for the installation:

Item	Quantity	Description
Mounting Hardware	1	The mounting hardware that secures the Sigma A-CP Fire Control Panel to the premises-wall is not provided in the packaging.
Ground Strap	1	A ground strap is required for handling electronic components of the Sigma A-CP Fire Control Panel. The ground strap is not provided in packaging of the Sigma A-CP Fire Control Panel.

CAUTION!



Disconnect power before removing circuit boards of the Sigma A-CP Fire Control Panel. Never insert or remove circuit boards while powering the fire control panel. Electronic components can be permanently damaged when circuit boards of the Sigma A-CP Fire Control Panel are removed while receiving power.

Determining System Current Draw

Determine the current draw of the fire alarm system for alarm and standby conditions. Use these maximum current values to obtain the operating constraints of the fire alarm system and the battery capacity of the fire control panel.

Standby-Battery Capacity

Perform the installation only after calculations have been completed for a suitable battery size. Battery standby-hours are dependent on battery capacity and load of the fire alarm system.

Reference Appendix C, Calculations to determine the standby-battery capacity of the system.

Operating Constraints

Operating constraints must be included in the planning of the fire control panel to maintain reliable standby and alarm operation. Operating constraints are based on the current-loading of the fire control system and the current-driving capability of the fire control panel.

Current-loading in a fire control system can be caused by individual or multiple combinations of zone circuits, signaling line circuits, notification appliances, initiating devices and cabling. Select circuit devices and cabling for the fire control system that does not exceed the current driving capability of the Sigma A-CP Fire Control Panel.

Reference Appendix A, Specifications and Appendix C, Calculations to determine specific operating constraints for devices and cabling connected to the Sigma A-CP Fire Control Panel.

Mounting the Fire Control Panel

This section describes preparing, removing the fascia and mounting the Sigma A-CP Fire Control Panel.

Preparing

Complete the following steps to prepare the fire control panel for mounting:

1 Open the cabinet-door of the fire control panel using the door-lock-key.

2 Remove the cabinet-door from the cabinet-box.

3 Remove the fascia from the cabinet-box.

4 Remove standby-batteries from the base of the cabinet-box.

5 Mark the location for mounting the cabinet-box to the premises-wall.

Removing the Fascia

Remove the fascia of the Sigma A-CP Fire Control Panel prior to the mounting process to prevent damage to circuit board components.

To remove the fascia from the cabinet-box of the Sigma A-CP Fire Control Panel:

1 Remove the mounting-screw on the right-side of the fascia.

2 Remove the ground lug.

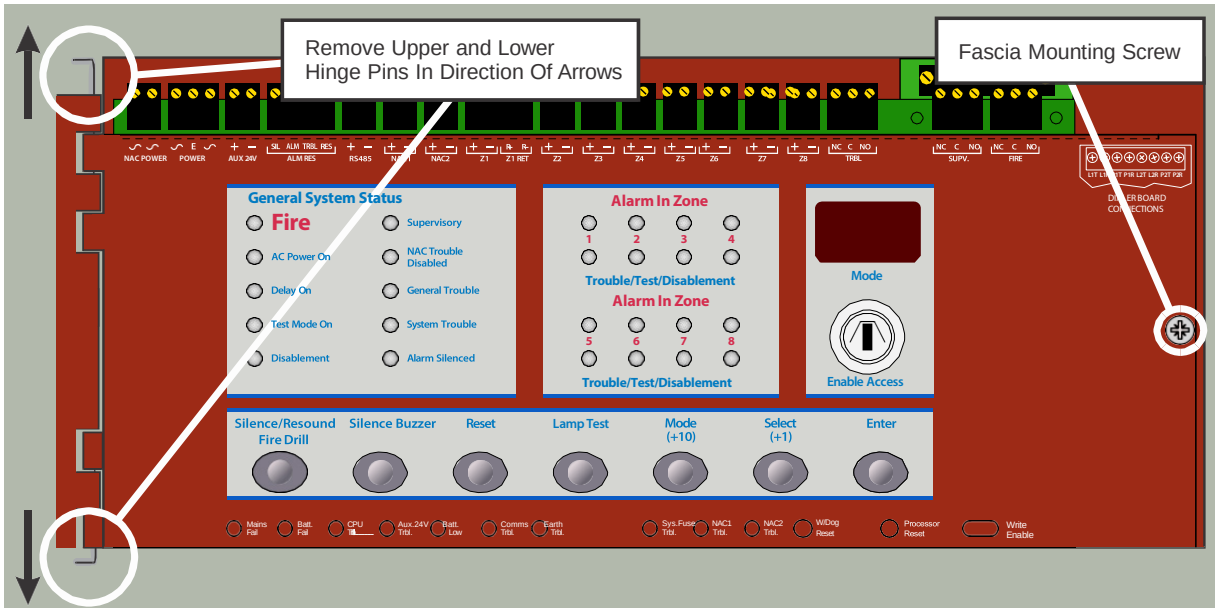
3 Remove NAC Power and Power connections from the terminal strip.

4 Remove the upper and lower hinge pins of the fascia.

5 Remove the fascia from the cabinet-box and place it in a safe location while mounting the cabinet-box.

The figure below illustrates removing the mounting screw and hinge pins of the fascia:

Figure 3- 1
Fascia Mounting Screw and Hinge Pins



Mounting

Mount the fire control panel on a flat, dry surface and position the cabinet-box so that the fascia is at eye level. Do not mount the fire control panel in another enclosure or near sources of excessive heat. Internal wiring and components such as the main terminal block and the transformer can remain in the cabinet-box during the mounting process if care can be taken to prevent their damage.

To mount the cabinet-box of the fire control panel:

1 Mark the premises wall in four locations to reference mounting-hole positions of the cabinet-box.

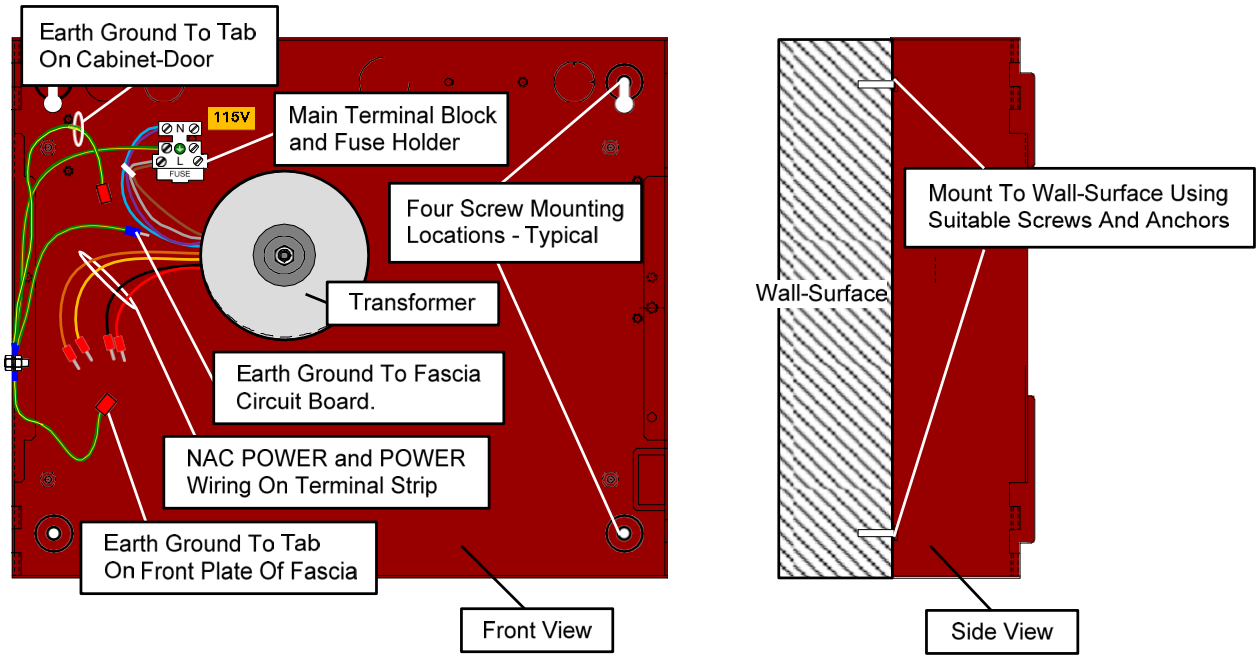
2 Drill four holes in the premises-wall that accept screws or bolts with a minimum diameter of 0.2" (5 mm).

3 Anchor the cabinet-box of the fire control panel to the premises wall.

4 Remove debris from the base of the cabinet-box that accumulates during the mounting process.

The figure below illustrates mounting holes, internal wiring and components of the cabinet-box:

Figure 3- 2
Mounting Holes, Internal Wiring and Components of the Cabinet-Box



Separation of Circuits

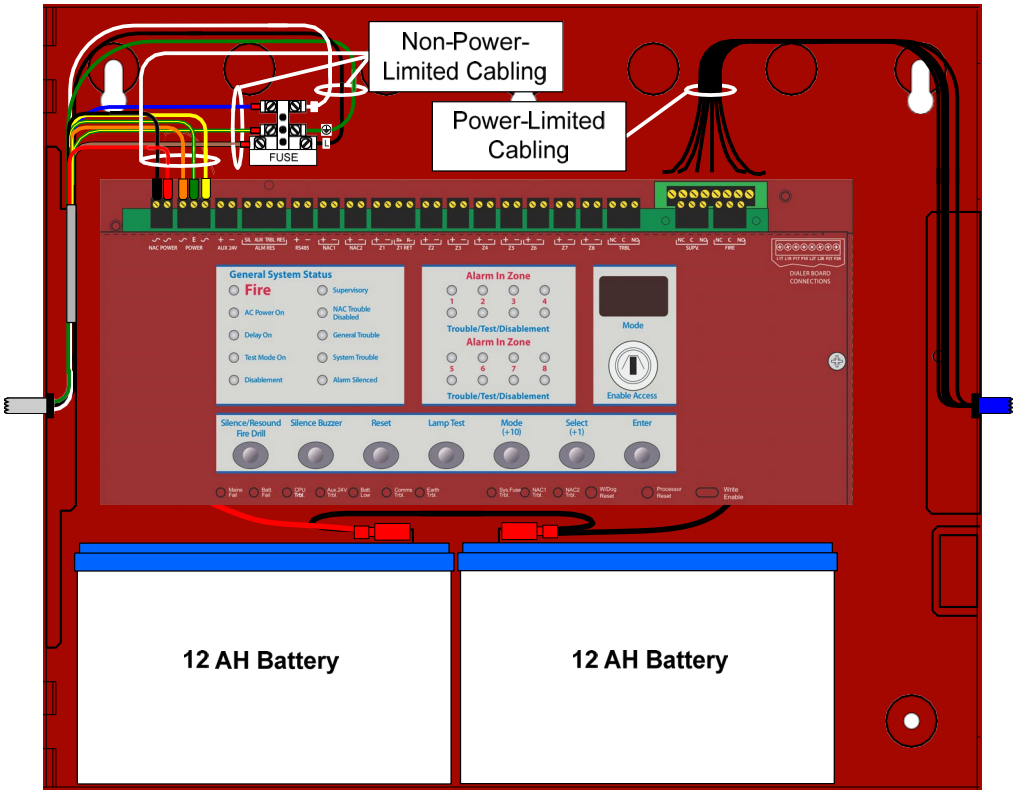
Cabling from the main power source is non-power limited and must be separated from all other cabling by a minimum of ¼ inch spacing. When the product design requires or permits power limited circuit conductors to occupy the same enclosure as non-power limited conductors, specific wire routing configurations must be detailed to ensure a minimum of ¼ inch spacing between non-power and power limited circuit conductors.

All circuits of the Sigma A-CP Fire Control Panel are power limited accept AC input, AC output, battery, transformer input, transformer output, bridge rectifier input and bridge rectifier output.

Reference UL 864 12.3.1.

The figure below illustrates separation of non-power limited and power limited circuit-cabling:

Figure 3- 3
Separation of Non-Power Limited and Power Limited Circuit-Cabling



AC Cabling

Power cabling from the mains to the Sigma A-CP Fire Control Panel must provide connections to branch circuits containing a 15 Amp fuse. Specify 14 AWG wiring for this connection.

Power cabling must enter the back, top or left-side of the fire control panel cabinet through the cabinet-knockouts.

To feed cabling into the cabinet:

1 Remove knockout tabs from the right and left-side of the cabinet.

2 Feed AC cabling in the left-side knockout-tab-hole.

3 Feed all other cabling in the right-side knockout-tab-hole.

4 Remove additional knockout-holes on the right-side of the cabinet to provide more cabling as required.

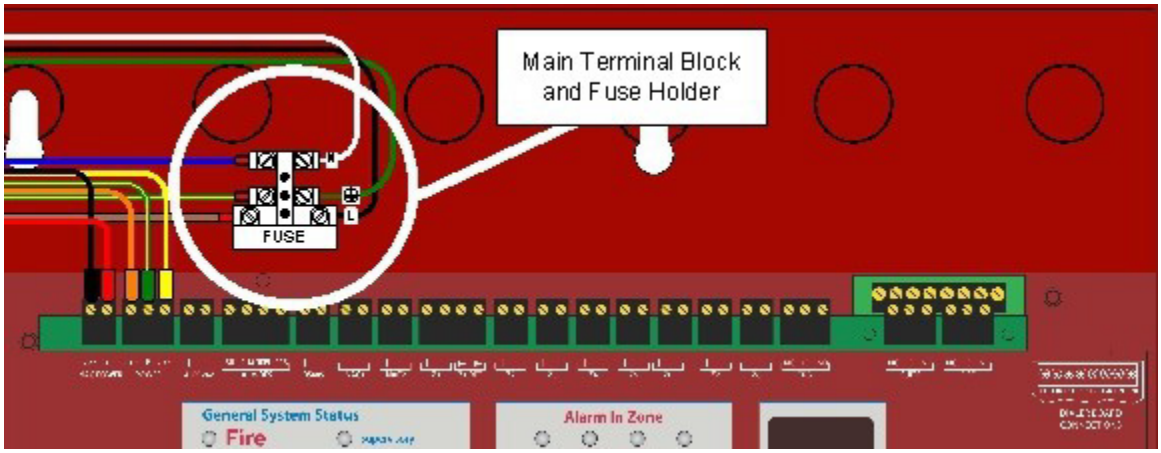
The fire control panel requires an input of 115 VAC @ 50 / 60Hz or an input of 230 VAC @ 50 / 60Hz. The main terminal block contains a 3.15 Amp slow-blow fuse rated at 250 VAC.

Connect AC cabling from the power-source to the main terminal block. The main terminal block is located on the top-left of the Sigma A-CP Fire Control Panel. Wiring from the power-source must include a secure earth-ground connection from the building-ground to the fire control panel and must enter the fire control panel cabinet as close as possible to the main terminal block.

Limit the length of power source wiring from the cabinet opening to the main terminal block of the fire control panel and dress this internal-cabinet wiring with cable ties.

The figure below illustrates supervised connections at the main terminal block and fuse holder for the Line (L), Neutral (N) and Ground of the AC power source.

Figure 3- 4
Supervised Connections at the Main Terminal Block



Reference Appendix A, Specifications for the wire-gage requirements of these connections.

Standby-Battery Cabling

Perform the installation only after calculations have been completed for selecting a suitable battery size. Battery standby-hours are dependent on battery capacity and loading of the FACP system.

To install the replacement standby-batteries:

1 Place standby-batteries at the bottom of the Sigma A-CP Fire Control Panel cabinet.

2 Connect the black battery-lead to the negative terminal of Battery 2.

3 Connect the red battery-lead to the positive terminal of Battery 1.

4 Connect the jumper-lead from the negative terminal of Battery 1 to the positive terminal of Battery 2.

5 Place an "in service" date" on Battery 1 and Battery 2.

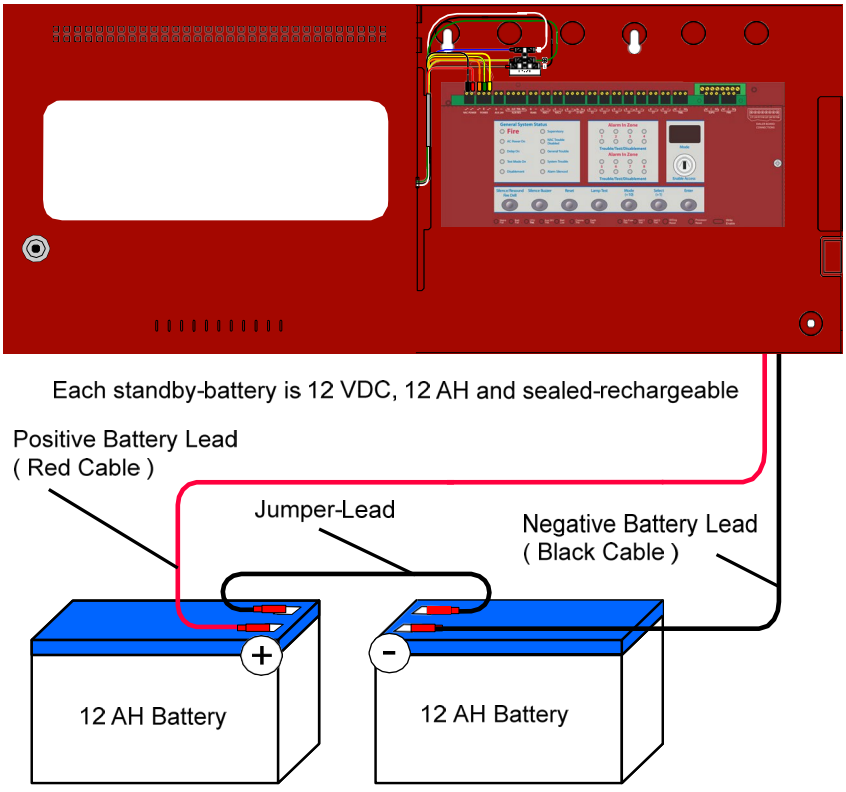
Do not connect the two batteries in parallel. A parallel connection will not provide the 24 volts required for operating the Sigma A-CP Fire Control Panel in a standby condition.

The recharging circuit of the power supply charges batteries to a maximum voltage of 27.6 VDC @ 1.7 A. The fire control panel accepts 7 AH or 12 AH, valve-regulated, lead-acid, rechargeable-batteries. The maximum current drawn from the batteries is 5.18 Amps when the main AC power source is disconnected. Observe polarity when connecting the leads of the standby-batteries to the fire control panel. Improper connections to the standby-batteries could damage the fire control panel and severely limit overall fire control panel operation. Connect two standby-batteries to the power supply in series. Do not connect the two batteries in parallel. A parallel connection will not provide the 24 volts required for operating the Sigma A-CP Fire Control Panel.

Reference Section 5, Maintenance for replacing the standby-batteries.

The figure below illustrates standby-battery connections on the Sigma A-CP Fire Control Panel:

Figure 3- 5
Standby-Battery Connections



The series connection illustrated provides a standby voltage of 24 VDC required by the Sigma A-CP Fire Control Panel.

Field Cabling

Connect field cabling for Detection Zones, Supervised Inputs, Notification Appliance Circuits (NACs), Relays, and AUX 24V with 14 to 22 AWG wiring. Connect field cabling of the Dialer with 14 to 20 AWG wiring. Connect field cabling of the AC input with 14 AWG wiring for line, neutral and ground terminations.

Wiring outside of the fire control panel must not be routed across the fascia-surface of the fire control panel.

Detection Zones

Detection zones of the Sigma A-CP Fire Control Panel provide a nominal 24 VDC for powering conventional detectors and pull stations. Detection Zones include connections for Z1 (Zone 1), Z1 RET (Zone 1 Class A, Loop Return) through Z8 (Zone 8).

Detection zones the Sigma A-CP Fire Control Panel are determined by model assignment and Main Board type. Reference Appendix B, Equipment List for model assignments and Main Board types of the 2, 4 and 8 zone Sigma A-CP Fire Control Panel.

Pull stations authorized for use with the Sigma A-CP Fire Control Panel are non-addressable and UL listed.

Detectors must be wired in a daisy-chain without T-Tap connections. Detection zones are supervised for open-circuit, short-circuit and ground-fault conditions with the installation of the 6.8K Ohm EOL resistor, K1896-00. Place the 6.8K Ohm EOL resistor across the last device in the detection zone circuit to provide this supervision.

Zones of the Sigma A-CP Fire Control Panel operate NFPA 72 Class B, Style C or NFPA 72, Class B, Style B. Style C devices provide trouble conditions for direct shorts and opens on zone loops. Style B devices provide alarm conditions for direct shorts and trouble conditions for opens on zone loops.

Change the default operation of Style B to Style C by using the appropriate configuration code. Clear the configuration code of the fire control panel to provide Style B operation. Set the code to provide Style C operation.

The table below describes codes for configuring the fire control panel for Zones 1 through 8:

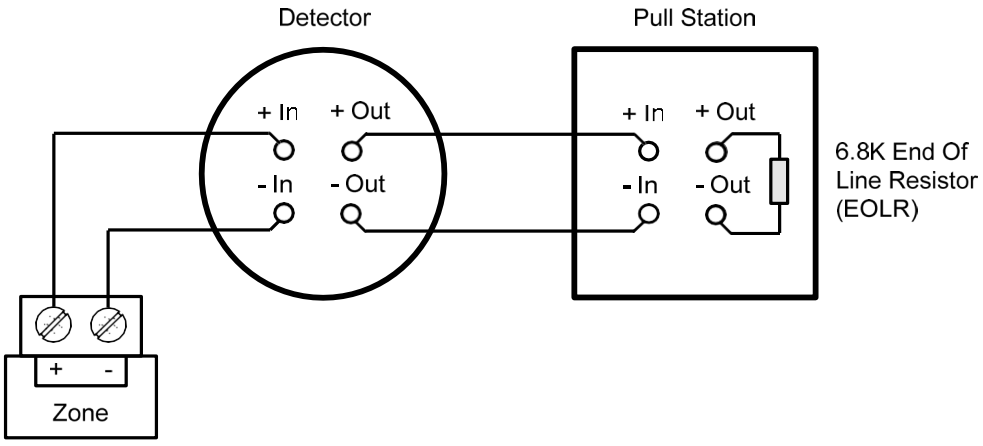
Configuration Code	Zone Short Circuit Supervision
71	Zone 1
72	Zone 2
73	Zone 3

Configuration Code	Zone Short Circuit Supervision
74	Zone 4
75	Zone 5
76	Zone 6
77	Zone 7
78	Zone 8

Reference Section 4, Programming and Operating for further information regarding this configuration option. The maximum number of detectors per zone is device and manufacturer dependent.

The figure below illustrates a Detector and Pull Station connection on the zone terminals of the Sigma A-CP Fire Control Panel:

Figure 3- 6
Detector and Pull Station Connection



Zones of the Sigma A-CP Fire Control Panel are not listed to operate more than one detector in the alarm condition. Reference Appendix B, Detectors for the maximum number of devices permitted per circuit. The value provided identifies the maximum number of devices permitted to operate on the zone circuit.

ALM RES

ALM RES inputs are unused on the terminal-strip of the fire control panel:

Terminal	Function
SIL	No Connection (NC)
ALM	NC
TRBL	NC
RES	NC

Notification Appliance Circuits (NAC) s

Notification Appliance Circuits (NAC) s, NAC 1 and NAC 2 are unregulated and special application. Each of the NAC 1 and NAC 2 outputs are rated to provide a maximum of 2.5 Amps. The combined output of NAC 1 and NAC 2 cannot exceed 4 Amps.

The NAC channels are rated for regulated conditions when each output operates at or below 250 mA. NAC circuits are supervised for ground-faults, open and short circuit conditions by placing a 10K EOL resistor, K1895-00 across the last device on the circuit. NAC circuits must be wired as a single circuit to enable the supervising circuit to operate.

The NAC channels are rated for regulated conditions when each output operates at or below 250 mA. NAC circuits are supervised for ground-faults, open and short circuit conditions by placing a 10K EOL resistor, K1895-00 across the last device on the circuit. NAC circuits must be wired as a single circuit to enable the supervising circuit to operate.

NAC circuits must also be wired in a daisy-chain without T-Tap connections. NAC outputs of the Sigma A-CP Fire Control Panel accept devices that are polarized only. A trouble condition is reported when non-polarized NAC devices are connected to these NAC outputs.

NAC 1 and NAC 2

The Sigma A-CP Fire Control Panel provides synchronized outputs on NAC 1 and NAC 2 with built-in synchronized protocols.

These terminals are authorized for special application or synchronized pulsed DC output voltage. Special application outputs maintain continuous DC output voltage.

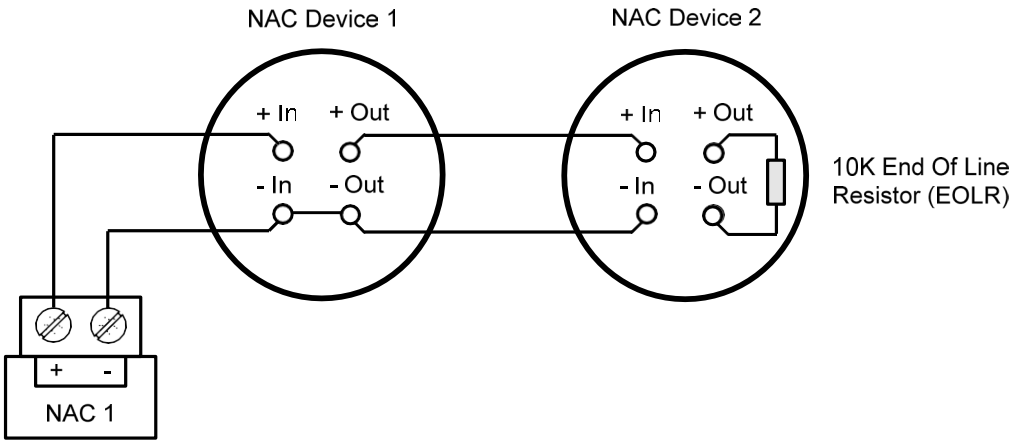
Reference Appendix A, Specifications to identify characteristics of the NAC 1 and NAC 2 special application outputs. Reference Appendix B, Equipment List for a list of compatible NAC devices.

To install Notification Appliance Circuits (NACs) on the Sigma A-CP Fire Control Panel:

1	Connect Notification Appliances and End-Of-Line-Devices to the NAC channel. *Notification Appliances must be wired in a daisy-chain without T-Tap connections. End-Of-Line-Devices must be connected to the last Notification Appliance in the daisy-chain.*
2	Maintain the limit for maximum wire length of the circuit.
3	Maintain maximum current limits and loading.

The Wiring Diagram below illustrates NAC Circuit Connections on the Sigma A-CP Fire Control Panel:

Figure 3- 7
NAC Circuit Connection



Relay Outputs

Volt free changeover relay contacts are provided for local control and signaling. These contacts are rated for switching signaling circuits and must be operated within specified ratings.

Reference Appendix A, Specifications for relay ratings of Sigma A-CP Fire Control Panel.

Optional Dialer Board

The Optional Dialer Board is an optional feature provided on specific models of the Sigma A-CP Fire Control Panel.

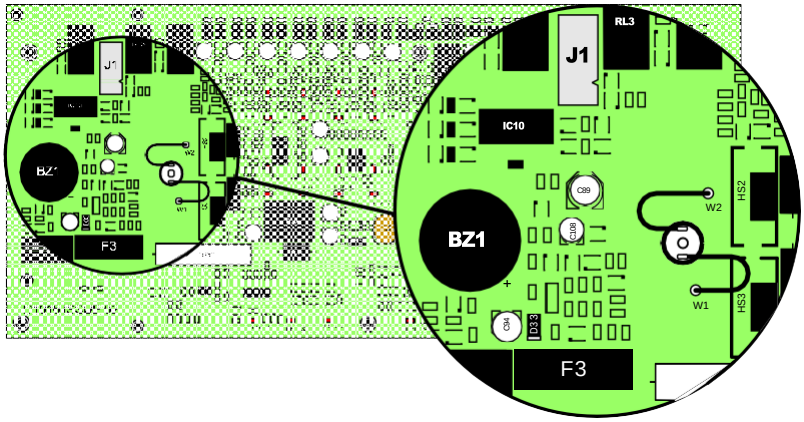
Mount the Optional Dialer Board on the Main Board of the Sigma A-CP Fire Control Panel.

To mount the Optional Dialer Board of the Sigma A-CP Fire Control Panel:

1 Locate the left area of the Main Board to connect and secure the Optional Dialer Board.
The left area of the Main Board contains fuse F3, internal buzzer BZ1 and connector J1.

The figure below illustrates the left area of the Main Board containing fuse F3, internal buzzer BZ1 and connector J1:

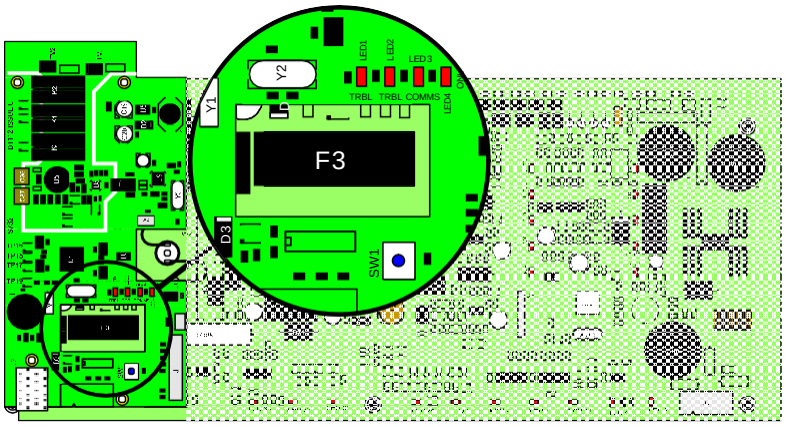
Figure 3- 8
Fuse F3, Internal Buzzer BZ1 and Connector J1



2 Center the F3 fuse in the opening on the Optional Dialer Board to pinpoint the connector position on the Main Board.

The figure below illustrates orientation of the Optional Dialer Board and the Main Board:

Figure 3- 9
Optional Dialer Board and Main Board Orientation



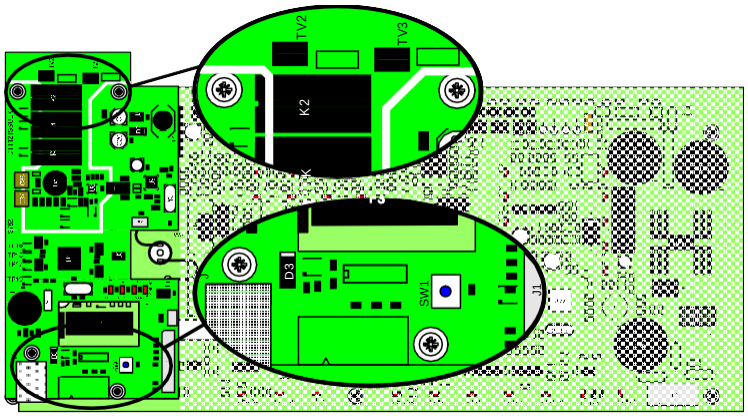
3 Press the Optional Dialer Board against the Main Board to complete the connection.

The connection is complete when connector J2 of the Optional Dialer Board inserts in connector J1 of the Main Board.

4 Secure the Optional Dialer Board to the Main Board with four standoff-screws.

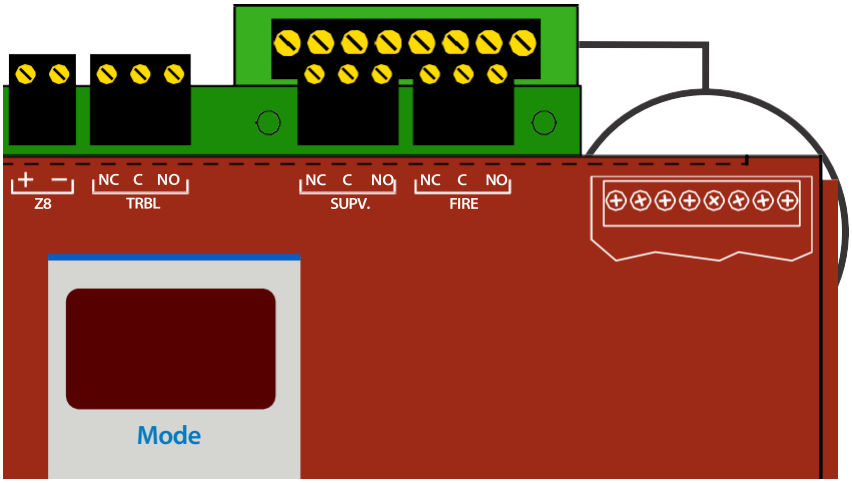
The figure below illustrates the secured location of the Optional Dialer Board on the Main Board:

Figure 3- 10
Optional Dialer Board and the Main Board



The figure below illustrates field terminals of the Optional Dialer Board:

Figure 3- 11
Field Terminals of the Optional Dialer Board

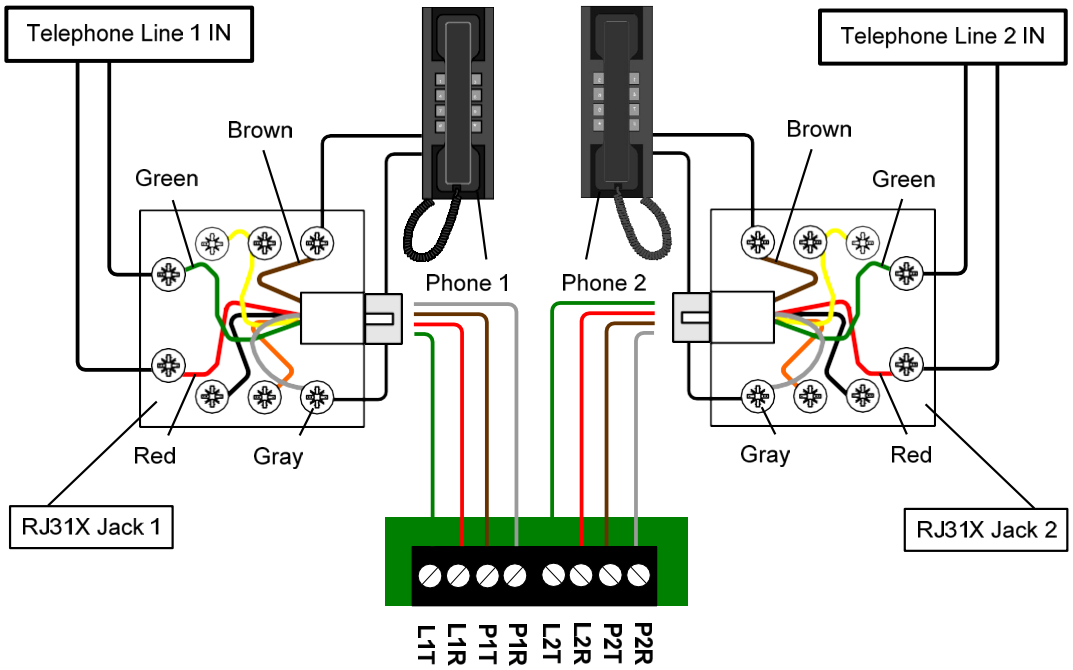


Reference Appendix B, Equipment List for Sigma A-CP Fire Control Panel models supporting the Optional Dialer Board. Reference Appendix A, Specifications for wire gages acceptable for these terminal block connections.

TELCO Line Connections

The figure below illustrates TELCO line 1 and line 2 connections of the Optional Dialer Board:

Figure 3- 12
TELCO Line Connections



The table below describes the TELCO color conventions illustrated in figure 3-12:

Terminal	Color
L1T	Green
L1R	Red
P1T	Brown
P1R	Gray
L2T	Green
L2R	Red
P2T	Brown
P2R	Gray

Aux 24V

The AUX 24V connection is a common DC voltage and special application output.

The output is supervised for short-circuits and ground faults. The output is not supervised for open circuit conditions. Terminals of the Aux 24V output are labeled positive (+) and negative (-).

Operating Limits

The AUX 24V supply is protected by an electronic, self-resetting fuse rated at 1.1 A.

Devices connected to this output must not draw current in excess of 500 mA. The AUX 24V supply is a special application output.

CAUTION!



Do not operate in standby while maintaining a 500 mA load on the AUX 24 V output of this fire control panel. The fire control panel cannot provide 500 mA of current to the load of the AUX 24 V output during an AC failure condition and maintain continuous standby operation for twenty-four hours followed by five minutes of alarm.

Total standby-current of the 7 AH batteries must draw less than 225 mA to maintain continuous standby operation for twenty-four hours followed by five minutes of alarm. Total standby-current of the 12 AH batteries must draw less than 400 mA to maintain continuous standby operation for twenty-four hours followed by five minutes of alarm.

Reference Appendix A, Specifications, Current Loading Limitations for loading details during standby and alarm conditions.

ALM RES

The ALM RES field terminals include inputs for SIL, ALM. TRBL and RES. These inputs are not authorized for operation under the UL listing of this product and therefore are *no connection* terminals.

RS485

The RS485 communication bus provides no connection and is reserved for future use.

Connecting the Sigma A-CP Annunciator

Connect the Sigma A-CP Annuciator to the Sigma A-CP Fire Control Panel for remote annunciation.

Reference Appendix B, Equipment List for models of the Sigma A-CP Annunciator.

Reference Sigma A-CP Annunciator Installation and Operation Instructions, K1865-00 for connection details.

Testing the Installation

Test the fire control panel to confirm basic operation before connecting devices and providing programming.

To test the installation of the Sigma A-CP Fire Control Panel:

1 Apply power to the fire control panel from the source.

2 Confirm that the Power On lamp on the fascia is illuminated.

3 Confirm that the fire control panel is not reporting trouble conditions.

4 Correct conflicts before proceeding with the testing.

5 Program and test the configuration to ensure that the control panel operates as intended.

Troubleshooting

Troubleshoot the Sigma A-CP Fire Control Panel when conflicts exist after installing or configuring. Monitor the lower fascia indicators of the fire control panel to determine the cause of the trouble condition. The lower indicators of the fascia are visible after opening the cabinet-door of the Sigma A-CP Fire Control Panel.

The table below describes lower fascia indicators of the Sigma A-CP Fire Control Panel:

Indicator	Description
Mains Fail	An AC power failure exists and the fire control panel is operating on standby batteries. Check for a loss of power at the source and then check the fuse enclosed in the main terminal block.
Batt Fail	Standby batteries are disconnected or the charging circuit of the fire control panel has failed. Check connections at the standby batteries. Disconnect the standby battery leads from the fire control panel and then test for 28 V on the standby battery leads.
CPU Trbl	The central processor unit has failed to execute code and has been re-started by the system watchdog. The watchdog reset switch must be pressed to clear the CPU trouble condition. Press watchdog reset. If system does not return to normal then the panel is probably damaged and needs the circuit board replaced.
Aux 24V Trbl	The 1.1 Amp fuse protecting the AUX 24 V output has operated. Power down the fire control panel and then correct the cause of the excessive current draw. Restart the fire control panel to reset the electronic fuse of the AUX 24 V output. The AUX 24 V output supports a maximum current load of 500 mA during AC operation. *Reference "Operating Limits" of this section for current loading limitations of this output that occur during standby operation.*

Indicator	Description
Batt Low	Illuminates when the fire control panel is operating on batteries and the battery voltage is below 21.5 VDC. Illuminates when the fire control panel is operating on AC and the battery voltage is below 24 VDC.
Comms Trbl	Communication has been lost with the remote annunciator or Ancillary board.
Earth Trbl	Part of the field wiring is connected to earth ground. Remove all field wiring and then re-connect cables one at a time until the Earth Trbl returns. Use this procedure to locate the cable connection to earth ground.
NAC1 Trbl	A short or open circuit exists on the NAC output. Remove wiring and reconnect the EOL resistor. Check NAC circuit wiring.
NAC2 Trbl	A short or open circuit exists on the NAC output. Remove wiring and reconnect the EOL resistor. Check NAC circuit wiring.
Mode LED	A trouble condition occurs on the fire control panel when o 7 is displayed on the Mode LED.

Section 4

Programming and Operating

Notice to Users, Installers, Authorities Having Jurisdiction, and other involved parties.

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 10th Edition, certain programming features or options must be limited to specific values or not used at all as indicated below.

Program Feature or Option	Permitted in UL 864 ? (Y / N)	Possible Settings	Settings Permitted In UL 864
Set Alarm Delay [1] Code: 00 to 09	Y	00 to 09	00 to 09
Set NAC Pattern Code: 10 to 16	Y	10 to 16	10 to 16
Disable Fire Alarm Buzzer Code: 21	Y	Set / Clear	Set / Clear
Disable Trbl. Relay Code: 22	Y	Set / Clear	Set / Clear
Disable Earth Trbl. Code: 23	N	Set / Clear	Clear
Set Strobe Activation During Alarm Silence Code: 24	Y	Set / Clear	Set / Clear
Set Zone 1 Class A Operation Code: 25	Y	Set / Clear	Set / Clear
Disable Fire Relay Code: 26	Y	Set / Clear	Set / Clear
Remove AUX 24V On Panel Reset Code: C27	Y	Set / Clear	Set / Clear

[1] This setting has no effect on options 31 through 38 when these options are set to clear.

Program Feature or Option	Permitted in UL 864 ? (Y / N)	Possible Settings	Settings Permitted In UL 864
Remove AUX 24V On Fire Alarm Code: 28	Y	Set / Clear	Set / Clear
Set Z1-Z8, Zone Alarm Delayed Code: 31 - 38	N	Set / Clear for each zone	Clear all zones
Set Z1-Z8, Zone Alarm From Detector Verified Code: 41 - 48	Y	Set / Clear for each zone	Set / Clear for each zone
Set Z1-Z8, Coincidence Zone Code: 51 - 58	Y	Set / Clear for each zone	Set / Clear for each zone
Set Z1-Z8, Configure Zone I.S. Barrier Code: 61 - 68	N	Set / Clear for each zone	Clear all zones
Set Z1-Z8, Zone Short Circuit Triggers Alarm Code: 71 - 78	Y	Set / Clear for each zone	Set / Clear for each zone
Set Z1-Z8, Zone Non-Latching Code: 81 – 88 [(2)]	Y	Set / Clear for each zone	Reference note [(2)]
Set Z1-Z8, Zone Alarm Generates Supervisory Code: 91 – 98 [(3)]	Y	Set / Clear for each zone	Reference note [(3)]
Set Z1-Z8, Alarm must be present for 30 seconds Code: A1 - A8	Y	Set / Clear for each zone	Set / Clear for each zone
Set Z1-Z8, Zone Fire Relay Deactivated Code: E1 - E8	Y	Set / Clear for each zone	Set / Clear for each zone

[(2)]Zones configured for reporting supervisory conditions are permitted to be configured as non-latching or latching. Zones configured for reporting fire conditions are permitted to be configured as latching only. Fire zones shall not be configured as non-latching. [(3)]Zones configured for reporting supervisory conditions must not contain smoke detectors or other devices intended for reporting fire conditions.

Programming the Fire Control Panel

The Sigma A-CP Fire Control Panel can be configured for most installation requirements.

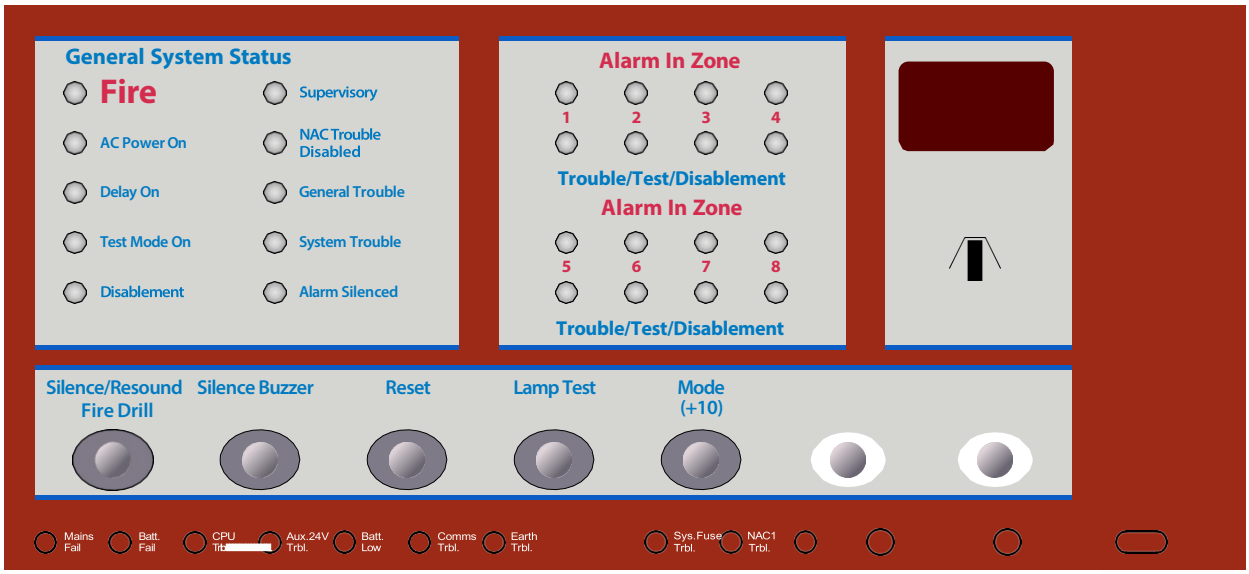
Open the Menu

The Mode LED display on the fascia of the fire control panel provides the configuration menu.

Open the menu through Access Level 2 and Access Level 3 of the Sigma A-CP Fire Control Panel. Open Access Level 2 by turning the Enable Access key to the right. Open Access Level 3 by moving the Write Enable slide-switch to the left.

The figure below illustrates Enable Access and Write Enable switches on the fascia of the fire control panel:

Figure 4- 1
Enable Access and Write Enable

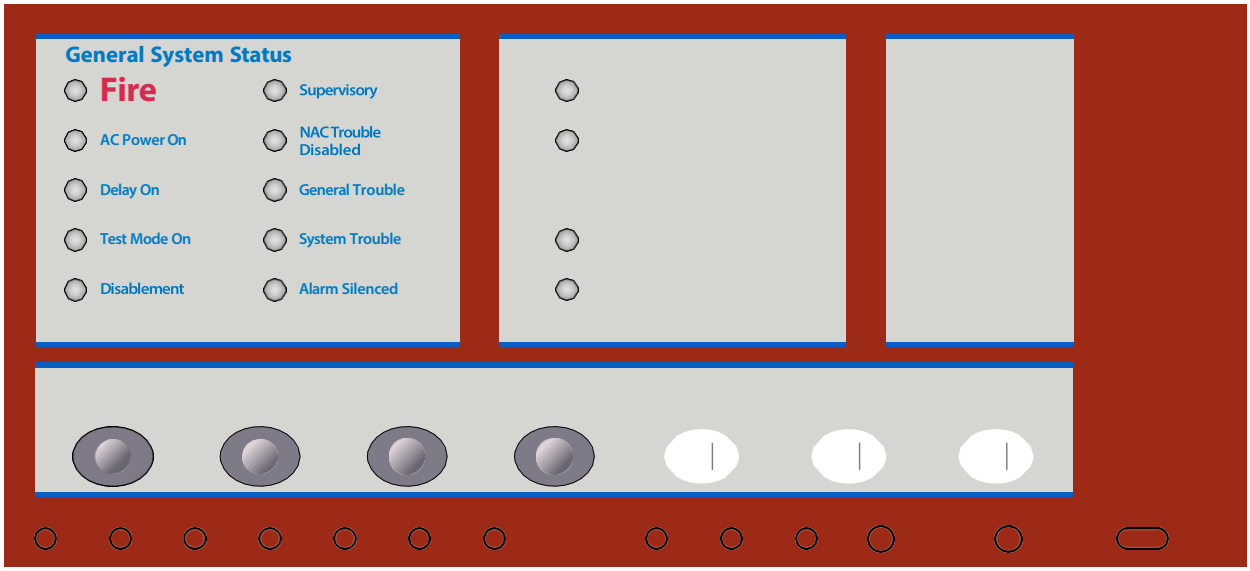


Navigate the Menu

Navigate the menu on the Mode LED display using the Mode (+10), Select (+1) and Enter buttons of the Sigma A-CP Fire Control Panel. The Mode LED, Mode (+10), Select (+1) and Enter buttons are located on the center of the fascia.

The figure below illustrates the Mode, Select, Enter and Mode LED on the fascia of the fire control panel:

Figure 4- 2
Mode, Select, Enter and Mode LED



To configure the fire control panel:

1 Program the fire control panel using codes required for default operation.

2 Clear all other codes except those necessary for default operation.

Perform this step to guarantee a clean configuration before programming the fire control panel.

3 Program the fire control panel using codes required for the configuration.

4 Test the fire control panel and the configuration for proper operation.

Default Operation

The Sigma A-CP Fire Control Panel must be programmed for default operation prior to configuring. Default operation includes the programming of default settings and well as the disabling of all remaining codes. Perform these tasks prior to configuring to ensure proper function of the fire control panel.

CAUTION!



Unintended settings can lead to unintended operation of the fire control panel. Clear the configuration memory of the fire control panel and program default settings before programming the new fire control configuration.

Programming Default Settings

Program codes 00 and 10 to complete default setting requirements of the Sigma A-CP Fire Control Panel.

To program default settings of the fire control panel:

1 Turn the Enable Access key to the right to enter Access Level 2.

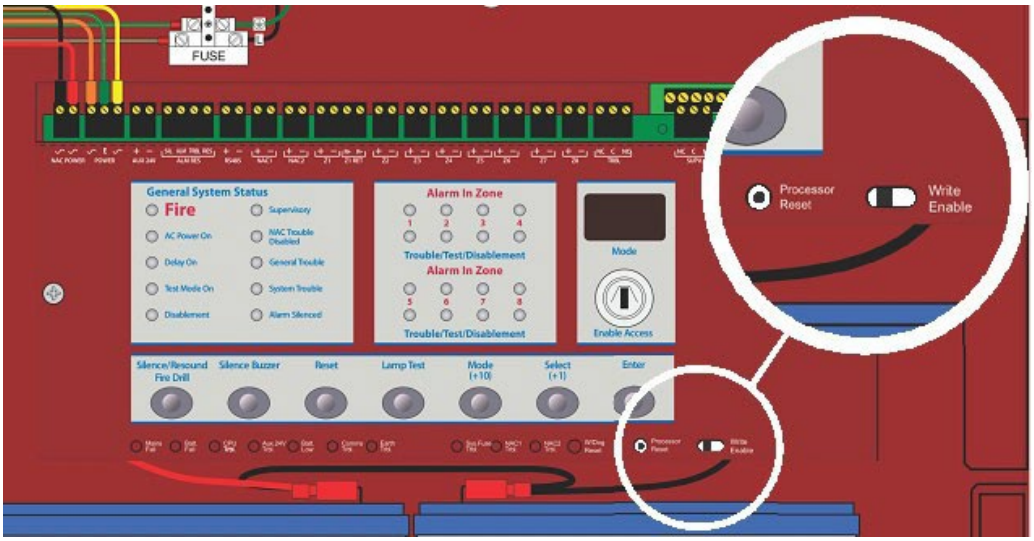
2 Move the Write Enable slide-switch to the left to enter Access Level 3.

The Write Enable slide-switch is located on the lower-right portion of the fascia adjacent to the Processor Reset button.

The fire control panel beeps three-times to indicate entry in Access Level 3.
The beeping continues to indicate Access Level 3 operation.

The figure below illustrates the Write Enable switch on the fascia of the Sigma A-CP Fire Control Panel:

Figure 4- 3
Write Enable Slide-Switch



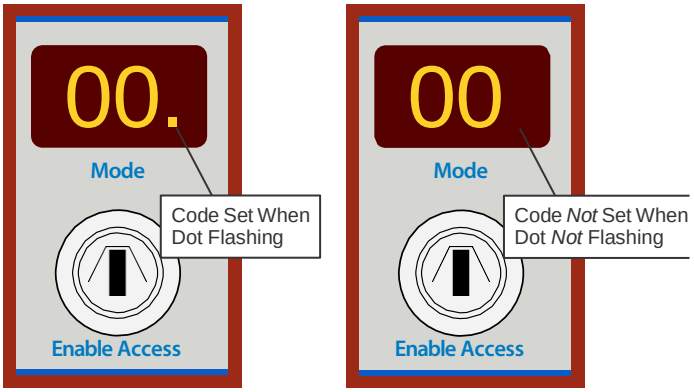
Code 00 is displayed on the menu of the Mode LED after entering Access Level 3.

3 Choose code 00 from the menu and press Enter to set the code.

A flashing dot is displayed in the lower-right-corner of the Mode LED to identify the set code.

The figure below illustrates a code 00 set and code 00 not set in the menu:

Figure 4- 4
Code 00 Set and Code 00 Not Set



A flashing dot is shown in the left Mode illustration indicating that the configuration code is set.

A flashing dot is absent from the right Mode illustration indicating that the configuration code *is not set*

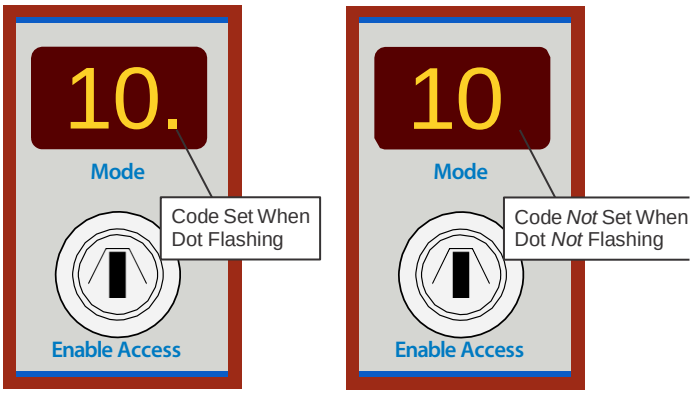
4 Press Mode (+10) on the fascia to scroll from code 00 to 10 on the menu.

5 Choose code 10 from the menu and press Enter to set the code.

A flashing dot is displayed in the lower-right-corner of the Mode LED to identify the set code.

The figure below illustrates a code 10 set and a code 10 not set in the menu:

Figure 4- 5
Code 10 Set and Code 10 Not Set



A flashing dot is shown in the left Mode illustration indicating that the configuration code is set.

A flashing dot is absent from the right Mode illustration indicating that the configuration code *is not set.*

6 Turn the Enable Access key to the left to exit Access Level 2 and return the fire control panel to the Normal Standby condition.

Clearing Remaining Configuration Options

Clear all other codes in memory before programming the new fire control configuration. Clearing previous settings provides a clean default condition for accepting the new fire control configuration.

To clear all codes in memory and maintain default settings:

1 Press Mode (+10) and then Select (+1) to inspect the range of codes 21-E8 for programming.

2 Press Enter to clear all programmed codes in the 21-E8 range.

3 Move the Write Enable slide-switch to the right to exit Access Level 3.

4 Turn the Enable Access key to the left to exit Access Level 2 and return the fire control panel to the Normal Standby condition.

Configuration Codes

Not all configuration codes of the Sigma A-CP Fire Control Panel are authorized for operation under UL 864.

Reference Appendix G, UL 864 Permitted Configurations for the list of authorized configuration codes of the Sigma A-CP Fire Control Panel.

The configuration codes described below are disabled unless indicated

The table below describes configuration codes of Access Level 3:

Code	Function	Description
00	Set Alarm Delay = 30 Seconds	These functions are not UL recognized. Sets NAC delay in combination with Zone Alarm codes 31 to 38. Program this function by setting code Ad in Access Level 2. These functions are disabled unless set by code Ad in Access Level 2.
01	Set Alarm Delay = 1 Minute	
02	Set Alarm Delay = 2 Minute	
03	Set Alarm Delay = 3 Minute	
04	Set Alarm Delay = 4 Minute	
05	Set Alarm Delay = 5 Minute	
06	Set Alarm Delay = 6 Minute	
07	Set Alarm Delay = 7 Minute	
08	Set Alarm Delay = 8 Minute	
09	Set Alarm Delay = 9 Minute	
10	Set Steady Alarm Mode	Sets NAC output to steady On
11	Set March Time Alarm Mode	Sets the frequency of the NACs for the March Time coding pattern of ½ second on, ½ second off and then repeat.
12	Set Temporal Alarm Mode	Sets the frequency of the NACs for the Temporal coding pattern of ½ second on, ½ second off, ½ second on, ½ second off, ½ second on, 1½ second off and then repeat.

Code	Function	Description
13	Set Amseco Alarm Mode	Sets the fire control panel to operate NAC devices from Amseco.
14	Set Gentex Alarm Mode	Sets the fire control panel to operate NAC devices from Gentex.
15	Set System Sensor Alarm Mode	Sets the fire control panel to operate NAC devices from System Sensor.
16	Set Wheelock Alarm Mode	Sets the fire control panel to operate NAC devices from Wheelock.
21	Disable Fire Alarm Buzzer	Disables operation of the internal buzzer during a fire alarm condition.
22	Disable Trbl. Relay	Disables operation of the trouble relay except during a power failure.
23	Disable Earth Trbl.	Disables operation of the Earth Trbl. so that earth-ground trouble conditions are not reported.
24	Set Strobe Activation During Alarm Silence	Sets NAC strobes to activate during an alarm silence. This function is only available when activating settings for Amseco, Gentex, System Sensor or Wheelock using codes 13, 14, 15 or 16.
25	Set Zone 1 Class A Operation	Sets Zone 1 for Class A operation using the terminals of Z1 and Z1 RET. Zone 1 operates as Class B and the terminals of Z1 RET are unused when this code is not set.
26	Disable Fire Relay	Disables activation of the Fire relay.
27	Remove Aux 24 V On Panel Reset	Sets the AUX 24 V output to switch off for five seconds during a reset of the fire control panel.
28	Remove Aux 24 V On Fire Alarm	Sets the AUX 24 V output to switch off during a fire alarm condition.

Code	Function	Description
31	Set Z1, Alarm Delayed	These functions are not UL recognized. Sets an alarm delay from the detector to the zone based on Alarm Delay codes 0-9. Program these functions to operate by setting code Ad in Access Level 2. These functions are disabled unless set by code Ad in Access Level 2.
32	Set Z2, Alarm Delayed	
33	Set Z3, Alarm Delayed	
34	Set Z4, Alarm Delayed	
35	Set Z5, Alarm Delayed	
36	Set Z6, Alarm Delayed	
37	Set Z7, Alarm Delayed	
38	Set Z8, Alarm Delayed	
41	Set Z1, Alarm Verification	Setting this function enables alarm verification on the Zone. "A feature of automatic fire-detection and alarm systems to reduce unwanted alarms wherein smoke detectors report alarm conditions for a minimum period of time, or confirm alarm conditions for a given period of time after reset, in order to be accepted as a valid alarm initiation." – UL 864. 3.8 Alarm Verification
42	Set Z2, Alarm Verification	
43	Set Z3, Alarm Verification	
44	Set Z4, Alarm Verification	
45	Set Z5, Alarm Verification	
46	Set Z6, Alarm Verification	
47	Set Z7, Alarm Verification	
48	Set Z8, Alarm Verification	
51	Set Z1, Coincidence	These functions are not supported. Setting this function enables Zone Coincidence.
52	Set Z2, Coincidence	

Code	Function	Description
53	Set Z3, Coincidence	
54	Set Z4, Coincidence	
55	Set Z5, Coincidence	
56	Set Z6, Coincidence	
57	Set Z7, Coincidence	
58	Set Z8, Coincidence	
61	Set Z1, Configure I.S. Barrier	These functions are not UL recognized. Set this function to configure the Zone I.S. Barrier. I.S. (Intrinsically Safe) Barriers are used in Europe. I.S. Barriers separate fire control panels from devices such as detectors and Pull Stations that are located in hazardous areas.
62	Set Z2, Configure I.S. Barrier	
63	Set Z3, Configure I.S. Barrier	
64	Set Z4, Configure I.S. Barrier	
65	Set Z5, Configure I.S. Barrier	
66	Set Z6, Configure I.S. Barrier	
67	Set Z7, Configure I.S. Barrier	
68	Set Z8, Configure I.S. Barrier	
71	Set Z1, Short Circuit Triggers Alarm	The default condition of this function reports short-circuits as activations under Class A, Style D or Class B, Style B. Setting this function changes from reporting short-circuits as activations to reporting short-circuits as trouble conditions under Class A, Style E or Class B, Style C. Class A circuits are available on zone 1 terminals, Z1 and Z1 RET only.
72	Set Z2, Short Circuit Triggers Alarm	
73	Set Z3, Short Circuit Triggers Alarm	
74	Set Z4, Short Circuit Triggers Alarm	
75	Set Z5, Short Circuit Triggers Alarm	
76	Set Z6, Short Circuit Triggers Alarm	

Code	Function	Description
77	Set Z7, Short Circuit Triggers Alarm	
78	Set Z8, Short Circuit Triggers Alarm	
81	Set Z1, Non-Latching	These functions are UL recognized for zones reporting supervisory conditions. These functions are not UL recognized for zones reporting fire conditions. Activation reports fire when this condition is clear. Activation report s supervisory when this condition is set. These functions do not reset latching devices such as detectors.
82	Set Z2, Non-Latching	
83	Set Z3, Non-Latching	
84	Set Z4, Non-Latching	
85	Set Z5, Non-Latching	
86	Set Z6, Non-Latching	
87	Set Z7, Non-Latching	
88	Set Z8, Non-Latching	
91	Set Z1, Alarm Generates Supervisory	Fire is reported when this code is cleared. Supervisory is reported when this code is set.
92	Set Z2, Alarm Generates Supervisory	
93	Set Z3, Alarm Generates Supervisory	
94	Set Z4, Alarm Generates Supervisory	
95	Set Z5, Alarm Generates Supervisory	
96	Set Z6, Alarm Generates Supervisory	
97	Set Z7, Alarm Generates Supervisory	
98	Set Z8, Alarm Generates Supervisory	

Code	Function	Description
A1	Set Z1, Alarm Must Persist for 30 Seconds	These codes set 30 second alarm duration before reporting. Alarm must persist for 30 seconds before conditions are reported. These codes are used when a device could report a condition unintentionally.
A2	Set Z2, Alarm Must Persist for 30 Seconds	
A3	Set Z3, Alarm Must Persist for 30 Seconds	
A4	Set Z4, Alarm Must Persist for 30 Seconds	
A5	Set Z6, Alarm Must Persist for 30 Seconds	
A6	Set Z7, Alarm Must Persist for 30 Seconds	
A7	Set Z8, Alarm Must Persist for 30 Seconds	
A8	Set Z9, Alarm Must Persist for 30 Seconds	
E1	Set Z1, Fire Relay Deactivated	Deactivates the fire relay of the programmed zone. These functions "deactivate" the fire relay from operating a programmed zone only. These functions do not "disable" the fire relay from operating. Zones not programmed through these functions continue to operate the fire relay under fire conditions. These functions prevent an activating zone from activating the fire relay.
E2	Set Z2, Fire Relay Deactivated	
E3	Set Z3, Fire Relay Deactivated	
E4	Set Z4, Fire Relay Deactivated	
E5	Set Z5, Fire Relay Deactivated	
E6	Set Z6, Fire Relay Deactivated	
E7	Set Z7, Fire Relay Deactivated	
E8	Set Z8, Fire Relay Deactivated	

Functions and Codes

Functions and codes for operating the Sigma A-CP Fire Control Panel in Access Level 2 are described below:

Function	Terminal	Codes	Description
Test Zones	Z1	t1	Select codes t1 through t8 to place Zones 1 through 8 in Test Mode. Zones in Test Mode automatically reset 3 seconds after operating. The Test Mode On and Zone Trouble/On Test/Disabled indicators illuminate when zones 1 through 8 are in Test Mode.
	Z2	t2	
	Z3	t3	
	Z4	t4	
	Z5	t5	
	Z6	t6	
	Z7	t7	
	Z8	t8	
Disable Zones	Z1	d1	Select codes d1 through d8 to disable Zones 1 through 8. Disabling Zones does not provide fire or trouble indications on the fire control panel. The Disablement and Zone Trouble/On Test/Disabled indicators illuminate when zones 1 through 8 are disabled.
	Z2	d2	
	Z3	d3	
	Z4	d4	
	Z5	d5	
	Z6	d6	
	Z7	d7	
	Z8	d8	

Function	Terminal	Codes	Description
Disable NAC 1 and NAC 2	NAC1, NAC 2	db	Select the code db to disable the outputs of NAC1 and NAC 2. The Disablement and NAC Trouble/ Disabled indicators illuminate when the NACs are disabled.
Enable Alarm Delay	Z1 through Z8	Ad	Select code Ad to enable codes 00-09 of the Alarm Delay function and codes 31-38 of the Zone Alarm Delayed function.

Control Operation

The table below describes control operation of the Sigma A-CP Fire Control Panel:

Controls	Operation
W / Dog Reset	Press the W / Dog Reset button to clear the watchdog event. The watchdog event causes a reset when the fire control panel fails to carry out an operation. The following conditions occur during a watchdog event: ▪ The General Trouble and System Trouble LEDs light in the General System Status area of the upper indicators. ▪ The CPU Trbl. (trouble) LED lights on the lower indicators of the fascia. ▪ The internal buzzer of the fire control panel sounds.
Processor Reset	Press the Processor Reset button to reset the function of processors in the Sigma A-CP Fire Control Panel. Perform this task to restore normal operation to the fire control panel. The fire control panel will resume normal operation within seconds of pressing the processor reset button. This task is not a typical function of the fire control panel and is only necessary when controls and indicators are unresponsive. Press the Processor Reset after a firmware upgrade to re-initialize processors in the fire control panel.
Write Enable	To operate the Write Enable switch: 4 Turn the Enable Access key to the right to open Access Level 2. 5 Move the slide-switch to the left (Write Enable position) when programming in Access Level 3. 6 Return the slide-switch to the right (non-Write Enable position) after completing tasks in Access Level 3.

Single Zone Fire Condition

Alarm In Zone LEDs flash at 2Hz and the Fire LED lights when fire conditions report through activation of zone detectors or pull stations. Fire relays operate and trigger connected systems and circuits during single zone fire conditions.

Silence/Resound Fire Drill

The Silence/Resound Fire Drill button can only be operated in Access Level 2 by turning the Enable Access key to the right. To silence the NACs, insert the Enable Access key, turn to the right and press the Silence/Sound alarm button.

When the NACs have been silenced, the Alarm In Zone LEDs will change from flashing to a steady state. Pressing the Silence/Sound alarm while the fire control panel is in this silenced condition will cause the NACs to operate again. The NACs can be toggled on and off with the Silence/Sound alarm button as required.

Reset

The reset command restores operation of the Sigma A-CP Fire Control Panel from an alarm or trouble condition.

Zone Trouble

Removal of a detector from its base or a trouble on any of the zone wiring will cause the Trouble LED and Zone Trouble LEDs to flash, indicating the zone in which the trouble has occurred.

NAC Trouble

A trouble on the wiring to sounder circuits will cause the Trouble and NAC Trouble LEDs to flash, indicating a trouble on the wiring to the sounder circuits.

Power Trouble

Loss of power from the AC source, power supply or standby batteries will cause the Trouble and Power Trouble LEDs to light.

System Trouble

The System Trouble LED will light if the configuration memory has not been set or has become corrupted.

General Trouble

The General Trouble LED illuminates during all trouble conditions. The LED also lights when the Enable Access key has been removed while in Access Level 3.

Lamp Test

All LED indicators can be tested at any time by pressing the Lamp Test button. Access Level 2 is not required to perform the Lamp Test. The internal buzzer of the fire control panel can be silenced at any time by pressing the Buzzer Silence button. Access Level 2 is not required to silence the internal buzzer.

Test Mode

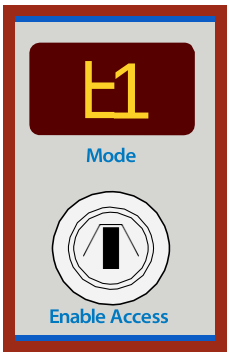
To operate Test Mode:

1 Turn the Enable Access key to the right to enter Access Level 2.

Code t1 is displayed on the Mode LED.

The figure below illustrates code t1 on the Mode LED:

Figure 4- 6
Code t1 on the Menu



2 Press Select (+1) to scroll through codes t1-t8 for testing.

Codes t1-t8 correspond to zones Z1-Z8.

3 Press Enter to program test codes in the t1-t8 range.

Test mode codes that are programmed for testing contain a flashing dot in the lower-right-corner of the Mode LED.

The Test Mode On LED and the Alarm In Zone LED are lit to confirm the test mode condition.

4 Turn the Enable Access key to the left to exit Access Level 2.

The Test Mode On LED and the Alarm In Zone LED remain lit and the Mode LED is no longer lit.

Disablements

Disablements prevent false alarms when performing building maintenance or construction. Use this function to disable sections of the fire control system for testing purposes.

Disabling and Re-enabling Zones

This section describes disabling and re-enabling zones. Disable zones for testing and troubleshooting. Re-enable zones following the disabling process.

Disabling Zones

To disable zones on the Sigma A-CP Fire Control Panel:

1 Turn the Enable Access key to the right to obtain Access Level 2 of the menu.

2 Press Mode (+10) until "d1" appears in the first field of the LED display.

3 Press Select (+1) to scroll through codes d1-d8 for disabling.

Codes d1-d8 correspond to zones Z1-Z8.

4 Press Enter to disable zone codes in the d1-d8 range.

Zone codes that are programmed for disabling contain a flashing dot in the lower-right-corner of the Mode LED.

Trouble/ Test /Disablement LEDs of the zone in test light and Disablement LED lights.

5 Turn the Enable Access key to the left to exit Access Level 2.

The Trouble/ Test /Disablement LEDs and the Disablement LED remain lit and the Mode LED is no longer lit.

Re-enabling Zones

To re-enable zones on the Sigma A-CP Fire Control Panel:

1 Turn the Enable Access key to the right to obtain Access Level 2 of the menu.

2 Press Mode (+10) until "d1" appears in the first field of the LED display.

3 Press Select (+1) to scroll to the disabled codes.

4 Press Enter to re-enable zone codes in the d1-d8 range.

5 Turn the Enable Access key to the left to exit Access Level 2.

The Trouble/ Test /Disablement LEDs, Disablement LED and Mode LED are no longer lit.

Disable NAC Outputs

To disable NAC outputs:

1 Turn the Enable Access key to the right to open Access Level 2.

2 Press the mode button to select "db" on the seven segment display.

3 Press Enter to disable all NAC outputs and cause the Disablement and NAC Trouble/ Disabled LEDs to light.

Disable Trouble Contact

To disable a trouble relay contact:

4 Turn the Enable Access key to the right to enter Access Level 2.

5 Move the Write Enable slide-switch to the left to enter Access Level 3.

6 Select configuration code 22

Reference additional disablement options in Functions and Codes of this section.

Alarm Delays

To activate zone alarm delays on the fire control panel:

1 Turn the Enable Access key to the right to enter Access Level 2.

2 Move the Write Enable slide-switch to the left to enter Access Level 3.

The Write Enable slide-switch is located on the lower-right portion of the fascia adjacent to the Processor Reset button.

The fire control panel beeps three-times to indicate entry in Access Level 3.
The beeping continues to indicate Access Level 3 operation.

Code 00 is displayed on the menu of the Mode LED after entering Access Level 3.

3 Choose an alarm delay code in the 00-09 range and press Enter to set the delay.

A flashing dot is displayed in the lower-right-corner of the Mode LED to identify the set code.

4 Press Mode (+10) on the fascia to scroll from code 00 to 31 on the menu.

5 Press Select (+1) on the fascia to scroll from zone code 31 to 38 on the menu.

6 Choose the zone code on the menu and press Enter to program the zone.

A flashing dot is displayed in the lower-right-corner of the Mode LED to identify the set code.

7 Move the Write Enable slide-switch to the right to exit Access Level 3.

8 Select "Ad" in Access Level 2 to add delay to the alarm.

9 Turn the Enable Access key to the left to exit Access Level 2 and return the fire control panel to the Normal Standby condition.

Reference Default Operation before programming these alarm delay settings.

Relay Operation

The Sigma A-CP Fire Control Panel provides volt free changeover relay contacts for local control and signaling. The relay contacts are rated for switching signaling circuits only and the maximum ratings should not be exceeded under any circumstances.

Reference Appendix A, Specifications for relay ratings and operating characteristics.

Relays of the Sigma A-CP Fire Control Panel are common, not programmable and include:

TRBL (Trouble)	The trouble relay is normally energized and will de-energize upon any trouble condition including total loss of power.
SUPV. (Supervisory)	The supervisory relay energizes during activation of a supervisory condition on any zone. The relay remains activated until the fire control panel is reset.
FIRE	The fire relay energizes during activation of a fire condition on any zone or by pressing the sound alarm button in Access Level 2 on the fascia. The relay remains activated until the fire control panel is reset.

Section 5

Maintenance and Repair

This section provides procedures for maintaining and repairing the Sigma A-CP Fire Control Panel.

Cleaning the External Cabinet and Fascia-Door

Clean the external cabinet and fascia-door of the Sigma A-CP Fire Control Panel with a damp cloth. Do not clean these surfaces with detergents or solvents. Do not permit water to enter the cabinet during the cleaning process.

Inspecting Batteries

Inspect the standby-batteries annually to determine the connection integrity to the Sigma A-CP Fire Control Panel. The fire control panel contains valve-regulated, lead-acid batteries to provide standby power in the event of mains failure. The standby-batteries have a life expectancy of 3 to 5 years. Test the standby-batteries annually in accordance with the battery manufacturer's recommendations to determine their suitability for continued standby operation.

Replacing Standby-Batteries

Replace standby-batteries when the service period reaches 3 to 5 years or when the low-battery indicator illuminates on the power supply. Specify replacement batteries that are valve-regulated, lead-acid.

Removing the Standby-Batteries

To remove the existing standby-batteries:

1 Disconnect the jumper-lead between the standby-batteries.

2 Disconnect the red-lead from the positive terminal of one standby-battery.

3 Disconnect the black-lead from the negative terminal of the other standby-battery.

4 Remove the standby-batteries from the bottom of the Sigma A-CP Fire Control Panel cabinet.

5 Re-cycle the standby-batteries according to manufacturer instructions.

Installing the Standby-Batteries

Reference Section 3, Installation for installing the standby-batteries.

Replacing Fuses

The Sigma A-CP Fire Control Panel contains a battery fuse, a transformer fuse and an AC input fuse to protect it against circuit overloads. A 6.3 Amp slow-blow fuse protects the battery charging circuit and the transformer secondary. A 5 Amp fuse protects the AC input.

Reference Section 1, Installation Wiring, Rechargeable Battery Circuit for more information about the battery fuse.

Reference Section 1, Installation Wiring, Main Supply Circuit for more information about the AC input fuse.

During the life of the product it may be necessary to replace one or both of the fuses to restore operation.

Replace a fuse only after diagnosing and replacing components responsible for causing the fuse failure. Fuse failure is not a condition caused by the fuse. Diagnose and replace components in the circuit before replacing the fuse and then test the Sigma A-CP Fire Control Panel for proper operation.

Battery Fuse

The following procedures describe methods for removing and installing the 6.3 Amp battery fuse of the Sigma A-CP Fire Control Panel.

Removing the Battery Fuse

To remove the 6.3 Amp battery fuse:

1. Turn off 115 VAC or 230 VAC at the power source.
2. Disconnect the red-lead of the recharging circuit from the positive terminal of the standby-battery.
3. Remove NAC Power and Power inserts from the fascia terminal strip of the Sigma A-CP Fire Control Panel.
4. Remove the retaining-screw securing the fascia to the cabinet of the Sigma A-CP Fire Control Panel.
5. Open the fascia-door of the Sigma A-CP Fire Control Panel.
6. Locate the fuse housing on the printed-circuit-board.
7. Remove the upper-half of the fuse-housing by grasping and pulling upward at the center of fuse-housing.
8. Remove the battery fuse from the upper-half of the fuse-housing.

Installing the Battery-Fuse

To install the 6.3 Amp battery-fuse:

1 Confirm that 115 VAC or 230 VAC is turned-off at the source.

2 Install the replacement fuse in the upper-half of the fuse-housing.

3 Connect the upper-half to the lower-half of the fuse-housing.

4 Secure the fascia-door to the cabinet of the Sigma A-CP Fire Control Panel with the retaining-screw.

5 Re-connect the red-lead of the recharging circuit to the positive terminal of the standby-batteries.

6 Close the fascia-door of the Sigma A-CP Fire Control Panel.

7 Connect NAC Power and Power inserts from the fascia terminal strip of the Sigma A-CP Fire Control Panel.

8 Turn on 115 VAC or 230 VAC at the power source.

9 Test the fire control panel by operating it to determine that it functions.

Transformer Fuse

The following procedures describe methods for removing and installing the 6.3 Amp transformer fuse of the Sigma A-CP Fire Control Panel.

Removing the Transformer Fuse

To remove the 6.3 Amp transformer fuse:

1 Turn off 115 VAC or 230 VAC at the power source.

2 Disconnect the red-lead of the recharging circuit from the positive terminal of the standby-battery.

3 Remove NAC Power and Power inserts from the fascia terminal strip of the Sigma A-CP Fire Control Panel.

4 Remove the retaining-screw securing the fascia to the cabinet of the Sigma A-CP Fire Control Panel.

5 Open the fascia-door of the Sigma A-CP Fire Control Panel.

6 Remove the transformer fuse from the fuse-housing.

Installing the Transformer Fuse

To install the 6.3 Amp transformer fuse:

1 Confirm that 115 VAC or 230 VAC is turned-off at the source.

2 Install the replacement fuse in the fuse-housing.

3 Close the fascia-door of the Sigma A-CP Fire Control Panel.

4 Connect NAC Power and Power inserts on the fascia-terminal strip of the Sigma A-CP Fire Control Panel.

5 Connect the red-lead of the recharging circuit to the positive terminal of the standby-battery.

6 Secure the retaining-screw to the fascia-door and the cabinet of the Sigma A-CP Fire Control Panel.

7 Turn on 115 VAC or 230 VAC at the power source.

8 Test the fire control panel by operating it to determine that it functions.

AC Input Fuse

The following procedures describe methods for removing and installing the 5 AC input fuse of the Sigma A-CP Fire Control Panel.

Removing the AC Input Fuse

To remove the 5 Amp AC input fuse:

1 Turn off 115 VAC or 230 VAC at the power source.

2 Disconnect the red-lead of the recharging circuit from the positive terminal of the standby-battery.

3 Remove NAC Power and Power inserts from the fascia terminal strip of the Sigma A-CP Fire Control Panel.

4 Remove the retaining-screw securing the fascia to the cabinet of the Sigma A-CP Fire Control Panel.

5 Open the fascia-door of the Sigma A-CP Fire Control Panel.

6 Remove the AC input fuse from the terminal block housing.

Installing the AC Input Fuse

To install the 5 Amp AC Input Fuse:

1 Confirm that 115 VAC or 230 VAC is turned-off at the source.

2 Install the replacement fuse in the terminal block housing.

3 Close the fascia-door of the Sigma A-CP Fire Control Panel.

4 Secure the retaining-screw to the fascia-door and the cabinet of the Sigma A-CP Fire Control Panel.

5 Connect NAC Power and Power inserts from the fascia terminal strip of the Sigma A-CP Fire Control Panel.

6 Secure the retaining-screw to the fascia-door and the cabinet of the Sigma A-CP Fire Control Panel.

7 Turn on 115 VAC or 230 VAC at the power source.

8 Test the fire control panel by operating it to determine that it functions.

Replacing Cabinet Components

Reference General Wiring Information when replacing components of the Sigma A-CP Fire Control Panel.

Appendix A

Specifications

This appendix provides electrical and environmental specifications of the Sigma A-CP Fire Control Panel.

Electrical

AC Line Connection

Terminals	Description	Voltage
L	AC Line	115 VAC @ 50 / 60Hz (Supervised), 170 VA Maximum
		230 VAC @ 50 / 60Hz (Supervised)), 170 VA Maximum
N	AC Neutral	
G	Earth-Ground	

Power Supply

AC Input Fuse	3.15 Amp @ 250 VAC, Slow-Blow, 5 x 20mm
Input (Supervised)	115 or 230 VAC 50/60Hz
Transfer Voltage	115 VAC transfer @ 90 VAC 230 VAC transfer @ 180 VAC

Ground Trouble Indication

A ground trouble indication occurs when a minimum of 30K Ohms exists between earth-ground and the following terminals of the fire control panel:

- AUX 24V
- NAC 1 and NAC 2
- Z1, Z1 RET through Z8

Maximum Current Draw

The maximum current draw of the Sigma A-CP Fire Control Panel cannot exceed 5.18 A.

Outputs of the fire control panel can be loaded with combinations of currents as long as the total does not exceed 4.5 A.

All calculations of maximum current draw must include the 620 mA current required to operate the Sigma A-CP Fire Control Panel while in an alarm condition.

Outputs of the Sigma A-CP Fire Control Panel are listed below:

Outputs	Current Rating
Sigma A-CP Fire Control Panel	680 mA
AUX 24V	500 mA
NAC 1	2.5 A
NAC 2	2.5 A

Rechargeable Battery Circuit

Parameter	Description
Standby-Battery Type	12 VDC, 7 AH or 12 AH, valve-regulated, lead-acid
Standby-Battery Charging	Two standby batteries wired in series
Charge Current	1.7 A maximum
Output Current	4.5 Amps
Battery Fuse	6.3 A, 250 VAC, (.2 x 0.787401)" ((5 x 20) mm)
Battery Charge Voltage	27.6 VDC current limited at 1.7 A maximum

Parameter	Description
Current Draw From Battery In Mains Fail, Standby, Not in Alarm	100 mA with the internal buzzer sounding 120 mA with the Dialer and the internal buzzer sounding
Maximum Current Draw of FACP, In Alarm	680 mA This current level represents load with dialer and is obtained from shorting eight-zone-outputs together. This current level does not include loads from NACs and Aux 24 V. 290 mA This current level represents load with dialer and is obtained from shorting two-zone-outputs together. This current level does not include loads from NACs and Aux 24 V.
Maximum Current Draw From Batteries	5.18 A

Current Loading Limitations

Standby-batteries of the Sigma A-CP Fire Control Panel are rated for 7 AH or 12 AH of operation.

Standby and alarm current of the Sigma A-CP Fire Control Panel can include all or part of the following loads:

Loads	Standby Current	Alarm Current
FACP	100 mA 120 mA with Dialer	680 mA (Current does not include loads from NACs and Aux 24 V) Value represents load with Dialer and is obtained from shorting two zone outputs together. A higher current level occurs by shorting eight zone outputs.
NAC Output	0 mA (per NAC output)	2.5 A , per NAC output with 4 A of NAC 1 and NAC 2 combined

Loads	Standby Current	Alarm Current
AUX 24 V	105 mA (7 AH batteries with Dialer) 125 mA (7 AH batteries without Dialer) 280 mA (12 AH batteries with Dialer) 300 mA (12 AH batteries without Dialer)	500 mA
Total Maximum Current	225 mA (7 AH Batteries) 400 mA (12 AH Batteries)	5.18 A

Total Standby Current

Total standby-current of the 7 AH standby-batteries must draw less than 225 mA to maintain continuous standby operation for twenty-four hours followed by five minutes of alarm.

Total standby-current of the 12 AH standby-batteries must draw less than 400 mA to maintain continuous standby operation for twenty-four hours followed by five minutes of alarm.

Current loading calculations do not include the combined IDC currents of the Sigma A-CP Fire Control Panel. These combined IDC currents are negligible in comparison to fire control panel, ancillary device and NAC currents of the Sigma A-CP Fire Control Panel and are therefore excluded from the current loading calculation.

Field Wiring

The following specifications identify the range of acceptable wire gages for field wiring, battery and power connections:

Terminals	Wire Range
AUX 24V	14 – 22 AWG
ALM RES	No Connection (NC)
NAC 1	14 – 22 AWG
NAC 2	14 – 22 AWG

Terminals	Wire Range
Z1, Z1 RET through Z8	14 – 22 AWG
TRBL	14 – 22 AWG
SUPV.	14 – 22 AWG
FIRE	14 – 22 AWG
Dialer	14 – 20 AWG

Battery and Line Connections

Designation	Terminal	Wire Range	Description
Battery Connection	+ Red lead		Positive connection for the Standby-batteries
	- Black lead		Negative connection for the Standby-batteries
AC Power	L	14 AWG	Line connection
	N	14 AWG	Neutral connection
	E	14 AWG	Ground Connection

Battery leads are provided in the cabinet for recharging the standby-batteries. One end of the battery leads are permanently connected to the power supply of the Sigma A-CP Fire Control Panel. The opposite end of the battery leads connect to terminals of the standby-batteries.

Field Terminal Capacity

Field terminal capacity: 14 to 22 AWG solid or stranded wire.

Kentec does not recommend use of wire size smaller than 18 AWG.

Initiating Device Circuit (IDC) Ratings

Condition	Rating
Maximum Open Circuit Voltage	21.9 VDC
Maximum Short Circuit Current	65 mA
Maximum Line Impedance	20.3 Ohms
Maximum Number of Detectors on Zones 1 through 8	Reference Appendix B, Equipment List, Detectors
Detector Compatibility Identifier on Zones 1 through 8	Reference Appendix B, Equipment List, Detectors
Detector Installation Limits on Zones 1 through 8	Reference Appendix B, Equipment List, Detectors

The maximum line impedance shown in the IDC Ratings table represents all initiating circuit types on detection zones of The Sigma A-CP Fire Control Panel.

Notification Appliance Circuit (NAC)

Terminal	Rating
NAC 1 (+), (-)	Special Application: 18 to 28 VDC @ 2.5 A continuous Regulated: 18 to 28 VDC @ 250 mA continuous Fused: Electronic 2.5 A Supervision: Voltage reversing DC Short Circuit Threshold: 130 Ohms +/- 20% Maximum line-voltage-drop: 2 VDC
NAC 2 (+), (-)	Special Application: 18 to 28 VDC @ 2.5 A continuous Regulated: 18 to 28 VDC @ 250 mA continuous Fused: Electronic 2.5 A Supervision: Voltage reversing DC Short Circuit Threshold: 130 Ohms +/- 20% Maximum line-voltage-drop: 2 VDC

Relay Ratings

Terminal	Ratings
TRBL (NC), (C), (NO)	Power Factor: 1.0 30 VDC @ 1 A maximum, volt free change over contact Relay Contact: Form C (SPDT)
SUPV. (NC), (C), (NO)	
FIRE (NC), (C), (NO)	

AUX 24V

Terminal	Rating
AUX 24V (+ / -)	15 - 28 VDC, special application, 500 mA maximum

ALM RES

ALM RES inputs are unused on the Sigma A-CP Fire Control Panel:

Terminal	Description
SIL	No Connection (NC)
ALM	NC
TRBL	NC
RES	NC

Dialer Board

Condition	Rating
Standby Current	20 mA
Alarm Current	60 mA

Cabling

Grounding Conductor	Install ground conductors with 14 AWG cabling to support branch circuits of the Sigma A-CP Fire Control Panel.
Branch Circuits	Protect branch circuits from the AC power source with a 15 Amp fuse.
Material	All field wiring should be installed using fire rated cables according to the NFPA except AC and TELCO.
Cross Sectional Size	The cross sectional size of zone cabling should be determined based on length and the number of devices in use. Connect zone cabling using a minimum of 1 mm cross sectional area.

Operating Environment

Low Temperature	32° F (0° C)
High Temperature	102° F (+ 49° C)
Relative Humidity	This device functions in an atmosphere of relative humidity up to 93 percent, non-condensing.

Physical Specifications

Cabinet-Box Dimensions	H 12.0” (304.8 mm) X W 14.5” (368.3 mm) X D 3.81” (97.0 mm)
	Depth of cabinet-box + Lid = 4.25 “ (108.0 mm)
Mounting	Maximum screw diameter: 0.2" (5 mm) screws

This fire control panel is designed for indoor use only.

Appendix B

Equipment List

This appendix describes models of the Sigma A-CP Fire Control Panel, supporting equipment and devices.

Sigma A-CP Fire Control Panels

The following models are provided for the Sigma A-CP Fire Control Panel:

Models	Features
K1842-10	2 Zone Conventional Panel, Red, 115V
K1842-11	2 Zone Conventional Panel, Red, 230V
K1842-40	2 Zone Conventional Panel, Gray, 115V
K1842-41	2 Zone Conventional Panel, Gray, 230V
K1844-10	4 Zone Conventional Panel, Red, 115V
K1844-11	4 Zone Conventional Panel, Red, 230V
K1844-40	4 Zone Conventional Panel, Gray, 115V
K1844-41	4 Zone Conventional Panel, Gray, 230V
K1848-10	8 Zone Conventional Panel, Red, 115V
K1848-11	8 Zone Conventional Panel, Red, 230V
K1848-40	8 Zone Conventional Panel, Gray, 115V
K1848-41	8 Zone Conventional Panel, Gray, 230V
K1852-10	2 Zone Conventional Panel with Dialer, Red, 115V
K1852-11	2 Zone Conventional Panel with Dialer, Red, 230V

Models	Features
K1852-40	2 Zone Conventional Panel with Dialer, Gray, 115V
K1852-41	2 Zone Conventional Panel with Dialer, Gray, 230V
K1854-10	4 Zone Conventional Panel with Dialer, Red, 115V
K1854-11	4 Zone Conventional Panel with Dialer, Red, 230V
K1854-40	4 Zone Conventional Panel with Dialer, Gray, 115V
K1854-41	4 Zone Conventional Panel with Dialer, Gray, 230V
K1858-10	8 Zone Conventional Panel with Dialer, Red, 115V
K1858-11	8 Zone Conventional Panel with Dialer, Red, 230V
K1858-40	8 Zone Conventional Panel with Dialer, Gray, 115V
K1858-41	8 Zone Conventional Panel with Dialer, Gray, 230V

Supporting Components and Replacements

The following supporting components and replacements are available for the Sigma A-CP Fire Control Panel:

Model	Description
Man-1194 (K1861-00)	Sigma A-CP Fire Control Panel - Installation and Operation Manual
Man-1195 (K1863-00)	Operating Instructions
K1864-00	UL Compliance Label
Man-1193 (K1862-00)	Wiring Diagram
K1841-00	Dialer Configuration Utility
K18040-00	Dialer Configuration Utility Manual
K1850-00	Dialer Board
K1842-00	2 Zone Board
K1844-00	4 Zone Board
K1848-00	8 Zone Board
K1897-00	470 Ohm Resistor (1), Trigger Resistor
K1898-00	270 Ohm Resistor (1), Series Resistor
K1895-00	10K Ohm Resistor (1): Sleeved End of Line (EOL) resistor
K1896-00	6.8K Ohm Resistor (1): Sleeved End of Line (EOL) resistor
K5450-00	Standby-Battery, 12 Volt, 7 AH, two per cabinet
K5451-00	Standby-Battery, 12 Volt, 12 AH, two per cabinet

Model	Description
K0511-10	Enclosure Back Box, Red
K0511-40	Enclosure Back Box, Gray
K0607-10	Enclosure Fascia, Red
K0607-40	Enclosure Fascia, Gray
K0613-10	Enclosure Box Lid, Red
K0613-40	Enclosure Box Lid, Gray
K1885-12	Sigma A-CP Annunciator - Red 2 Zone
K1885-42	Sigma A-CP Annunciator - Gray 2-Zone
K1885-14	Sigma A-CP Annunciator - Red 4 Zone
K1885-44	Sigma A-CP Annunciator - Gray 4-Zone
K1885-18	Sigma A-CP Annunciator - Red 8 Zone
K1885-48	Sigma A-CP Annunciator - Gray 8-Zone

Detectors

Detector models from Apollo, Hochiki, Kentec and System Sensor must not be mixed on individual zones of the Sigma A-CP Fire Control Panel. Detector models from these manufacturers can be mixed between separate zones of the fire control panel as long as each zone contains detectors from a single manufacturer.

Compatibility Identifier, Sigma A-CP Fire Control Panel: ACP0110

Compatibility Identifier, Detectors Apollo, Kentec, System Sensor and Hochiki: ACP0110

Detector models from Apollo, Hochiki, Kentec and System Sensor are compatible for use on the Initiating Device Circuits of the Sigma A-CP Fire Control Panel.

Apollo

Detector Models	Base Models	Maximum Number of Devices
55000-139	45681-200 45681-255	13
55000-142	45681-200 45681-255	13
55000-145	45681-200 45681-255	13
55000-226	45681-200 45681-255	13
55000-326	45681-200 45681-255	13

System Sensor

Detector Models	Base Models	Maximum Number of Devices
2W-B, 2WT-B	N/A	18
2WTA-B	N/A	1
2WTR-B	N/A	1

Kentec

Detector Models	Base Models	Maximum Number of Devices
KSU-HEAT-135F-CV	KSU-BASE-4-CV KSU-BASE-6-CV	20
KSU-HEAT-190F-CV	KSU-BASE-4-CV KSU-BASE-6-CV	20
KSU -OPT-7-CV	KSU-BASE-4-CV KSU-BASE-6-CV	20
KSU -MULTI-7-CV	KSU-BASE-4-CV KSU-BASE-6-CV	20

Hochiki

Detector Models	Base Models	Maximum Number of Devices
DCD-135	NS4-220 NS6-220	20
DCD-190	NS4-220 NS6-220	20
SOC-24V /VW/VN	NS4-220/224 NS6-220/224	20
SOE-24V **SOE-24H**	NS4-220/224 NS6-220/224	20
SIJ24	NS4-220 NS6-220	20
SLR-24H	NS4-220 NS6-220	20
SLR835	NS4-220 NS6-220	20
SLR-835B-2	N/A	20
SLR-835BH-2	N/A	20
SLR-835H	NS4-220 NS6-220	20

Detector Models	Base Models	Maximum Number of Devices
SLV-24V/-24/-24N	NS4-220 NS6-220	20

Notification Appliances

Outputs of NAC 1 and NAC 2 on the Sigma A-CP Fire Control Panel operate in a special application mode. The special application mode conforms to specific levels of continuous DC. Outputs meet these requirements when NAC currents do not exceed 2.5 A on NAC 1 or NAC 2 with the combined currents not to exceed 4 A.

The Sigma A-CP Fire Control Panel provides synchronization for the special application outputs of NAC 1 and NAC 2.

Synchronization

The Sigma A-CP Fire Control Panel provide dual circuit synchronization on the outputs of NAC channels 1 and 2 when operating NAC devices from Amseco, Gentex, System Sensor or Wheelock.

Amseco Compatible NAC Devices

The Sigma A-CP Fire Control Panel accepts compatible Amseco NAC devices for use on the special application outputs of NAC 1 and NAC 2. The number of compatible devices that NAC 1 and NAC 2 can each safely operate is limited by a 2.5 A current threshold. Installers must limit the population of compatible devices in each NAC circuit by this 2.5 A threshold.

A circuit design is limited by the power source and device-loads connected to it. A combination of device-loads can be safely installed in a circuit when the circuit is operated within the constraints of the power source threshold. There are no exclusions for the amount of device-loads that can be safely installed in the circuit as long as the maximum current load is below the output current available from the power source.

The Sigma A-CP Fire Control Panel can also safely operate combinations of device-loads on NAC 1 and NAC 2. These device-loads can include combinations such as strobes, horns, strobe/chimes, strobe/horns and speaker strobes. The sum of this device-load combination is limited by the 2.5 A available from each NAC output. Kentec recommends designing and installing combinations of NAC circuits based on this “device-load” versus “current-available” understanding.

Reference manufacturer data sheets for individual device loads and then total the loads to determine if the sum exceeds the 2.5 A threshold of each NAC output.

Reference Section 1, Installation Wiring Documents, Notification Appliance Circuit (NAC), Specifications for additional parameters related to the NAC 1 and NAC 2 outputs.

UL Listing Requirement

All control panel designs restrict the number of NAC devices installed in circuits based on the rated current threshold. Some control panel designs further restrict the number of NAC devices installed in circuits based on device synchronization in addition to the rated current threshold. These control panel designs can reduce the population of NAC devices below the number of devices that would be considered for the rated current threshold.

NAC outputs of the Sigma A-CP Fire Control Panel are not limited by conditions other than the maximum rated current threshold. NAC outputs of the Sigma A-CP Fire Control Panel can operate combinations of Kentec authorized NAC devices as long as the total load of NAC 1 and NAC 2 does not exceed 4 A.

The following series of Amseco NAC devices are compatible for use on the special application outputs of NAC 1 and NAC 2 when operating each NAC output below 2.5 A:

Name of Series	Environment	Model Series	Description	Mounting Type
Select-A-Strobe/Chime	Indoor	CM24C	Chime	Ceiling
Select-A-Strobe/Chime	Indoor	SCM24C	Chime Strobe	Ceiling
Select-A-Horn	Indoor/Outdoor	H-1224	Horn	Wall
Select-A-Strobe/Horn	Indoor	SH-1224	Horn Strobe	Wall
Select-A-Strobe/Horn	Outdoor	SH-1224WP	Horn Strobe	Wall
Select-A-Strobe/Horn	Indoor	SH24C-177	Horn Strobe	Wall/Ceiling
Select-A-Strobe/Horn	Indoor	SH24C-3075110	Horn Strobe	Wall/Ceiling
Speaker/Strobe Square	Indoor/Outdoor	SSS-2	Speaker Strobe	Wall
Speaker/Strobe Square	Indoor/Outdoor	SSS-8	Speaker Strobe	Wall
Speaker/Strobe Round	Indoor/Outdoor	SSR-2	Speaker Strobe	Wall/Ceiling
Speaker/Strobe Round	Indoor/Outdoor	SSR-8	Speaker Strobe	Wall/Ceiling
Speaker/Strobe Round	Indoor	SSC-2	Speaker Strobe	Wall/Ceiling
Speaker/Strobe Round	Indoor	SSC-8	Speaker Strobe	Wall/Ceiling

Name of Series	Environment	Model Series	Description	Mounting Type
Select-A-Strobe	Indoor	SL-1224	Strobe	Wall
Select-A-Strobe	Indoor/Outdoor	SL-1224-WP	Strobe	Wall
Select-A-Strobe	Indoor	SL24C-3075110	Strobe	Wall/Ceiling
Select-A-Strobe	Indoor	SL24C-177	Strobe	Wall/Ceiling
Bell/Select-A-Strobe	Indoor	SB24	Bell Strobe	Wall/Ceiling
Select-A-Strobe/Chime	Indoor	SCM24W-153075	Chime Strobe	Wall
Select-A-Strobe/Chime	Indoor	SCM24W-75110	Chime Strobe	Wall
Select-A-Horn	Indoor	H24W	Horn	Wall/Ceiling
Select-A-Strobe/Horn	Indoor	SH24W-1530	Horn Strobe	Wall
Select-A-Strobe/Horn	Indoor	SH24W-75110	Horn Strobe	Wall
Indoor/Outdoor Horn/ Strobe	Indoor/Outdoor	SHB24-75	Horn Strobe	Wall
Speaker/Strobe	Indoor	SSC25-177	Speaker Strobe	Wall/Ceiling
Select-A-Strobe/Speaker	Indoor	SSC25-3075110	Speaker Strobe	Wall/Ceiling
Speaker/Strobe	Indoor	SSC70-177	Speaker Strobe	Wall/Ceiling
Select-A-Strobe/Speaker	Indoor	SSC70-3075110	Speaker Strobe	Wall/Ceiling
Select-A-Strobe/Speaker	Indoor	SFH45-153075	Speaker Strobe	Wall/Ceiling
Select-A-Strobe/Speaker	Indoor	SFH47-75110	Speaker Strobe	Wall/Ceiling
Select-A-Strobe	Indoor	SL24W-1530	Strobe	Wall

Name of Series	Environment	Model Series	Description	Mounting Type
Select-A-Strobe	Indoor	SL24W-75110	Strobe	Wall
Indoor/Outdoor Strobe	Indoor/Outdoor	SLB24-75	Strobe	Wall
Select-A-Strobe	Indoor/Outdoor	SB24	Strobe	Wall/Ceiling
Select-A-Strobe/Horn	Indoor	SH24W-153075	Horn Strobe	Wall
Select-A-Strobe	Indoor	SL24W-153075	Strobe	Wall
Select-A-Strobe	Indoor	ASH-2475110R	Horn Strobe	Wall
Select-A-Strobe	Indoor	RSB24-153075	Strobe	Wall/Ceiling
Select-A-Strobe	Indoor	RSD24-153075	Strobe	Wall/Ceiling
Select-A-Strobe	Indoor	RSD24-75110	Strobe	Wall/Ceiling
Select-A-Strobe	Indoor	SA24 SERIES	Strobe	Wall
Select-A-Strobe	Indoor	SAD24-153075	Strobe	Wall/Ceiling
Select-A-Strobe	Indoor	SAD24-75110	Strobe	Wall

Gentex Compatible NAC Devices

The Sigma A-CP Fire Control Panel accepts compatible Gentex NAC devices for use on the special application outputs of NAC 1 and NAC 2. The number of compatible devices that NAC 1 and NAC 2 can each safely operate is limited by a 2.5 A current threshold. Installers must limit the population of compatible devices in each NAC circuit by this 2.5 A threshold.

A circuit design is limited by the power source and device-loads connected to it. A combination of device-loads can be safely installed in a circuit when the circuit is operated within the constraints of the power source threshold. There are no exclusions for the amount of device-loads that can be safely installed in the circuit as long as the maximum current load is below the output current available from the power source.

The Sigma A-CP Fire Control Panel can also safely operate combinations of device-loads on NAC 1 and NAC 2. These device-loads can include combinations such as strobes, horns, strobe/chimes, strobe/horns and speaker strobes. The sum of this device-load combination is limited by the 2.5 A available from each NAC output.

Kentec recommends designing and installing combinations of NAC circuits based on this "device-load" versus "current-available" understanding.

Reference manufacturer data sheets for individual device loads and then total the loads to determine if the sum exceeds the 2.5 A threshold of each NAC output.

Reference Section 1, Installation Wiring Documents, Notification Appliance Circuit (NAC), Specifications for additional parameters related to the NAC 1 and NAC 2 outputs.

UL Listing Requirement

All control panel designs restrict the number of NAC devices installed in circuits based on the rated current threshold. Some control panel designs further restrict the number of NAC devices installed in circuits based on device synchronization in addition to the rated current threshold. These control panel designs can reduce the population of NAC devices below the number of devices that would be considered for the rated current threshold.

NAC outputs of the Sigma A-CP Fire Control Panel are not limited by conditions other than the maximum rated current threshold. NAC outputs of the Sigma A-CP Fire Control Panel can operate combinations of Kentec authorized NAC devices as long as the total load of NAC 1 and NAC 2 does not exceed 4 A.

The following series of Gentex NAC devices are compatible for use on the special application outputs of NAC 1 and NAC 2 when operating each NAC output below 2.5 A:

Name of Series	Environment	Model Series	Description	Mounting Type
WSSPK Series	Outdoor	WSSPK24-15/75	Speaker Strobe	Wall
SSPK24WLP Series	Indoor	SSPK24WLP	Speaker Strobe	Wall
SSPKCLP Series	Indoor	SSPK24CLP	Speaker Strobe	Ceiling
Commander4 Series	Indoor	GCC24	Horn Strobe	Ceiling
Commander4 Series	Indoor	GCS24	Strobe	Ceiling
Commander3 Series	Indoor	GEC3-24	Horn Strobe	Wall
Commander3 Series	Indoor	GES3-24	Strobe	Wall

Name of Series	Environment	Model Series	Description	Mounting Type
Commander3 Series	Indoor	GEH24	Horn	Wall
Commander2 Series	Indoor	GEC24	Horn Strobe	Wall
Commander2 Series	Indoor	GES24	Strobe	Wall
Commander2 Series	Indoor	GEH24	Horn	Wall
Outdoor Commander Series	Outdoor	WGEC24	Horn Strobe	Wall
Outdoor Commander Series	Outdoor	WGES24	Strobe	Wall
Outdoor Commander Series	Outdoor	GEH24	Horn	Wall
GX91/GX93 Series	Indoor	GX93	Mini Horn	Wall

System Sensor Compatible NAC Devices

The Sigma A-CP Fire Control Panel accepts compatible System Sensor NAC devices for use on the special application outputs of NAC 1 and NAC 2. The number of compatible devices that NAC 1 and NAC 2 can each safely operate is limited by a 2.5 A current threshold. Installers must limit the population of compatible devices in each NAC circuit by this 2.5 A threshold.

A circuit design is limited by the power source and device-loads connected to it. A combination of device-loads can be safely installed in a circuit when the circuit is operated within the constraints of the power source threshold. There are no exclusions for the amount of device-loads that can be safely installed in the circuit as long as the maximum current load is below the output current available from the power source. The Sigma A-CP Fire Control Panel can also safely operate combinations of device-loads on NAC 1 and NAC 2. These device-loads can include combinations such as strobes, horns, strobe/chimes, strobe/horns and speaker strobes. The sum of this device-load combination is limited by the 2.5 A available from each NAC output. Kentec recommends designing and installing combinations of NAC circuits based on this “device-load” versus “current- available” understanding.

Reference manufacturer data sheets for individual device loads and then total the loads to determine if the sum exceeds the 2.5 A threshold of each NAC output.

Reference Section 1, Installation Wiring Documents, Notification Appliance Circuit (NAC), Specifications for additional parameters related to the NAC 1 and NAC 2 outputs.

UL Listing Requirement

All control panel designs restrict the number of NAC devices installed in circuits based on the rated current threshold. Some control panel designs further restrict the number of NAC devices installed in circuits based on device synchronization in addition to the rated current threshold. These control panel designs can reduce the population of NAC devices below the number of devices that would be considered for the rated current threshold.

NAC outputs of the Sigma A-CP Fire Control Panel are not limited by conditions other than the maximum rated current threshold. NAC outputs of the Sigma A-CP Fire Control Panel can operate combinations of Kentec authorized NAC devices as long as the total load of NAC 1 and NAC 2 does not exceed 4 A.

The following series of System Sensor NAC devices are compatible for use on the special application outputs of NAC 1 and NAC 2 when operating each NAC output below 2.5 A:

Name of Series	Environment	Model Series	Description	Mounting Type
SpectrAlert Advance	Indoor	SPS	Speaker Strobe	Wall
SpectrAlert Advance	Indoor	SPSC	Speaker Strobe	Ceiling
SpectrAlert Advance	Outdoor	SPS (K)	Speaker Strobe	Wall
SpectrAlert Advance	Outdoor	SPSC (K)	Speaker Strobe	Ceiling
SpectrAlert Advance	Indoor	P2	Horn Strobe, 2-Wire	Wall
SpectrAlert Advance	Indoor	P4	Horn Strobe, 4-Wire	Wall
SpectrAlert Advance	Indoor	S	Strobe	Wall
SpectrAlert Advance	Indoor	PC2	Horn Strobe, 2-Wire	Ceiling
SpectrAlert Advance	Indoor	PC4	Horn Strobe, 4-Wire	Ceiling
SpectrAlert Advance	Indoor	SC	Strobe	Ceiling
SpectrAlert Advance	Indoor	H	Horn	Wall/Ceiling

Name of Series	Environment	Model Series	Description	Mounting Type
SpectrAlert Advance	Outdoor	P2 (K)	Horn Strobe,2-Wire	Wall
SpectrAlert Advance	Outdoor	P4 (K)	Horn Strobe, 4-Wire	Wall
SpectrAlert Advance	Outdoor	S (K)	Strobe	Wall
SpectrAlert Advance	Outdoor	PC2 (K)	Horn Strobe, 2-Wire	Ceiling
SpectrAlert Advance	Outdoor	PC4 (K)	Horn Strobe, 4-Wire	Ceiling
SpectrAlert Advance	Outdoor	SC (K)	Strobe	Ceiling
SpectrAlert Advance	Outdoor	H (K)	Horn	Wall/Ceiling
SpectrAlert Advance	Indoor	CH	Chime	Wall/Ceiling
SpectrAlert Advance	Indoor	CHS	Chime Strobe	Wall
SpectrAlert	Indoor	CH24MC	Chime Strobe	Wall
SpectrAlert	Indoor	CH1224	Chime	Wall/Ceiling
SpectrAlert	Indoor	SP2x1224MC	Speaker Strobe	Wall
SpectrAlert	Indoor	SP3x1224MC	Speaker Strobe	Wall
SpectrAlert	Outdoor	SP2R1224MCK	Speaker Strobe	Wall
SpectrAlert		S1224MC	Strobe	Wall
SpectrAlert		P1224MC	Horn Strobe, 4-Wire	Wall
SpectrAlert		H12/24	Horn	Wall/Ceiling

Cooper/Wheelock Compatible NAC Devices

The Sigma A-CP Fire Control Panel accepts compatible Cooper/Wheelock NAC devices for use on the special application outputs of NAC 1 and NAC 2. The number of compatible devices that NAC 1 and NAC 2 can each safely operate is limited by a 2.5 A current threshold. Installers must limit the population of compatible devices in each NAC circuit by this 2.5 A threshold.

A circuit design is limited by the power source and device-loads connected to it. A combination of device-loads can be safely installed in a circuit when the circuit is operated within the constraints of the power source threshold. There are no exclusions for the amount of device-loads that can be safely installed in the circuit as long as the maximum current load is below the output current available from the power source.

The Sigma A-CP Fire Control Panel can also safely operate combinations of device-loads on NAC 1 and NAC 2. These device-loads can include combinations such as strobes, horns, strobe/chimes, strobe/horns and speaker strobes. The sum of this device-load combination is limited by the 2.5 A available from each NAC output. Kentec recommends designing and installing combinations of NAC circuits based on this “device-load” versus “current-available” understanding.

Reference manufacturer data sheets for individual device loads and then total the loads to determine if the sum exceeds the 2.5 A threshold of each NAC output.

Reference Section 1, Installation Wiring Documents, Notification Appliance Circuit (NAC), Specifications for additional parameters related to the NAC 1 and NAC 2 outputs.

UL Listing Requirement

All control panel designs restrict the number of NAC devices installed in circuits based on the rated current threshold. Some control panel designs further restrict the number of NAC devices installed in circuits based on device synchronization in addition to the rated current threshold. These control panel designs can reduce the population of NAC devices below the number of devices that would be considered for the rated current threshold.

NAC outputs of the Sigma A-CP Fire Control Panel are not limited by conditions other than the maximum rated current threshold. NAC outputs of the Sigma A-CP Fire Control Panel can operate combinations of Kentec authorized NAC devices as long as the total load of NAC 1 and NAC 2 does not exceed 4 A.

The following series of Cooper/Wheelock NAC devices are compatible for use on the special application outputs of NAC 1 and NAC 2 when operating each NAC output below 2.5 A:

Name of Series	Environment	Model Series	Description	Mounting Type
AMT-12/24	Multitone - 3 inputs	AMT-12/24	Multitone - 3 inputs	AMT-12/24
AMT-241575, AMT-24MCW	Multitone Strobe - 1575cd or 15,30,75,110 cd, wall	AMT-241575, AMT-24MCW	Multitone Strobe - 1575cd or 15,30,75,110 cd, wall	AMT-241575, AMT-24MCW
AMT-241575	Multitone Strobe (NYC) - 1575 cd, wall	AMT-241575	Multitone Strobe (NYC) - 1575 cd, wall	AMT-241575
AMT-12/24 Audible Only	Multitone Audible only	AMT-12/24 Audible Only	Multitone Audible only	AMT-12/24 Audible Only
AS-121575, AS-241575	Audible Strobe - 1575 cd, wall	AS-121575, AS-241575	Audible Strobe - 1575 cd, wall	AS-121575, AS-241575
AS-24MCW	Audible Strobe - 15,30,75,110 cd, wall	AS-24MCW	Audible Strobe - 15,30,75,110 cd, wall	AS-24MCW
AS-24MCC	Audible Strobe - 15,30,75,95 cd, ceiling	AS-24MCC	Audible Strobe - 15,30,75,95 cd, ceiling	AS-24MCC
AS-24MCWH	Audible Strobe - 135,185 cd, wall	AS-24MCWH	Audible Strobe - 135,185 cd, wall	AS-24MCWH
AS-24MCCH	Audible Strobe - 115,177 cd, ceiling	AS-24MCCH	Audible Strobe - 115,177 cd, ceiling	AS-24MCCH
AH-12, AH-24	Audible	AH-12, AH-24	Audible	AH-12, AH-24
ASWP-2475	Audible Strobe - 180 cd, weatherproof	ASWP-2475	Audible Strobe - 180 cd, weatherproof	ASWP-2475

Name of Series	Environment	Model Series	Description	Mounting Type
AHWP	Audible - outdoor	AHWP	Audible - outdoor	AHWP
CH70, CH90	Chime	CH70, CH90	Chime	CH70, CH90
CH70-241575	Chime - 1575 cd, wall	CH70-241575	Chime - 1575 cd, wall	CH70-241575
CH70-24MCW	Chime - 15,30,75,110 cd, wall	CH70-24MCW	Chime - 15,30,75,110 cd, wall	CH70-24MCW
CH90-24MCC	Chime - 15,30,75,95 cd, ceiling	CH90-24MCC	Chime - 15,30,75,95 cd, ceiling	CH90-24MCC
CH70-MCWH	Chime - 135,185 cd, wall	CH70-MCWH	Chime - 135,185 cd, wall	CH70-MCWH
CH90-MCCH	Chime - 115,177 cd, ceiling	CH90-MCCH	Chime - 115,177 cd, ceiling	CH90-MCCH
E50-241575W	Speaker Strobe-wall	E50-241575W	Speaker Strobe-wall	E50-241575W
E50-MCW	Speaker Strobe - 15,30,75,110 cd, wall	E50-MCW	Speaker Strobe - 15,30,75,110 cd, wall	E50-MCW
E50-MCWH	Speaker Strobe - 135,185 cd, wall	E50-MCWH	Speaker Strobe - 135,185 cd, wall	E50-MCWH
E60-24MCC	Speaker Strobe 15,30,75,95 cd, ceiling	E60-24MCC	Speaker Strobe 15,30,75,95 cd, ceiling	E60-24MCC
E60-MCCH	Speaker Strobe 115/177 cd, ceiling	E60-MCCH	Speaker Strobe 115/177 cd, ceiling	E60-MCCH
E70A, E70B, E90A, E90B	Speaker Strobe - amber or blue lens	E70A, E70B, E90A, E90B	Speaker Strobe - amber or blue lens	E70A, E70B, E90A, E90B

Name of Series	Environment	Model Series	Description	Mounting Type
E70-241575	Speaker Strobe - 1575 cd, wall	E70-241575	Speaker Strobe - 1575 cd, wall	E70-241575
E70-24MCW	Speaker Strobe - 15,30,75,110 cd, wall	E70-24MCW	Speaker Strobe - 15,30,75,110 cd, wall	E70-24MCW
E90-24MCC	Speaker Strobe - 15,30,75,95 cd, ceiling	E90-24MCC	Speaker Strobe - 15,30,75,95 cd, ceiling	E90-24MCC
E70-24MCWH	Speaker Strobe - 135,185 cd, wall	E70-24MCWH	Speaker Strobe - 135,185 cd, wall	E70-24MCWH
E90-24MCCH	Speaker Strobe - 115,177 cd, ceiling	E90-24MCCH	Speaker Strobe - 115,177 cd, ceiling	E90-24MCCH
ET70-241575	Speaker Strobe - 1575 cd, wall	ET70-241575	Speaker Strobe - 1575 cd, wall	ET70-241575
ET70-24MCW	Speaker Strobe - 15,30,75,110 cd, wall	ET70-24MCW	Speaker Strobe - 15,30,75,110 cd, wall	ET70-24MCW
ET90-24MCC	Speaker Strobe - 15,30,75,95 cd, ceiling	ET90-24MCC	Speaker Strobe - 15,30,75,95 cd, ceiling	ET90-24MCC
ET70-24MCWH	Speaker Strobe - 135,185 cd, wall	ET70-24MCWH	Speaker Strobe - 135,185 cd, wall	ET70-24MCWH
ET90-24MCCH	Speaker Strobe - 115,177 cd, ceiling	ET90-24MCCH	Speaker Strobe - 115,177 cd, ceiling	ET90-24MCCH
ET80-24MCW	Speaker Strobe - vandal resist, 15,30,75,110 cd, wall	ET80-24MCW	Speaker Strobe - vandal resist, 15,30,75,110 cd, wall	ET80-24MCW
ET80-24MCWH	Speaker Strobe - vandal resist, 135,185 cd, wall	ET80-24MCWH	Speaker Strobe - vandal resist, 135,185 cd, wall	ET80-24MCWH

Name of Series	Environment	Model Series	Description	Mounting Type
ET70WP-2475	Speaker Strobe - weatherproof	ET70WP-2475	Speaker Strobe - weatherproof	ET70WP-2475
HS-24	Audible	HS-24	Audible	HS-24
HS4-241575	Audible Strobe - 1575 cd, wall	HS4-241575	Audible Strobe - 1575 cd, wall	HS4-241575
HS4-24MCW	Audible Strobe - 15,30,75,110 cd, wall	HS4-24MCW	Audible Strobe - 15,30,75,110 cd, wall	HS4-24MCW
HS4-24MCWH	Audible Strobe - 135,185 cd, wall	HS4-24MCWH	Audible Strobe - 135,185 cd, wall	HS4-24MCWH
MIZ-24S	Mini Horn - continuous, code-3, sync	MIZ-24S	Mini Horn - continuous, code-3, sync	MIZ-24S
MT	Multitone	MT	Multitone	MT
MT-121575, MT-241575, MT-24MCW	Multitone Strobe - 1575 cd or 15,30,75,110 cd, wall	MT-121575, MT-241575, MT-24MCW	Multitone Strobe - 1575 cd or 15,30,75,110 cd, wall	MT-121575, MT-241575, MT-24MCW
MTWP-2475	Multitone Strobe - weatherproof	MTWP-2475	Multitone Strobe - weatherproof	MTWP-2475
MTWP B or A	Multitone Strobe - weatherproof-Blue or Amber lens	MTWP B or A	Multitone Strobe - weatherproof-Blue or Amber lens	MTWP B or A
NH	Audible	NH	Audible	NH
NS-24MCC	Audible Strobe - 15,30,75,95 cd, ceiling	NS-24MCC	Audible Strobe - 15,30,75,95 cd, ceiling	NS-24MCC
NS-24MCCH	Audible Strobe - 115, 177 cd, ceiling	NS-24MCCH	Audible Strobe - 115, 177 cd, ceiling	NS-24MCCH

Name of Series	Environment	Model Series	Description	Mounting Type
NS-24MCW	Audible Strobe - 15,30,75,110 cd, wall	NS-24MCW	Audible Strobe - 15,30,75,110 cd, wall	NS-24MCW
NS-121575, NS-241575	Audible Strobe - 1575 cd, wall	NS-121575, NS-241575	Audible Strobe - 1575 cd, wall	NS-121575, NS-241575
RSS-121575	Strobe-15,75 cd, wall	RSS-121575	Strobe-15,75 cd, wall	RSS-121575
RSS-241575, RSSP-241575	Strobe - 15,75 cd, wall	RSS-241575, RSSP-241575	Strobe - 15,75 cd, wall	RSS-241575, RSSP-241575
RSS-24MCW, RSSP-24MCW	Strobe - 15,30,75,110 cd, wall	RSS-24MCW, RSSP-24MCW	Strobe - 15,30,75,110 cd, wall	RSS-24MCW, RSSP-24MCW
RSS-24MCC, RSS-24MCCR	Strobe - 15,30,75,95 cd, ceiling, round or square	RSS-24MCC, RSS-24MCCR	Strobe - 15,30,75,95 cd, ceiling, round or square	RSS-24MCC, RSS-24MCCR
RSS-24MCWH, RSSP-24MCWH	Strobe - 135,185 cd, wall	RSS-24MCWH, RSSP-24MCWH	Strobe - 135,185 cd, wall	RSS-24MCWH, RSSP-24MCWH
RSS-24MCCH, RSS-24MCCHR	Strobe - 115,177 cd, ceiling, round or square	RSS-24MCCH, RSS-24MCCHR	Strobe - 115,177 cd, ceiling, round or square	RSS-24MCCH, RSS-24MCCHR
S8, S8-24MCC, S8-24MCCH	Speaker or Speaker Strobe - 8-inch, ceiling	S8, S8-24MCC, S8-24MCCH	Speaker or Speaker Strobe - 8-inch, ceiling	S8, S8-24MCC, S8-24MCCH
SA-S90-24MCC	Speaker Strobe - amplified, 15,30,75,95 cd, ceiling	SA-S90-24MCC	Speaker Strobe - amplified, 15,30,75,95 cd, ceiling	SA-S90-24MCC
SA-S70-24MCW	Speaker Strobe - amplified, 15,30,75,115 cd, wall	SA-S70-24MCW	Speaker Strobe - amplified, 15,30,75,115 cd, wall	SA-S70-24MCW

Name of Series	Environment	Model Series	Description	Mounting Type
STH with opt strobe	Cluster Speakers - with optional DC-MAX strobe	STH with opt strobe	Cluster Speakers - with optional DC-MAX strobe	STH with opt strobe
STH MCCH	Cluster Speakers - with 115/177 cd strobe	STH MCCH	Cluster Speakers - with 115/177 cd strobe	STH MCCH
STH-4R24MCCH110	Cluster Speaker with three strobes	STH-4R24MCCH110	Cluster Speaker with three strobes	STH-4R24MCCH110
STx	Strobe - 15,15/75,30,75,95,110,135,185 cd, wall	STx	Strobe - 15,15/75,30,75,95,110,135,185 cd, wall	STx
STxC	Strobe - 15,30,60,75,95,115,150,177 cd, ceiling	STxC	Strobe - 15,30,60,75,95,115,150,177 cd, ceiling	STxC
HSx	Audible Strobe - 15,15/75,30,75,95,110,135,185 cd, wall	HSx	Audible Strobe - 15,15/75,30,75,95,110,135,185 cd, wall	HSx
HSxC	Audible Strobe - 15,30,60,75,95,115,150,177 cd, ceiling	HSxC	Audible Strobe - 15,30,60,75,95,115,150,177 cd, ceiling	HSxC
HNx	Audible, wall	HNx	Audible, wall	HNx
HNxC	Audible, ceiling	HNxC	Audible	HNxC

Appendix C

Calculations

This section describes current-loading and the process for determining the standby-battery rating and the NAC wiring length.

Current loading calculations do not include the combined detector currents of the Sigma A-CP Fire Control Panel. These combined currents are negligible in comparison to currents of the fire control panel, ancillary devices and NACs and are therefore excluded from the current loading calculation.

Determining the Amp-Hour Rating

Installers must identify the load current for each device connected to the fire control panel. The sum of this current must be below the operating limits of the fire control panel and within the load capacity of the standby-batteries.

To determine the load rating of the fire control circuit:

1. Record the standby and alarm currents of the Sigma A-CP Fire Control Panel.
2. Record the standby and alarm currents of Ancillary Devices.
3. Record the alarm currents of NAC Devices.
4. Total the standby and alarm currents of the Sigma A-CP Fire Control Panel, Ancillary Devices and NAC devices.
5. Calculate the Total Standby Amp Hours.
6. Calculate the Total Alarm Amp Hours.
7. Determine Total Amp-Hours by adding the Total Standby Amp Hours to the Total Alarm Amp Hours.
8. Determine the minimum Amp Hour rating for the battery by multiplying the Total Amp-Hours to the Derating Factor (1.20).
9. Verify that the rating determined from the Load Capacity Worksheet does not exceed the 7 AH or 12 AH capacity of the Standby-Batteries specified for operating the Sigma A-CP Fire Control Panel.

Current-Load

The current-load of the Sigma A-CP Fire Control Panel is limited to 4.5 Amps of the power supply and 7 AH or 12 AH of the standby-batteries. Each NAC output of the Sigma A-CP Fire Control Panel is load dependent and limited to a maximum load-current of 2.5A.

Standby-batteries of 7 AH can provide an operating duration of twenty-four hours followed by five minutes of alarm when the standby current does not exceed 225 mA.

Standby-batteries of 12 AH can provide an operating duration of twenty-four hours followed by five minutes of alarm when the standby current does not exceed 400 mA.

Standby and alarm current can include all or part of the following loads but cannot exceed the total maximum
currents specified:

Loads	Standby Current	Alarm Current
FACP	100 mA 120 mA with Dialer	680 mA (Current does not include loads from NACs and Aux 24 V) Value represents load with Dialer and is obtained from shorting two zone outputs together. A higher current level occurs by shorting eight zone outputs.
NAC Outputs	0 mA (per NAC output)	2.5 A, per NAC output with 4 A of NAC 1 and NAC 2 combined
AUX 24 V	105 mA (7 AH batteries with Dialer) 125 mA (7 AH batteries without Dialer) 280 mA (12 AH batteries with Dialer) 300 mA (12 AH batteries without Dialer)	500 mA
Total Maximum Current	225 mA (7 AH batteries) 400 mA (12 AH batteries	5.18 A

Current limits are provided in Appendix A, “Specifications” for each circuit of the Sigma A-CP Fire Control Panel. Installers must identify the current-draw of each device and then compare the sum of these device currents to the current limit provided for each circuit-output. The total device-current must be below the limits provided for each circuit output specified in Appendix A, “Specifications”.

The calculation of total-current-loading during an alarm condition includes the sum of device-loads on each power output circuit of the Sigma A-CP Fire Control Panel. Power circuits of the fire control panel are provided on the terminals of NAC 1, NAC 2 and AUX 24V.

CAUTION!



Do not operate in standby while maintaining a 500 mA load on the AUX 24 V output of this fire control panel. The fire control panel cannot provide 500 mA of current to the load of the AUX 24 V output during an AC failure condition and maintain continuous standby operation for twenty-four hours followed by five minutes of alarm. Total standby-current of the 7 AH batteries must draw less than 225 mA to maintain continuous standby operation for twenty-four hours followed by five minutes of alarm. Total standby-current of the 12 AH batteries must draw less than 400 mA to maintain continuous standby operation for twenty-four hours followed by five minutes of alarm.

NAC Wiring Length

Determine the maximum wire length that can safely operate Notification Appliances under worst case conditions.

To determine the maximum wire length under worst case conditions:

1 Identify the minimum operating-voltage (V_{Opmin}) of Notification Appliances on the NAC channel.

2 Calculate the maximum current of the circuit (I_{max}).

3 Identify the wire-resistance-per-foot of the circuit (R_{wire}).

4 Calculate the maximum wire length (L_{max}) of the circuit.

Sample L_{max} Calculation

The example calculation below illustrates the method for determining the maximum allowable wire length from the NAC1 output to the EOL resistor.

Determine the maximum wire length (L_{max}) for three Notification Appliances on NAC channel 1 where,

- The manufacturer data sheet for the strobe indicates that the minimum operating-voltage (V_{Opmin}) is 16 VDC.
- The manufacturer data sheet for the strobe indicates that the maximum current-draw (I_{strobe}) is 209mA DC.
- The circuit connection is provided with 18 AWG solid-copper-wire.
- The EOL resistor in the circuit is 10K Ohms.

To determine the maximum safe-wire-length (L_{max}) of this circuit:

1 Identify the minimum operating-voltage ($V_{STB\text{-}min}$) of the strobe from the manufacturer data sheet. From the manufacturer data sheet:

$V_{STB\text{-}min} = 16$ VDC

2 Calculate the total current of the parallel devices in the circuit (I_{total}) where,

$$[\, I_{total} = I_{strobe_1} + I_{strobe_2} + I_{strobe_3} + (V_{Opmin} / EOLD)\,]$$

$$= [\,(0.209 + 0.209 + 0.209 + 16 / 10K)\,]\ A$$

$$= (0.627 + 0.0016)\ A$$

$I_{total} = 0.6286$ A

3 Identify the maximum resistance of the wire gage used in the circuit ($R_{wiremax}$) when using 18 AWG copper.

An 18 AWG solid copper wire is 6.385 Ohms at 1000 FT using the Resistance Table below:

Gage	Resistance / 1000 FT @ 68° F	R_{wire}
18 AWG	6.385 Ω (Ohms)	0.006385 Ω / FT
16 AWG	4.016 Ω	0.004016 Ω / FT
14 AWG	2.525 Ω	0.002525 Ω / FT

4 The minimum NAC output voltage:

$V_{NAC-min} = 20.4$ VDC

5 Identify the voltage-drop (V_{drop}) across the length of the wire:

$V_{drop} = V_{outmin} - V_{opmin}$

$= 18$ VDC - 16 VDC

$V_{drop} = 2$ VDC

6 Identify the maximum wire length (L_{max}) of this circuit:

$L_{max} = 1/2 (V_{drop} / I_{max}) / R_{wire}$

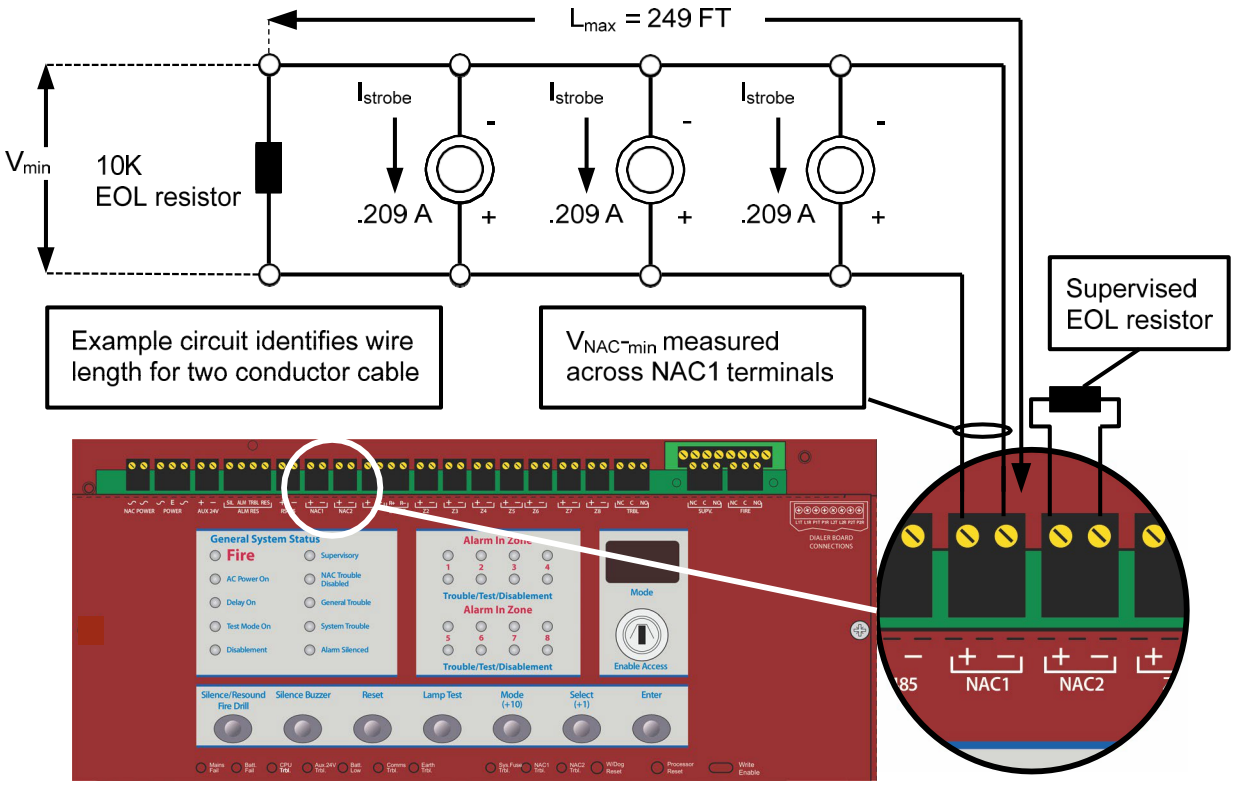
where,

$= 1/2 [(2 / 0.6286) / (0.006385$ Ohms / FT $)]$

$L_{max} = 249$ FT

The figure below illustrates an example circuit for determining maximum wire length where values are provided for minimum operating-voltage of the NAC channel output ($V_{NAC\text{-}min}$), maximum current of the circuit (I_{max}), wire-resistance-per-foot of the circuit (R_{wire}) and maximum current-draw of the strobe (I_{strobe}):

Figure C- 1
Example Circuit for Determining Maximum Wire Length

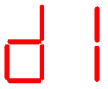
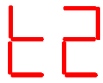


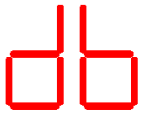
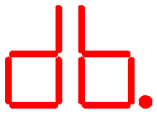
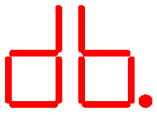
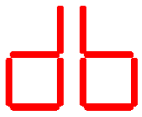
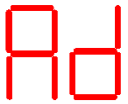
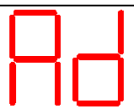
Appendix D

Operating Instructions

This section provides operating instructions, Man-1195 (K/VF1863-00) for the Sigma A-CP Fire Control Panel. These operating instructions must be placed on the cabinet or on a separate sheet for framing adjacent to the fire control panel:

How To	Do This	Display	Comments
Test Lamps	Lamp Test  Press button	 All lamps on	The internal buzzer of the fire control panel sounds while button is pressed.
Enable Buttons	Enable Access  Insert key and turn		The internal buzzer of the fire control panel beeps twice every few seconds The Lamp Test is the only function accessible without turning Enable Access key.
Silence Buzzer	Panel Sounder Silence  Press button		The internal buzzer is silenced.
Silence Alarms	Silence/Resound Fire Drill  Press Button	 Alarm Silenced	The Alarm Silenced NACs de-activate and the Alarm Silenced LED is illuminated.
Re-sound Alarms	Re-Sound Alarm  Press button	 Fire	The Alarm Silenced LED turns off and NACs activate.
Reset	Reset  Press button		Confirm that the source of the fire condition is cleared before re-setting the fire control panel.
Disabling A Zone Step 1	Mode  Press button	 First display	Press the Mode button repeatedly until d1 is displayed on the Mode LED.
Disabling A Zone Step 2	Select  Press button	 Zone 2	Press the Select button to scroll through the list of zones. Zone 2 is shown as an example.
Disabling A Zone Step 3	Enter  Press button		 Disablement The disablement LED is illuminated and the Mode LED Dot is flashing when Zone 2 is disabled, the Trouble/Test Disablement LED of the Zone is illuminated.

How To	Do This	Display	Comments
Put A Zone Into Test Mode **Step 1**	Mode  Press button	 First display	Press the Mode button repeatedly until t1 is displayed on the Mode LED.
Put A Zone Into Test Mode **Step 2**	Select  Press button	 Zone 2	Press the Select button to scroll through the list of zones. Zone 2 is shown as an example.
Put A Zone Into Test Mode **Step 3**	Enter  Press button		The dot in the Mode LED is flashing, the Test Mode On, the Trouble/Test/Disablement LED of the Zone is illuminated. The LED is illuminated continuously to indicate Test Mode.
Enable A Zone **Step 1**	Mode  Press button	 First display	Press Mode button until d1 is displayed.
Enable A Zone **Step 2**	Select  Press button	 Zone 2	Press the Select button to scroll through the list of zones.The dot in the Mode LED is flashing to indicate that Zone 2 is disabled.
Enable A Zone **Step 3**	Enter  Press button		The Dot in the Mode Display is not illuminated. The LED of Zone 2 for Trouble/Test/Disablement is not illuminated to indicate that the zone has been enabled. The Disablement LED stops illuminating when zones are no longer disabled.
Exit Test Mode **Step 1**	Mode  Press button	 First display	
Exit Test Mode **Step 2**	Select  Press to scroll zones	 Zone 2	The dot in the Mode LED is flashing to indicate that Zone 2 is in Test Mode.
Exit Test Mode **Step 3**	Enter  Press button	 Zone 2 LED off	The dot in the Mode LED is not flashing and is no longer illuminated to indicate that Test Mode has been exited. The LED of Zone 2 for Trouble/Test/Disablement is no longer illuminated. The Test Mode LED stops illuminating when no more zones are put in test.

How To	Do This	Display	Comments
Disable Sounders **Step 1**	Mode  Press button		Press the Mode button until db is displayed in the Mode LED.
Disable Sounders **Step 2**	Enter  Press button		The dot is flashing in the Mode LED and the NAC Trouble Disabled LED is illuminated to indicate that sounders are disabled.
Enable Sounders **Step 1**	Mode  Press button until db is displayed		The dot in the Mode LED is flashing to indicate that sounders are disabled.
Enable Sounders **Step 2**	Enter  Press button		The dot in the Mode LED is not flashing and no longer illuminated to indicate that sounders are enabled. The NAC Trouble Disabled LED is no longer illuminated.
Activate Zone Input Delays **Step 1**	Mode  Press button until Ad is displayed		
Activate Zone Input Delays **Step 2**	Enter  Press button		The dot in the Mode LED is flashing to indicate that delays are active. The Delay On LED is illuminated.
De-activate zone input delays	Mode  Press button until Ad is displayed		The dot in the Mode LED is not flashing and no longer illuminated to indicate that delays have been de-activated.
Return System To Normal Standby Condition	Enable Access  Insert key and turn		The Lamp Test is the only function accessible in this condition.

Inspecting Batteries

Inspect the standby-batteries annually to determine the connection integrity to The Sigma A-CP Fire Control Panel. The fire control panel contains sealed lead acid batteries to provide standby power in the event of mains failure. The standby-batteries have a life expectancy of 3 to 5 years. Test the standby-batteries annually in accordance with the battery manufacturer's recommendations to determine their suitability for continued standby operation.

Replacing Standby-Batteries

Replace standby-batteries when the service period reaches 3 to 5 years or when the low-battery indicator illuminates on the power supply. Specify replacement batteries that are Power Sonic model PS-1270 F2, sealed-lead-acid, 12 VDC and 7 AH or 12 AH.

Related Documentation

The following documents shall be used to provide additional information for installing and operating the K1840 and K1850 series Sigma A-CP Fire Control Panel:

- Installation and Operation Manual, K1861-00, Revision E01.XX
- Operating Instructions, K1863-00, Revision E01.XX
- Wiring Diagram, K1862-00, Revision E01.XX
- UL Compliance Label, K1864-00, Revision E01.XX

Emergency Contact

In The Event Of Trouble
Contact
Name
Street
City
Telephone

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