FIREGUARD

IQ805
EXTINGUISHING PANEL

Description

The IQ805 is an intelligent Fire Alarm Control Panel (FACP) designed for small and medium-scale facilities. The FACP is ideally suited for both new and retrofit commercial, institutional, and industrial fire detection and notification applications.

The FACP support up to 252 devices, 2 NACs and three Form-C relays (pre-programmed for Alarm, Trouble and Supervisory). In addition, the control panel can be used for hazard agent releasing application via the SLC loop.

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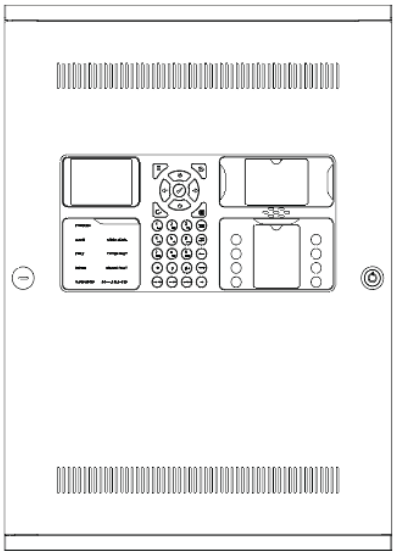
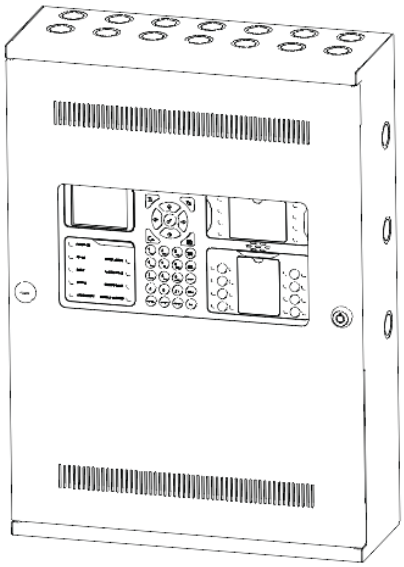




1.2 Product Features

The IQ805 is an addressable fire control system with dual hazard agent releasing that meets the requirements of UL 864, and CAN/ULC-S527.

It can support:

- 1 Signaling Line Circuits and 252 addressable devices/points
- Up to 2 Notification Appliance Circuits
- 3 form C dry relay contacts
- 16 built in annunciator zone
- Up to 2 releasing zone

The IQ805 has

- A 2.8" true color LCD
- Meta black enclosure

- 29 input keys
- 9 general LED indicators
- Up to 16 zone LED annunciator
- Ethernet and USB port for programming

1.3 Specifications

The specifications of the FW2107 Control Panel are described in Table 1.

Table 1 IQ805 Control Panel Specifications

General	Digital signal processor-based design, fully configurable from front panel with password protection
Environmental	• Operating temperature: 32 - 120°F (0 - 49°C) • Relative humidity: Up to 93% @ 90°F (32°C) • To be installed in normal dry indoor environment only
Primary Supply	• 110 - 120 VAC 60Hz (5.3A), or • 220 - 240 VAC 50Hz (2.6A)
Secondary Power Supply	• Two 12V in series lead-acid batteries set • Charging capacity: 40AH
Power Outputs	Internal power supply for • MBU(Main Board Unit)
	Two auxiliary power supplies • Non-Resettable/Resettable Power Output (configurable) • Power limited output current combined for both aux outputs: 100mA in total (normal standby), 3.0A in total (alarm) • Power Factor Rating: 0.35 • Special application: Compatible devices are Supervised Output Module Model FW2821 / FW2821H and Releasing Module FW2822. • Class E or CLASS B when powering models / FW2821 / FW2821H / FW2822.
SLC (Signaling Line Circuit)	• Class A/DCLA or Class B/DCLB circuit • 252 addresses: detectors, manual releasing stations, abort switches and modules max • Output voltage range: 19.4V ~ 27.5V • Maximum normal standby current: 100mA • Maximum alarm current: 220mA • Max. line capacitance = 0.1 μF • Max. line resistance = 10 Ω per line
NAC	• 24 VDC

Notification Appliance Circuits)	• Class A / Class B circuits • Maximum Current: 2A per NAC circuit, total power available 2A. • Bell code: Steady, Temporal 3, March Time 20/60/120 pulses per minute • Panel supports one of the following: One regulated circuit only or two special application circuits. • Max line loss: 1.8 V
Relays Output	• 3 pre-programmable relays for Alarm, Supervisory and Trouble • Form C Contact • Contact Rating: 5A 30VDC; 5A 120VAC • Power Factor Ration:0.35
Network Circuit	• Class B/DCLB circuit • For up to 99 panels • Communications protocol: CAN • Max. line capacitance = 0.05 μF • Max. line resistance = 25 Ω
Recommended Testing impendence	• 6.6 k Ω for ground fault • 10M Ω for open • 0.1 Ω for short

The main board unit contains the system's CPU and other primary components and wiring interface connectors. As show in Figure 2, the MBU front panel has:

- 2.8" true color LCD
- 9 general LED indicators including signal and system status

- Keypad with navigation buttons, alpha-numeric buttons and Function buttons
- 8 annunciator LEDs without button, 1 LED per zone, sharing with releasing zone
- 8 annunciator LEDs with button, 2 LED per zone

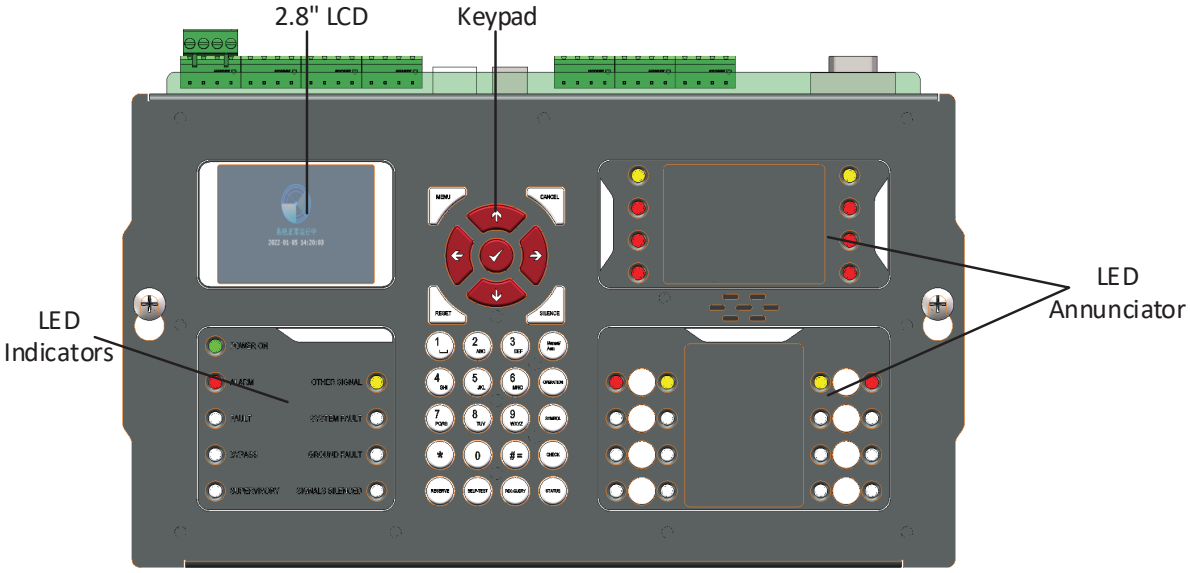


Figure 2 Main Board Unit (Front)

The wire terminal are all located on top of the MBU illustrated in Figure 3, which contains:

- 1 SLC (Signaling Line Circuit), Class A/DCLA or Class B/DCLB
- 2 NACs, Class A or Class B
- 3 Form-C Relay Outputs
  - Relay1 – Alarm Relay
  - Relay2 – Supervisory Relay
  - Relay3 – Trouble Relay
- 1 Network Circuit, Class B/DCLB
- 1 RS485
- 1 RS232
- 1 USB
- 1 Ethernet

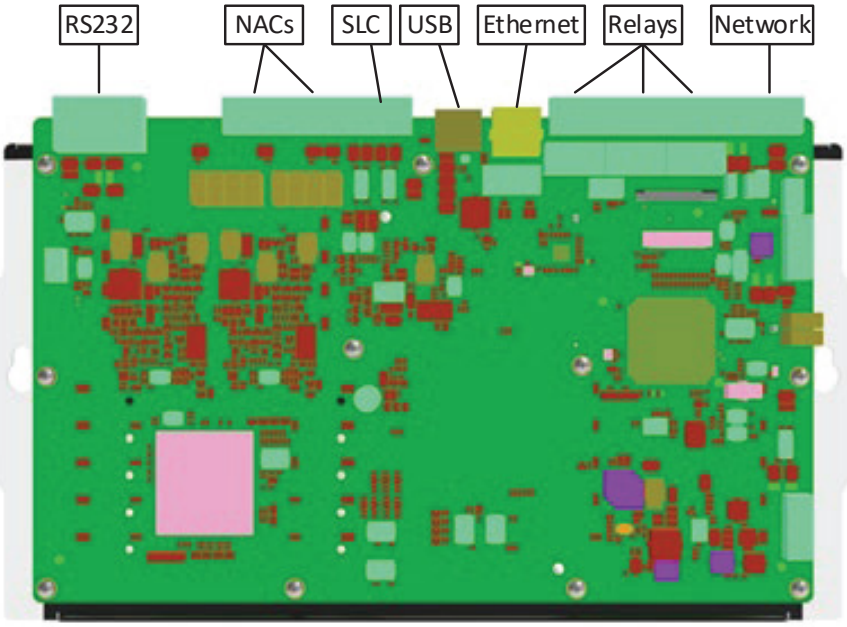


Figure 3 Main Board Unit (Back)

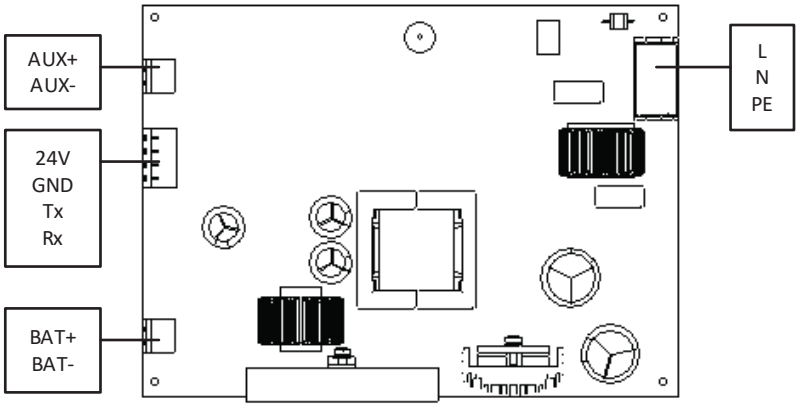


Figure 4 PSU (Power Supply Unit)

- 112-120VAC, or 220-240VAC input selectable
- Provide power supply output to the system
- Terminals BAT+ and BAT- connect two lead-acid batteries (12VDC) in series
- Maximum Charge Voltage: 27.8 VDC
- Maximum Charge Current: 2.5A. Sufficient battery charging capability is available to charge 40AH sealed lead-acid batteries within code requirements for up to 24 hours standby plus 30 minutes alarm plus 5 minutes alert.
- Use a microprocessor-controlled transfer circuit to switch power supply for the system to standby batteries when AC power is off or low

- Communicate to the AMI to report fault conditions

110-120VAC or 220-240VAC input is optional. A slide switch is used to fulfill this function. Please refer to Power Supply Wiring section for switch usage information.

Cabinets

The cabinets consists of three parts: the outer door, the inner front panel and the backbox, show as Figure 5 and Figure 6. The back box measures 14.5" (42.29 cm) x 20.4" (48.26 cm) x 5.3" (13.23 cm) and provides space for two batteries (up to 18 Amp Hours). The color of enclosure is matte black.

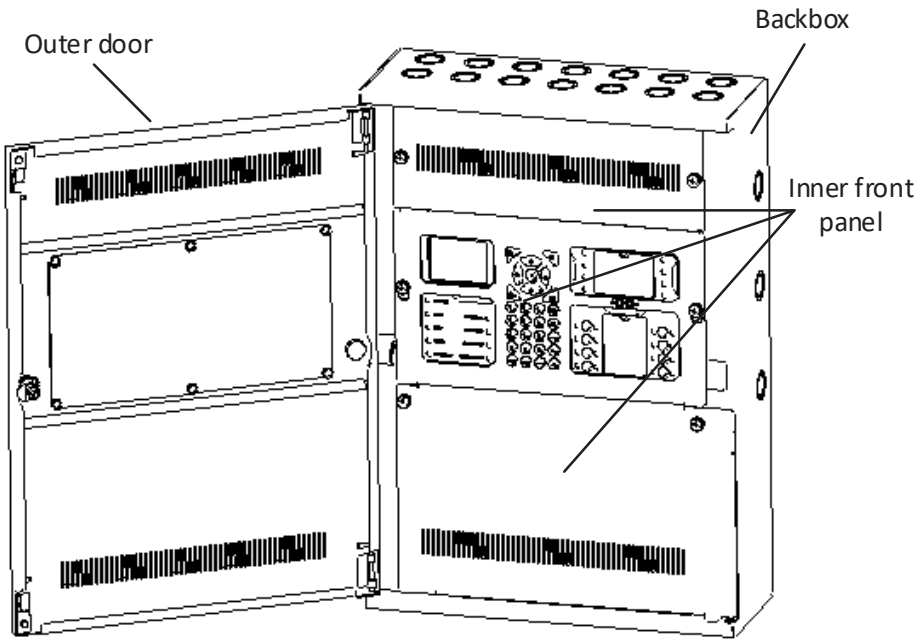


Figure 5 Control Panel Enclose – Outer door and inner front panel

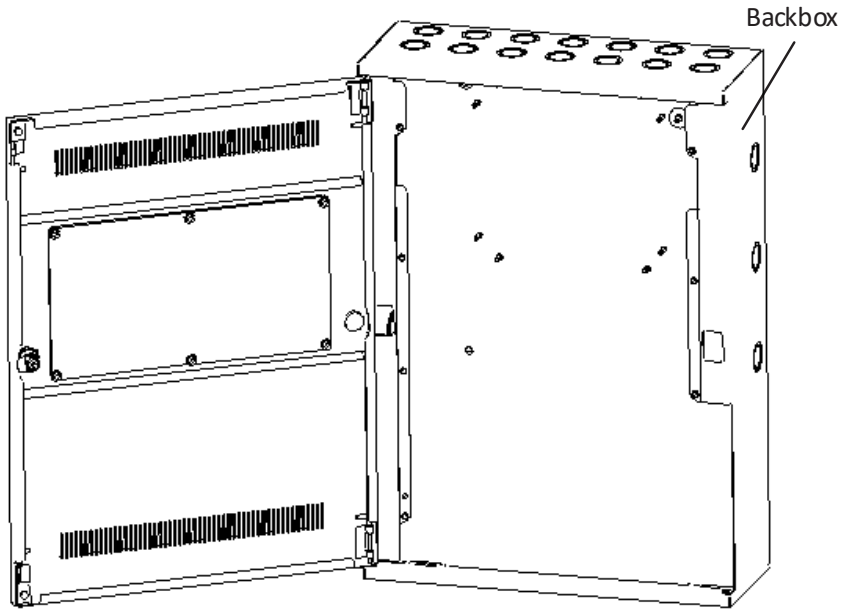


Figure 6 Control Panel Enclose - Backbox

Batteries

The cabinet provides space for up to two 18 Amp Hour batteries illustrated in (larger batteries require use of a UL listed battery box). Batteries must be ordered separately.

2 Installation

2.1.1 Cautions

- Remove the PCB for any procedure that may cause dust, metal shavings, grease, or such matter to affect the operation of the boards or get in contact with the units.
- Disconnect all sources of power prior to installing or removing modules, connecting or disconnecting wiring and programming jumpers.
- Group the incoming wires through the top of the enclosure. For easy identification and neatness use a wire tie.
- DO NOT insert cables through bottom of the box. This space is reserved for Batteries.

2.1.2 Control Panel Installation Notice

The cabinet must be fastened securely to a clean, dry, shock-free, and vibration-free surface in a protected environment. Consider the following when mounting the cabinet:

- Mounting height for visual and manual access to the Display Board
- Weight and size of cabinet
- Local mounting codes

When mounting the cabinet, position the cabinet clear of obstructions so that the door can open freely and indicators and controls are easily accessible.

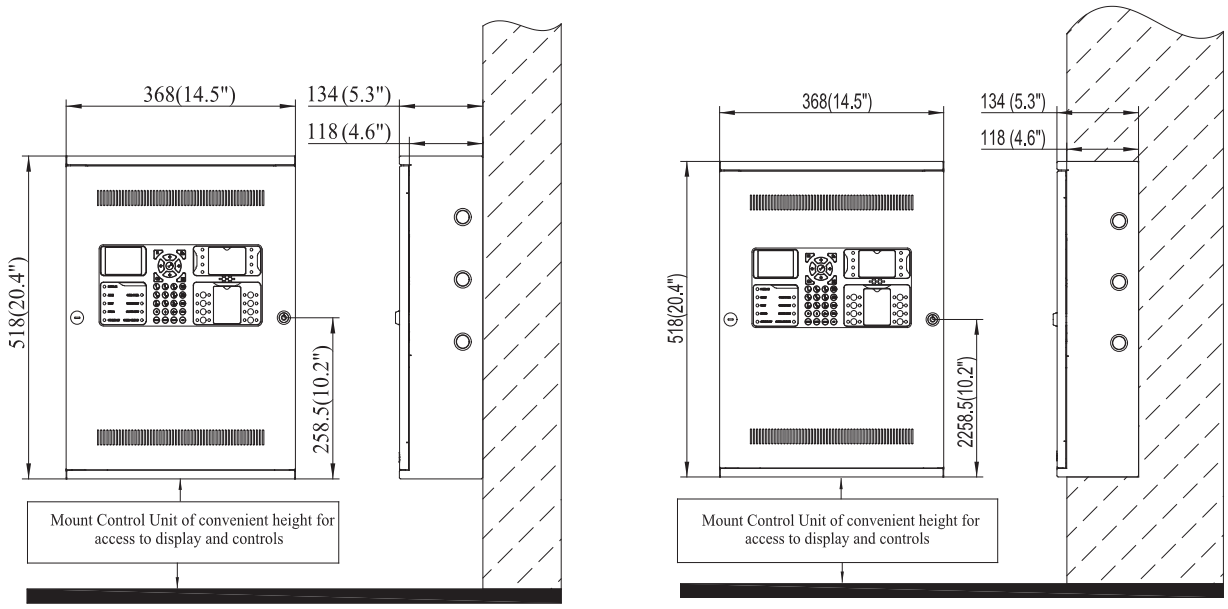
The fire alarm control panel/releasing panel must be mounted in a properly accessible location, as required by the applicable codes and the AHJ.

Installation must be done by qualified personnel who have thoroughly read and who understands these instructions.

2.1.3 Mounting Space

The FW2107 cabinet can be surface-mounted or flush-mounted.

Do NOT flush mount in a wall designated as a fire separation.



(a) Surface-mounted (b) Flush-mounted

Figure 7 FW2107 Enclosure Mounting Size

2.1.4 Drilling Holes

Before installing any electrical components, drill the holes as follows.

- Drill the hole on the position shown in Figure 13. The size of the holes shall be suitable for 1/2' or 3/4' conduit connection.
- Remove shavings and smooth sharp edges. The hole must be round and smooth

Route all high voltage and non-power limited wiring away from power limited wiring. Refer to the Power Limiting section for more details.

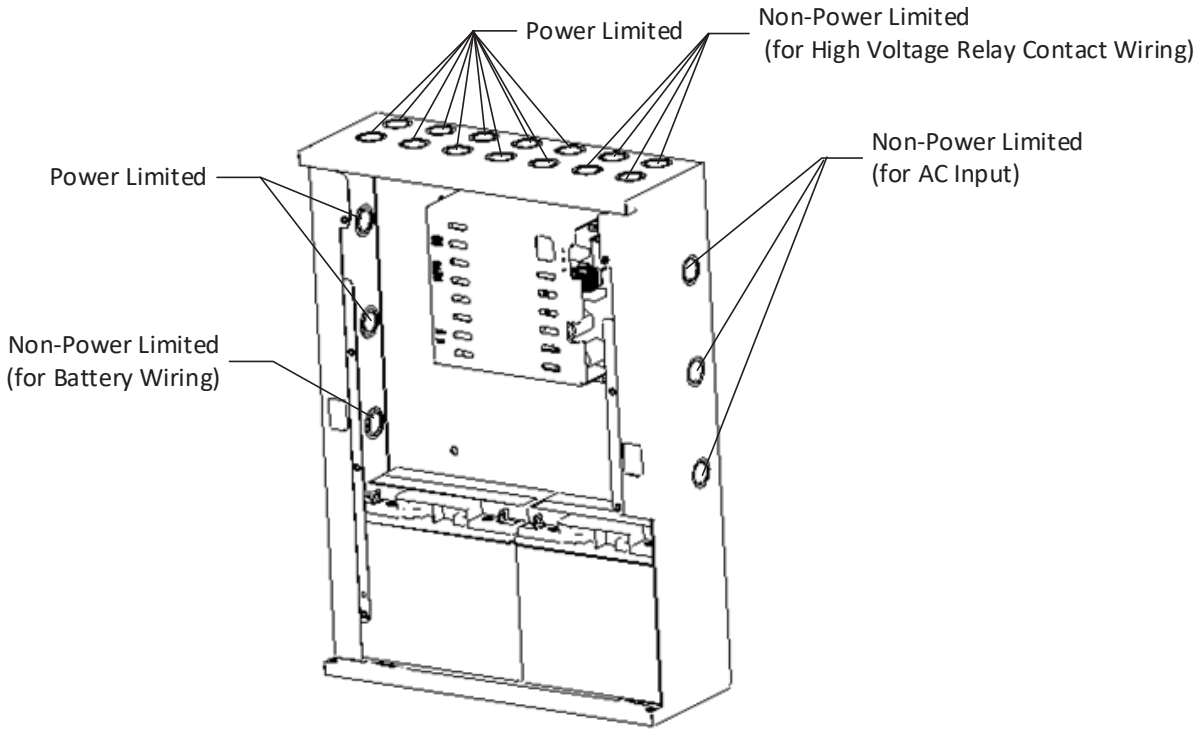


Figure 8 Hole Position

2.2 Mounting Control Panel and Wiring Internally

2.2.1 Step 1: Mounting Backbox

To install the backbox:

- Select a clean, dry, shock, and vibration-free surface in a protected environment.
- Position the cabinet clear of obstructions so that the front door opens freely and the controls and indicators are easily accessible.
- Mark the locations of the two upper mounting bolts of the cabinet on the wall. See Figure 14 for the mounting size.

There are two key-shaped cutouts on the top of the back box. Make sure the end with the two key-shaped cutouts is on top when installing the back box.

- Drill the two holes marked in the previous step and screw in the top bolts, leaving a small gap between the wall and each top bolt.

Choose a screw type and length able to support the control panel, options, and battery set. You may need a different screw type depending on the wall material.

- Place the cabinet over the two top bolts and allow it to slide down over the bolts.
- Mark, drill, and install the two bottom bolts in the cabinet.
- Tighten all four bolts securely against the back wall of the cabinet.

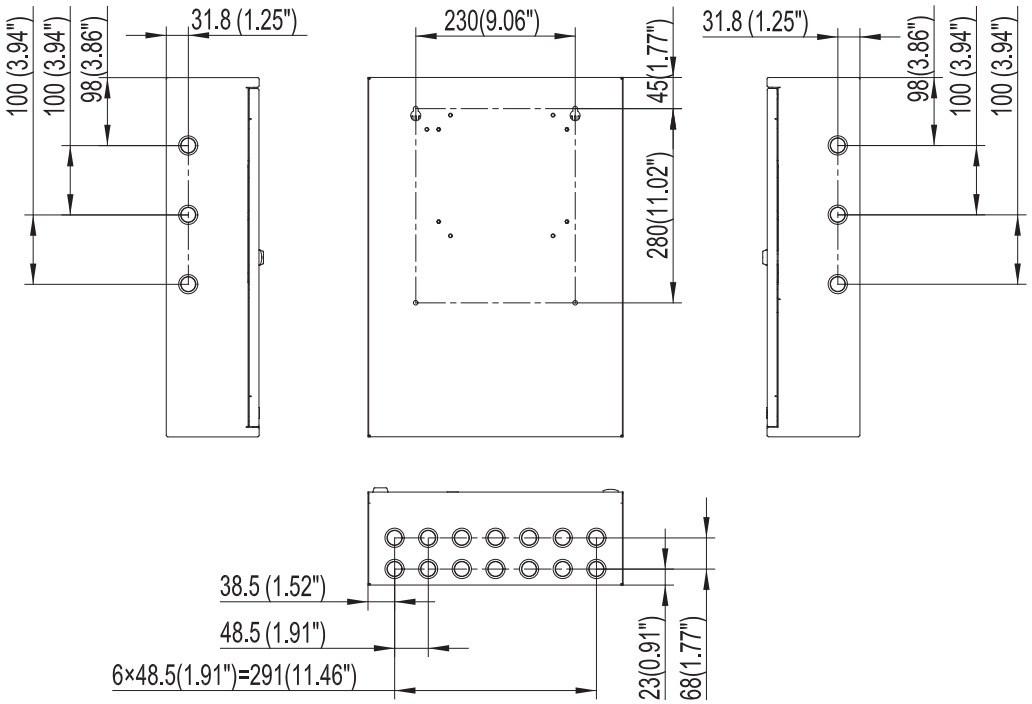


Figure 9 Installation Size

2.2.2 Step 2: Mounting PSU

- Place PSU PCB board by aligning the four screw bases.
- Tight the four fixing screws on four corner positions of PCB board.
- Place PSU cover onto PCB board by aligning the four screw bases.
- Tight the four fixing screws on four corner positions of PSU cover.

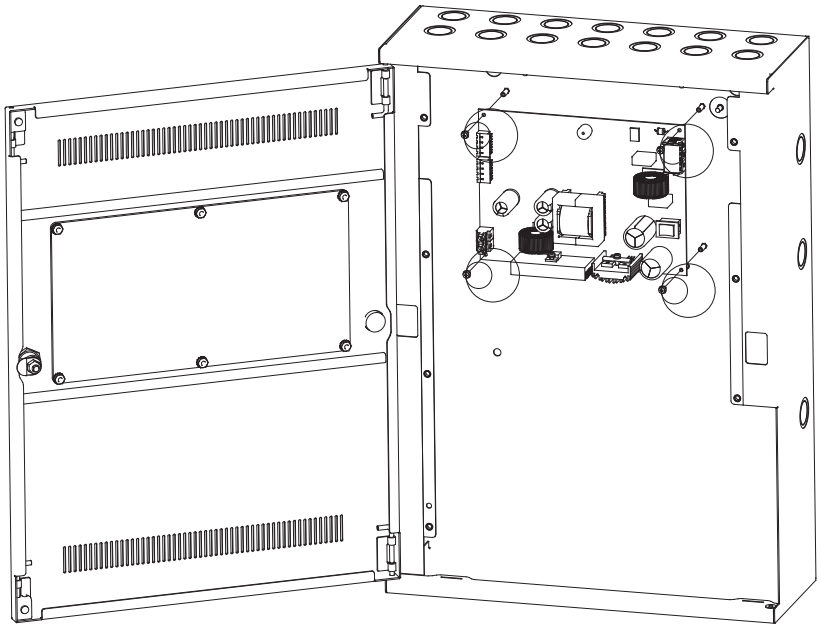


Figure 10 Mounting PSU PCB board

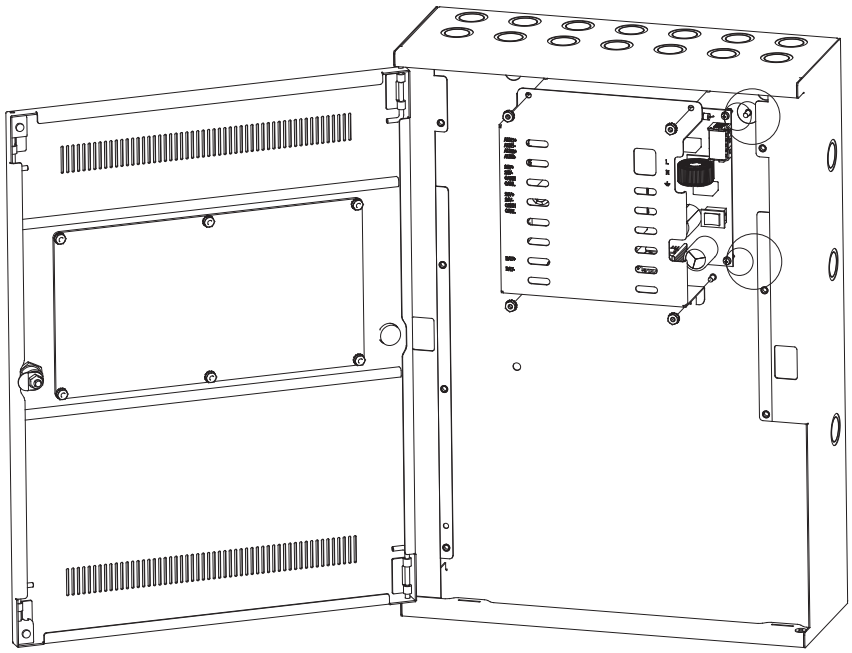


Figure 11 Mounting PSU cover

2.2.3 Step 3: Installing Battery

Use the battery calculation chart to determine the battery capacity and size. Place the batteries in the space provided in the bottom of the enclosure.

FW2190 enclosure can fit up to 17 AH sealed lead-acid batteries. For larger batteries up to 40 AH a separate UL/ULC listed battery enclosure is needed.

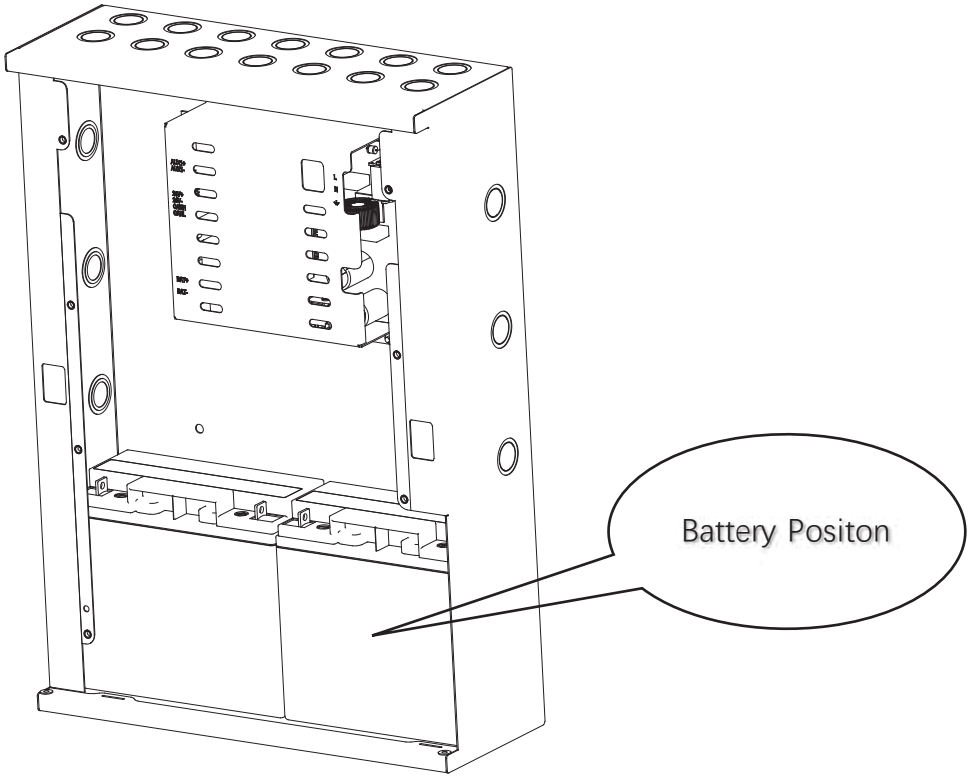


Figure 12 Batter Position

2.2.4 Step 4: Internal Wiring

AC Connection

Prior to installation, make sure the slide switch matches the rated voltage. Otherwise the PTU will be permanently damaged!

Wire the AC supply to the power supply on the back of the enclosure. The supply should originate from a dedicated 15A branch circuit. It should be provided with a breaker or other means of isolation that must be colored red.

Dangerous voltages will be present on the terminal block and on other components surrounding it when the AC supply is turned on. Do not touch.

AC Input terminals must be located on the right side of the enclosure and in the knockouts position shown in Figure 18.

Route all high voltage and non-power limited wiring together and away from power limited wiring. Refer to the **错误!未找到引用源。** section for more details.

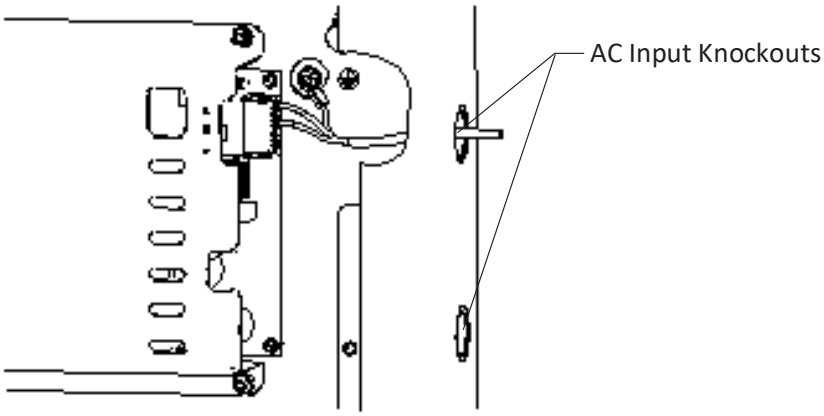


Figure 13 AC Power Supply Wiring

Connect the ground cable to the earth stud on the enclosure back box.

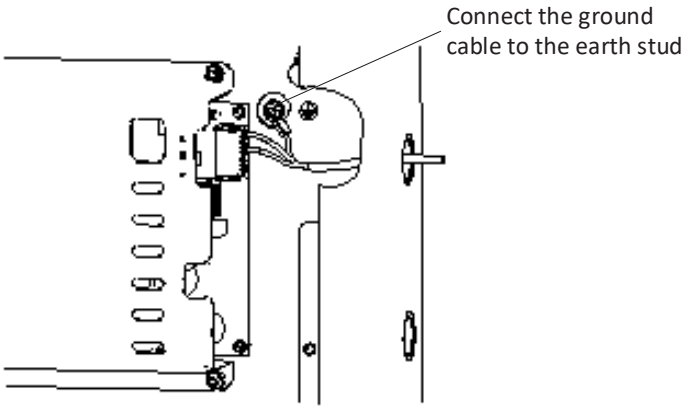


Figure 14 Ground Wiring

Battery Connection

WARNING

Improper battery connections or shorting battery terminals may damage the system and/or the batteries and may cause personal injuries.

The control panel battery charge capacity is up to 40AH. Determine the correct AH rating as per your current load calculation (see Appendix-D: Battery Calculations). Wire batteries in series to produce a 24-volt equivalent. Do not parallel batteries to increase the AH rating.

Note: The maximum battery can be located in the cabinet is 21 AH. Batteries larger than 21 AH shall be installed in an external UL/ULC listed battery box

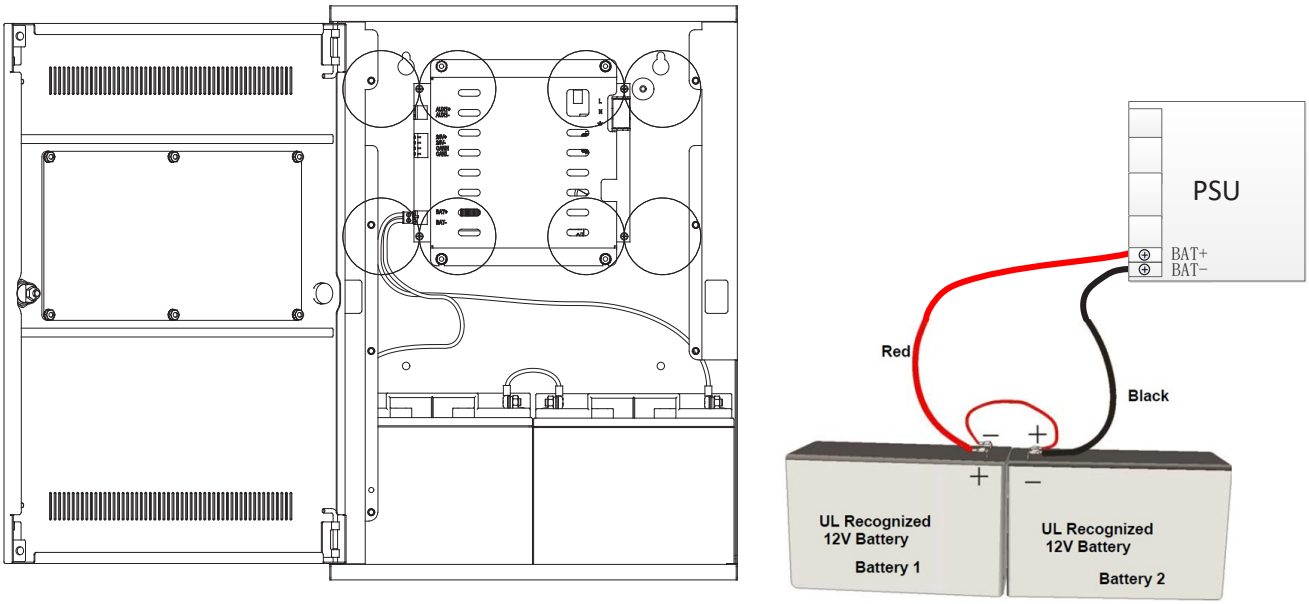
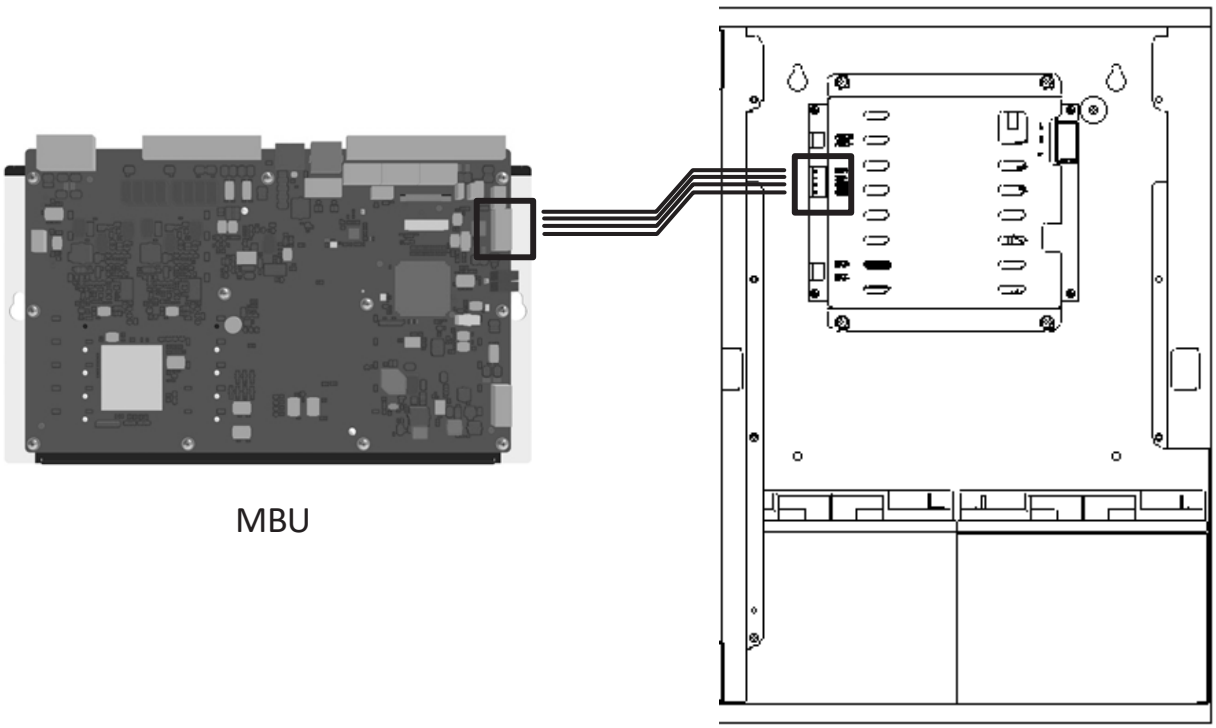


Figure 15 Battery Wiring

MBU Connection

MBU can only be worked after connecting to PSU. Please connect the terminal in the right of MBU to the terminal in the left of PSU as shown in Figure 16.



MBU

Figure 16 MBU internal Wiring

2.2.5 Step 5: Mounting MBU

- Place MBU board on the cabinet by aligning the two screw bases.
- Tight the two fixing screws on each side of MBU board to fix the MBU board.
- Install and tight the upper blank plate and bottom blank plate (**Note: these two plates should be installed after output wiring**).

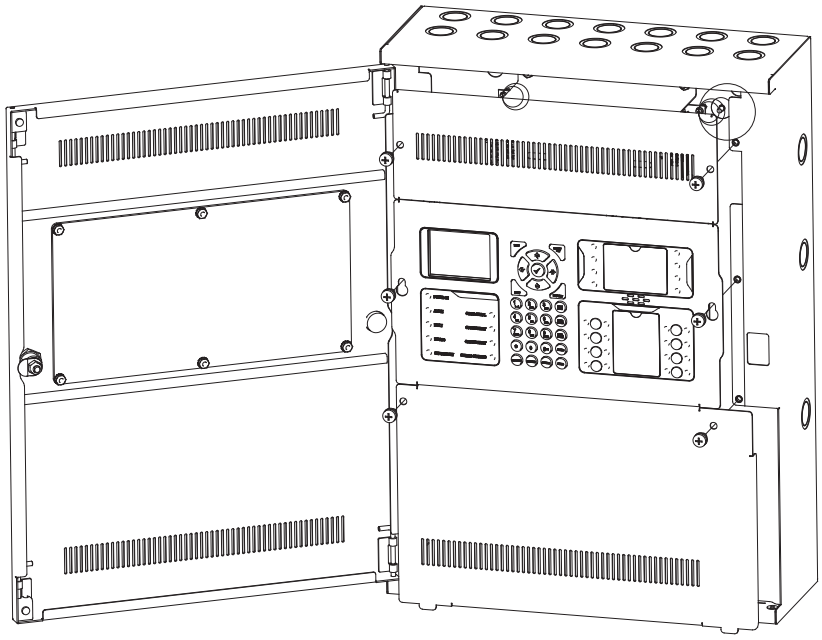


Figure 17 Mounting inner front panels

2.3 Output Wiring

All the field wiring are aggregated into the top of MBU board except the auxiliary power output wiring. The summary of all the connection terminal definition are described in Figure 18.

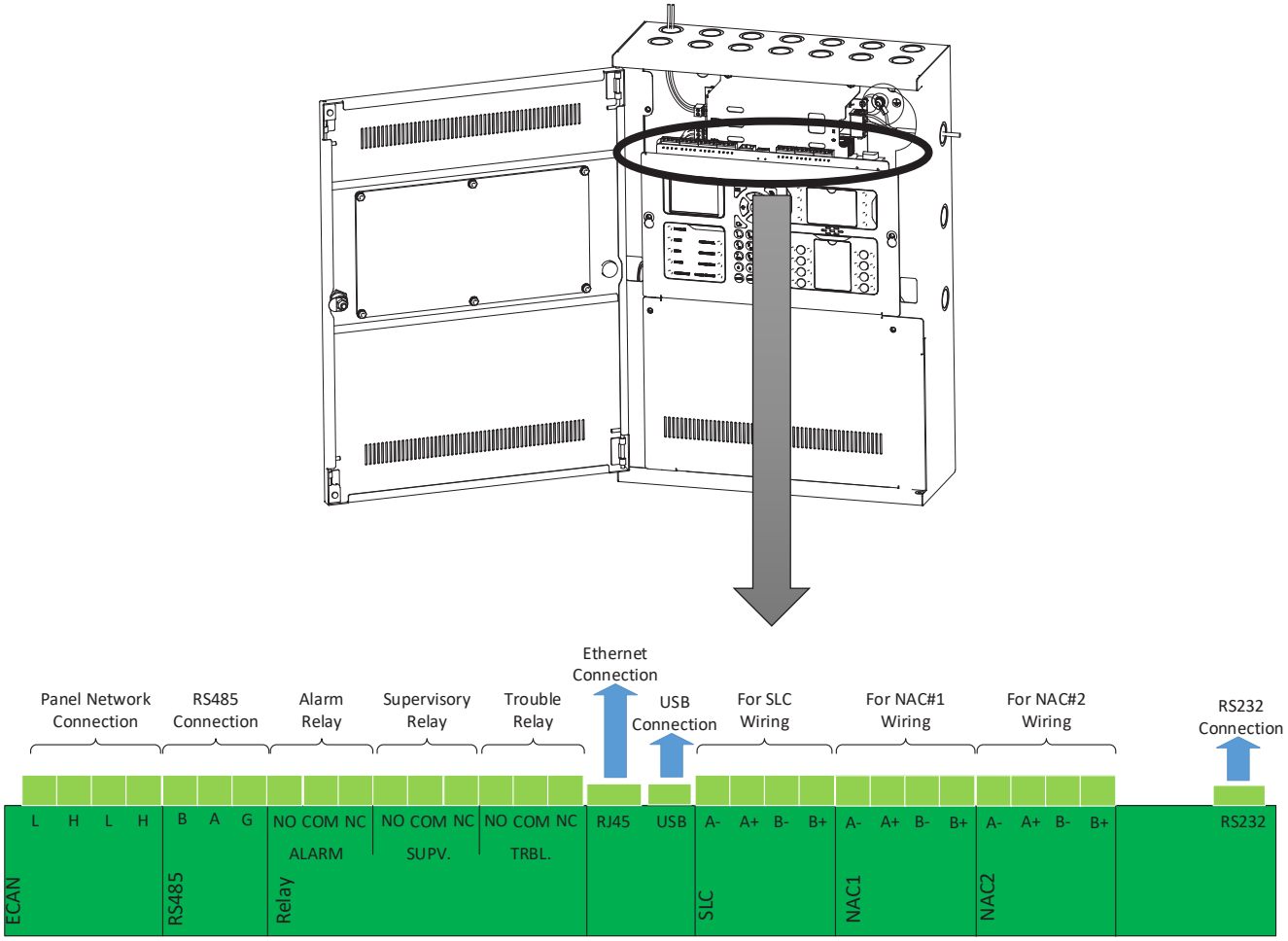


Figure 18 MBU board terminals

2.3.1 Signaling Line Circuit Wiring

Signaling Line Circuit supports Class A/DCLA and Class B/DCLB style. A maximum of 252 devices can be connected to the circuit.

All the compatible detectors and manual stations are polarity insensitive, while the compatible modules are polarity sensitive.

Refer to the instruction sheets packed with each device.

The detectors and modules may be wired together according to several NFPA defined wiring styles. The wiring style that is appropriate for your installation should be determined from the relevant building codes and the local Authority Having Jurisdiction.

Signaling Line Circuit Wiring – Class A/DCLA

Class A provides redundant communication paths.

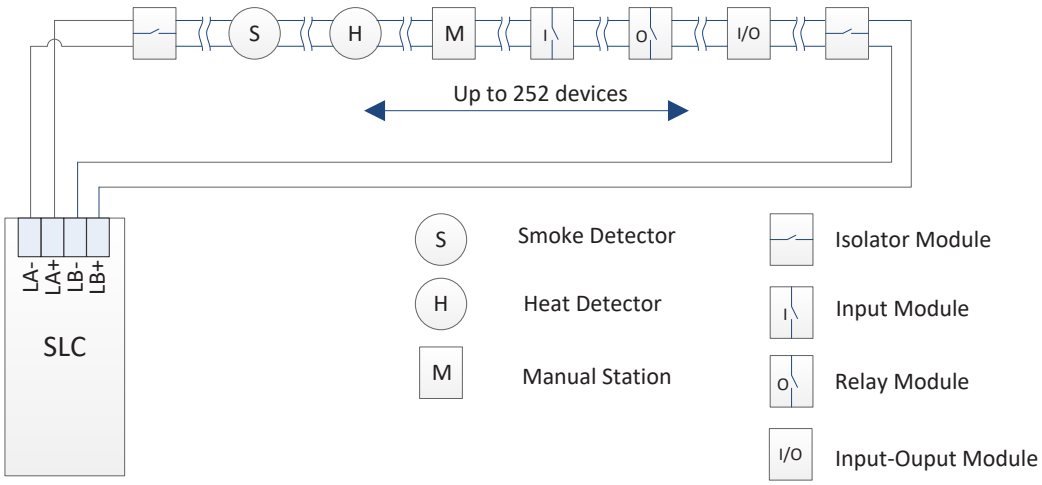


Figure 19 Signaling Line Circuit Wiring – Class A/DCLA

Signaling Line Circuit Wiring – Class B/DCLB

Class B/DCLB wiring allows branching of circuit connections.

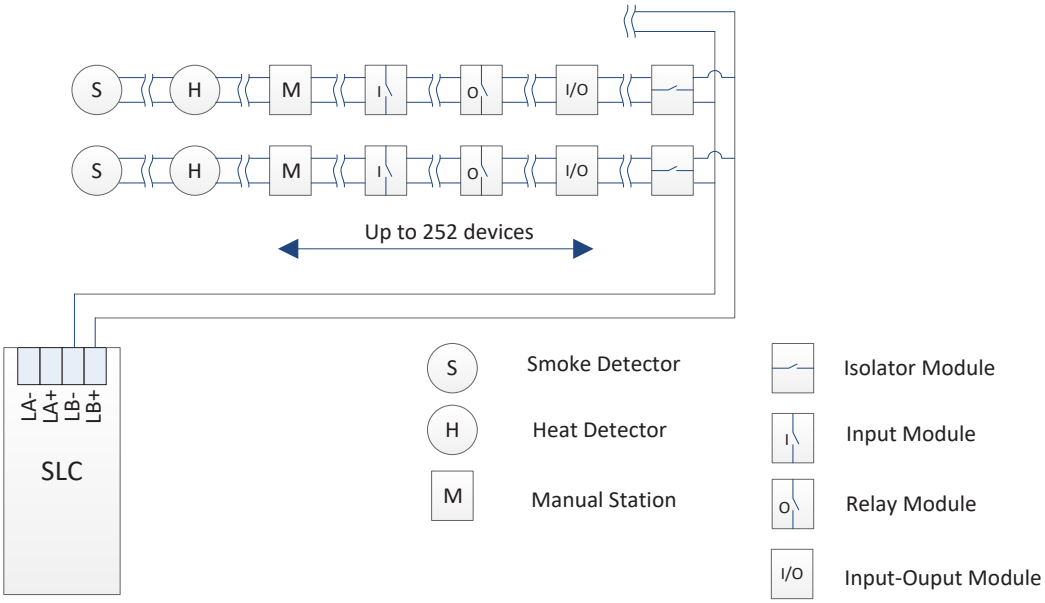


Figure 20 Signaling Line Circuit Wiring – Class B/DCLB

2.3.2 Notification Appliance Circuit Wiring

Refer to the instruction sheets packed with each NAC device.

Notification Conventional Appliance Circuit Wiring – Class A

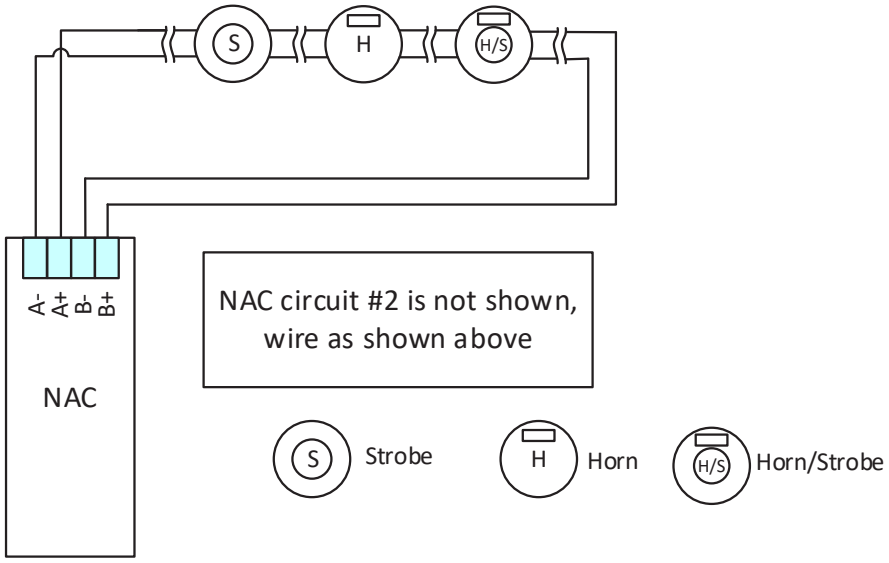


Figure 21 Notification Conventional Appliance Circuit Wiring – Class A

Notification Conventional Appliance Circuit Wiring – Class B

One EOLR (FW421 or FW422) is needed at the end of the line to monitor the circuit integrity.

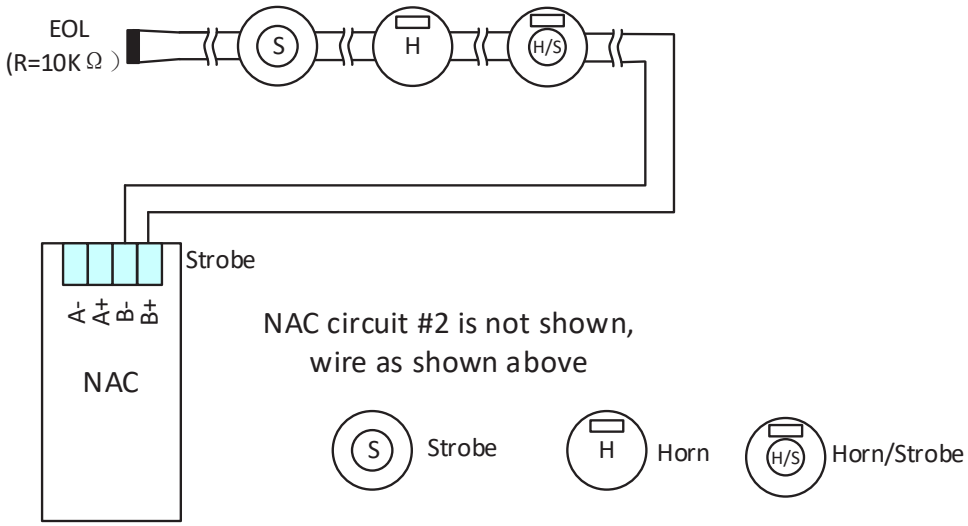
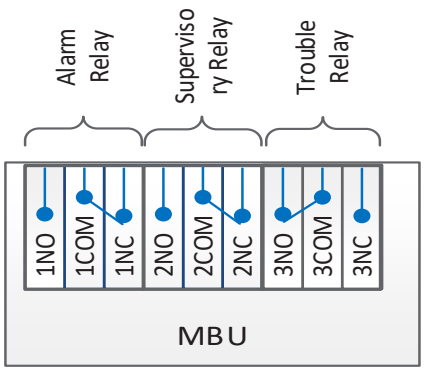


Figure 22 Notification Conventional Appliance Circuit Wiring – Class B

2.3.3 Relay Output Circuit Wiring

MBU provide three dry contact relays used for alarm, supervisory and trouble.



Relay contact
(Shown in normal standby condition, see left drawing)

NO – Normal Open
COM – Common
NC – Normal Close

Figure 23 Relay Output Circuit Wiring

2.3.4 Network Circuit Wiring

Network can connect up to 99 panels in Class B/DCLB wiring.

Network Circuit Wiring - Class B/DCLB

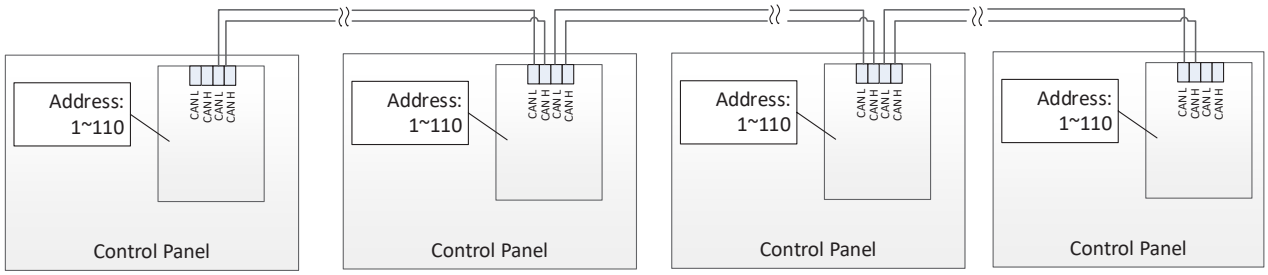


Figure 24 External Network Circuit Wiring - Class B/DCLB

2.3.5 Auxiliary Power Output Wiring

Auxiliary power output wiring should be from PSU terminals. The AUX+/AUX- at the left side of PSU are used to provide 24VDC auxiliary power output.

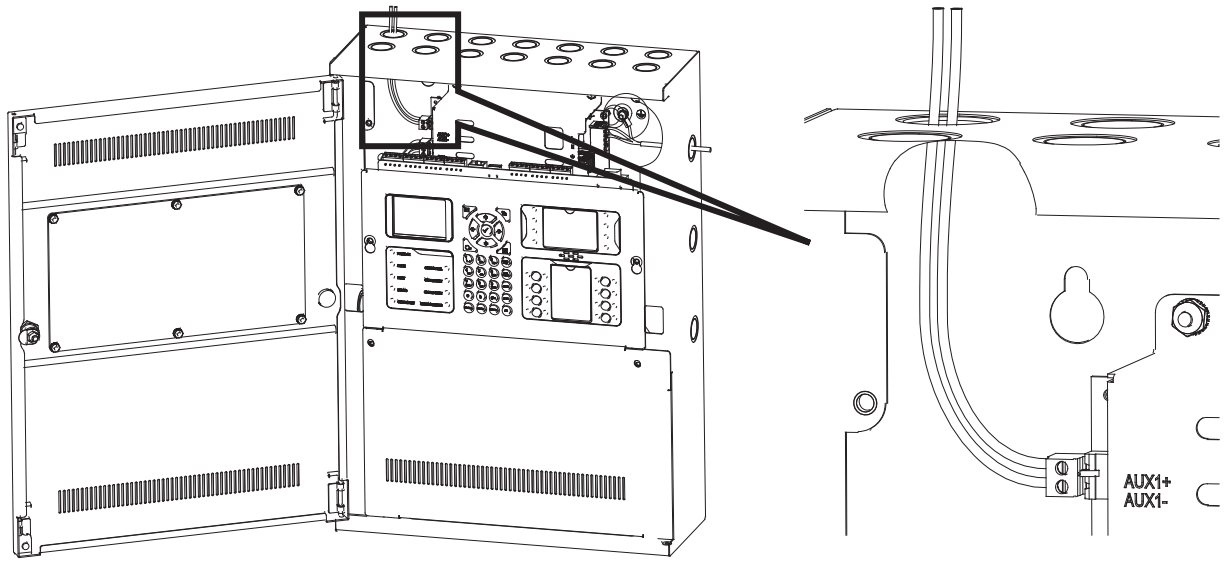


Figure 25 Auxiliary Power Output Circuit Wiring

2.4 System Checkout

The following are the recommended steps that should be followed before and during the powering up of the FW2107.

Before Turning the Power ON

1. To prevent sparking, DO NOT connect the battery first. Connecting the batteries should only be done once the system has been powered from the main AC Supply.
2. Check all field (external) wiring for opens, shorts, and ground.
3. Check that all interconnection cables are secure and that all connectors are plugged in properly.
4. Check all switches for proper setting.
5. Check the AC power wiring for proper connection. Observe/check slide switch position.
6. Close the front cover plate before powering the system from main AC supply.

Power-up Procedure

1. After completing Before Turning the Power ON procedures, power-up the panel.

The green AC ON LED should illuminate.

2. Since the batteries are not connected, the Battery Trouble LED should illuminate, the Trouble LED should flash and the Trouble Relay (on the main board) will be active.
3. Connect the batteries while observing correct polarity.

The red wire is positive (+) and black wire is negative (-).

4. All indicators should extinguish except for normal power AC ON green LED.

2.5 Trouble shooting

The following are common methods to solving Circuit Troubles, Ground Fault, Battery and Common troubles.

Circuit Trouble

Normally when a circuit trouble occurs, the Trouble LED will be illuminated and the common trouble relay will be active. Usually a relative event can be shown on the LCD event list view. Use these indications to correct the fault, check for open wiring on that particular circuit loop.

Table 3 Circuit Trouble

	The minimum resistance to test open fault (Ω)	The maximum resistance to test short fault(Ω)
In Addressable Loop Circuit	500	300
In Notification Appliance Circuit	500	300
In Auxiliary Power Circuit	NA	5

Ground Fault

This panel has ground fault detection. To correct the fault, check for any external wiring touching the chassis or other Earth Ground connection.
The maximum resistance for testing ground fault detection for extended wirings is 6.6 kΩ.

Battery Trouble

Check for the presence of batteries and their conditions. Low voltage (below 20.4V) will cause a battery trouble. If battery trouble condition persists, replace batteries as soon as possible.

Common Trouble

If only a common trouble is indicated on the main panel and none of those above confirming trouble indicators are on, then check the following for possible fault

- Any missing interconnection wiring
- Improperly secured cabling

3 Programming

3.1 Configuring Units

3.1.1 SLC

SLC is a Signaling Line Circuit. It is an fixed unit for IQ805

- ALU contains one SLC supports up to 128 points of addressable devices.
- Initializes and operates all devices residing on the loop and communicates all relevant devices and event information, such as alarms and troubles, to the System CPU.
- Circuit topology support: Class A/DCLA or Class B/DCLB.
- Maximum current: 100 mA in Normal Standby, 300 mA in Alarm

3.1.2 NAC

NAC is a Notification Appliance Circuits. It is an fixed unit for IQ805

- NOU contains two independent notification appliance circuits.
- Circuit topology support: Class A or Class B.
- Maximum current: 2A per NAC, 4A maximum for all NACs

3.1.3 PSU

PSU is a Power Supply Unit. It is an fixed unit for IQ805

- 12-120VAC, or 220-240VAC input selectable
- Provide power supply output to the system
- Terminals BAT+ and BAT- connect two lead-acid batteries (12VDC) in series.
- Maximum Charge Voltage: 27.8 VDC
- Maximum Charge Current: 2A. Sufficient battery charging capability is available to charge 18AH sealed lead-acid batteries within code requirements for up to 24 hours standby plus 30 minutes alarm plus 5 minutes alert.
- Use a microprocessor-controlled transfer circuit to switch power supply for the system to standby batteries when AC power is off or low.
- Communicate to the AMI to report fault conditions.

3.1.4 LED Annunciator

LED Annunciator is a local LED Display Unit to display local zone events. It is an fixed unit for FW2107.

- LDU contains two releasing zone and eight alarm zone.

- Each releasing zone contains three indicator lights, one yellow abort indicator light, one red pre-discharge indicator light, one red discharge indicator light.
- Each alarm zone contains two indicator lights, one red alarm or supervisory indicator light, one red fault or bypass indicator light.

3.2 Configuring Devices

3.2.1 Add devices

Access level 3 user. Unfold the Control Panel and make the cursor focus on the ALU.

Press “Install” button to go to the “Install” interface.

- Address

  The address must be 1 to 128 due to the system configuration capability. If you input a number larger than 128, a tip “The address must be: 1~128” will show on the interface.
- Customer Label

  The text is the note for devices. Users need to provide specific customer text for fire and non-fire inputs so as to provide the visual distinction between fire and non-fire troubles.
  The texts could be up to 32 characters consisting of digits, letters and symbols.
- Device Type

  Select the correct type of the device(s) you want to install
- Zone

  Put the device(s) into the correct zone. The zone should be added prior to assigning the devices.

3.2.2 Delete devices

Access level 3 user. Unflold the Control Panel and make the cursor focus on the device.

Press “delete” button to delete device.

3.2.3 Attributes of devices

Press enter button to access the attribute interface of device.

Press “Edit” to change the configuration of any feature or operations.

- Name

  Change the device type by pressing the navigation and enter button.
- Customer

  The text is the note for device. Users need to provide specific customer text for fire and non-fire inputs so as to provide the visual distinction between fire and non-fire troubles. The texts could be up to 32 characters consisting of digits, letters and symbols.
- UID

  The address must be 0 to 999900. If you input a number larger than 999900, a tip “The address must be: 0~999900” will show on the interface.

The UID for each device should be unique.

- Type

  The Type indicates the type of the device used for mapping logic.

- Bypass

  NO – The actuation of this device will actuate events as intened.
  YES – The acutaiton of this device will be ignored.

- Zone

  Input the specific zone number which you want to put the device into.
  If you input the wrong number, a tip “Zone does not exit” will show on the interface.

3.3 Configuring Zones

3.3.1 General Zone

Unflold the Control Panel and make the cursor focus on “ZONE”. Press “Install” button to go to the “Install” interface.

- Address

  The address must be 1 to 8999 due to the system configuration capability. If you input a number larger than 8999, a tip “The address must be: 1~8999” will show on the interface.

- Customer Label

  The texts could be up to 32 characters consisting of digits, letters and symbols.

- Type

  Auto – all other devices expect for manual station.
  Manu –manual station
  Make the cursor focus on the specific zone. Access the attribute interface by pressing the enter button.

- Alarm Delay

  This is the special settings for different optional features.
  - No delay – Devices in this zone will instantly actuate an alarm event once it is triggered.
  - Verification – Devices in this zone will be Alarm Verification feature enabled.
  - PAS – Devices in this zone will be Positive Alarm Sequence feature enabled.
  - Two-stage – Devices in this zone will be Two-stage feature enabled.

3.3.2 Releasing Zone

Unflold the Control Panel and make the cursor focus on “Releasing ZONE”. Press “Install” button to go to the “Install” interface.

- Address

  The address must be 1 to 8999 due to the system configuration capability. If you input a number larger than 8999, a tip “The address must be: 1~8999” will show on the interface.

- Customer Label

  The texts could be up to 32 characters consisting of digits, letters and symbols.

- Type

Cross – Activate the release function after multiple fire zones report a fire alarm simultaneously.

Counting –Activate the release function after multiple detectors in the same zone report a fire alarm simultaneously

Make the cursor focus on the specific zone. Access the attribute interface by pressing the enter button.

- Alarm Delay

  This is the special settings for different optional features.

  - No delay – Devices in this zone will instantly actuate an alarm event once it is triggered.
  - Verification – Devices in this zone will be Alarm Verification feature enabled.
  - PAS – Devices in this zone will be Positive Alarm Sequence feature enabled.
  - Two-stage – Devices in this zone will be Two-stage feature enabled.

3.4 System Options

Access level 3 user. Enter the Attribute of System by pressing the enter button. Press Edit button to change any configuration of the programmable features or operations.

3.3.1 Time/Date

Date: MM/DD/YY

Time: HH/MM/SS

3.3.2 Reset Inhibit

The Reset Inhibit time is the period that the Reset function will be bypassed.

The range should be within 1 to 20 minutes.

3.3.3 Daylight

For areas where the daylight saving time is applicable, set the time duration of the DST and the clock will automatically start the daylight saving time once it's within the duration.

For areas where the daylight saving time is not applicable, just set the feature as "Not Applicable".

3.3.4 Alarm Sequence

Latest on Top – The latest alarm event will be displayed on the top of the queue. The first alarm event will be shown in the title bar of Alarm Event.

Earliest on Top – The earliest alarm event will be displayed on the top of the queue. The first alarm event will be shown in the title bar of Alarm Event.

3.3.5 PAS Bypass

No – Positive Alarm Sequence will operate as intended.

Yes – Positive Alarm Sequence feature will be disabled.

3.3.6 AC Failure Delay Timer

The Failure Delay Timer is the time period during which the alarm is delayed when the AC main power supply fails

The range should be within 1 to 30 minutes.

3.3.7 Login Time

The Login Time is the period that the system will automatically exit from other interfaces.

The range should be within 1 to 30 minutes.

3.3.8 LCD ShutDown

The LCD ShutDown Time is the period that the system goes into saver screen mode.

The range should be within 0to 60 minutes.

The saver screen mode will be bypassed if the time is set to 0.

3.3.9 Two-stage Time

The countdown time of the first stage. 1 to 10 minutes optional.

3.3.10 Debug Mode

No – All mapping logic will operate as intended.

Yes – All mapping logic will be disabled. Any activated initiating devices will actuate all NACs.

3.3.11 Language

Two languages are optional – English and French

4 Operating Instructions

This chapter describes common tasks that need to be performed following installation and configuration of the FW2107 FACP.

4.1 Indicators, Buttons, Buzzer

4.1.1 Indicators

Refer to Table 4 for the general LED indicators operation.

Table 4 LEDs Operation

POWER ON	Green	Steady ON	Indicates that the system's main power works normally.
		OFF	Indicates that the system is not powered on yet or the system is powered by battery.
ALARM	Red	Steady ON	Indicates that there are alarm events and all alarm events have been acknowledged.
		OFF	Indicates that there is no alarm event in the system.
OTHER SIGNALS	Yellow	Steady ON	Indicates that there are other signal events and all of them have been acknowledged.
		OFF	Indicates that there is no other signal event in the system.
		Flashing	Indicates that there are other signal events in the system, but some of them have not been acknowledged.
FAULT	Yellow	Steady ON	Indicates that there are trouble events and all of them have been acknowledged.
		OFF	Indicates that there is no trouble event in the system.
		Flashing	Indicates that there are trouble events in the system, but some of them have not been acknowledged.
SYSTEM FAULT	Yellow	Steady ON	Indicates that the CPU is in fault.
		OFF	Indicates that there is no CPU fault.
BYPASS	Yellow	Steady ON	Indicates that there are disabled events.
		OFF	Indicates that there are no disabled events.
GROUND FAULT	Yellow	Steady ON	Indicates that there are Ground Fault events in the system.
		OFF	Indicates that there is no Ground Fault event in the system.
SUPERVISORY	Yellow	Steady ON	Indicates that there are supervisory events and all of them have been acknowledged.
		OFF	Indicates that there is no supervisory event in the system.
		Flashing	Indicates that there are supervisory events in the system, but some of them have not been acknowledged.
SIGNAL	Yellow	Steady ON	Indicates that there are activated NAC devices and at least one of

SILENCE			them has been silenced.
		OFF	Indicates that there is no NAC activated or a NAC is activated and not silenced.

The MBU card has two 8-zone LED Annunciator. When configured for releasing application, the first 8-Zone LED Annunciator will be used to indicate releasing zone status as shown in Figure 26, and the eight indicators operate as descripted in Table 5;

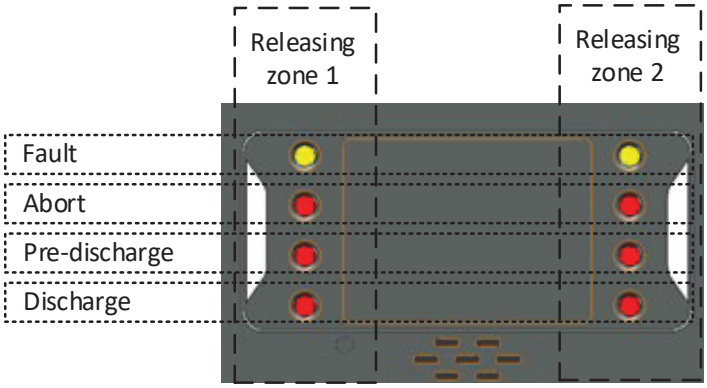


Figure 26 Releasing zone indicators location

Table 5 Releasing zone LEDs Operation

Fault	Yellow	Steady ON	Indicates that the releasing zone has trouble events and all of them have been acknowledged.
		OFF	Indicates that there is no trouble event in the releasing zone.
		Flashing	Indicates that the releasing zone has trouble events, but some of them have not been acknowledged.
Abort	Red	Steady ON	Indicates an input Abort signal has been activated to interrupt an agent release.
		OFF	Indicates there is no abort signal or the abort signal is not interrupt an agent release.
Pre-discharge	Red	Steady ON	Indicates a releasing event has been initiated and the releasing delay timer has been started.
		OFF	Indicates that the releasing zone is not in pre-discharge stage.
Discharge	Red	Steady ON	Indicates that the agent releasing circuit is activated and a discharge is taking place.
		OFF	Indicates that agent releasing circuit is not actived.

4.1.2 Buttons

Figure 27 Keypad

Mounted on the MBU, the key panel has 29 keys, which is visible with the outer door closed, includes 4 navigation buttons, 1 enter button, 12 alpha-numeric buttons and 12 Function buttons.

Table 6 Buttons Function

↑↓←→	Navigation Buttons To select the items in the menu, or to select letters or digits for input. Cursor movement will be speedy if the button keeps being pressed.
√	Enter Button To select or confirm information
Menu(Symbol)	Open main menu structure unless you are in Programming.
Canel/Exit(Symbol)	Back out of current windows to the top level.
Reset(Symbol)	Clears all obsolete events and resets all devices, except those disabled in the system.
Buzzer Silence(Symbol)	Buzzer Silence – Silence the buzzer Buzzer Resound – Resound the buzzer
Manual Alarm	Initiate an alarm signal and activates NAC devices
Signal Silence	Signal Silence - Silences specific NAC devices in the system. This will cause specific activated NAC devices to become silenced. Signal Resound - Resound specific NAC devices in the system. This will cause specific activated, but silenced NAC devices, to resound.

Archive	Open event log window
Bypass	To quickly disable or enable any point that is currently displayed (passcode protected).
Acknowledge	Acknowledges once a single unacknowledged event in the system.
LampTest	Illuminates all LEDs and LCD, activates the buzze.
SLC View	Hotkey for browsing the status of devices install to the SLC.
Sys. View	Hotkey for browsing the system configurations.

4.1.3 Buzzer

The buzzer operates as follows:

Normally OFF – indicates that the system is in normal condition or all events in the system have been acknowledged.

ON (continuous) – indicates that at least ONE unacknowledged alarm is present in the system.

ON (1 pulse per 0.25 second) – indicates that at least ONE unacknowledged Alert event is present in the system

ON (1 pulse per 0.5 second) – indicates that at least ONE unacknowledged supervisory event is present in the system.

ON (1 pulse per 1 second) – indicates that at least ONE unacknowledged trouble event is present in the system.

ON (1 pulse per 2 second) – indicates that at least ONE unacknowledged other signal event is present in the system.

4.2 Normal Operation

With no alarms or troubles in the system, the display message is System All Normal along with the current time and date as shown below. The green AC ON LED should be the only illuminated LED. To set the time and date, refer to the appropriate section in this manual.

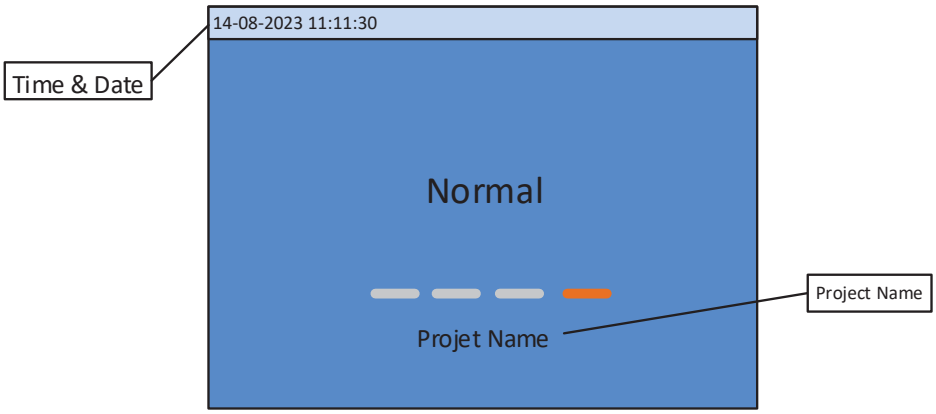


Figure 28 LCD Display (Standby)

The FACP performs the following functions at regular intervals in Normal mode:

- Monitors AC input voltage and battery voltage
- Monitors and reports status devices, circuits and control panel
- Refreshes LCD display and updates time
- Scans control panel keypad for key presses
- Updates and reads all communications circuits (SLC, NAC, Network, etc.)

4.3 Trouble Operation

In case of a trouble condition, the FACP takes the following actions:

- System trouble LED and any programmed trouble LEDs to flash
- Buzzer to sounds in trouble pattern
- Trouble relay to activate
- LCD identifies the trouble event with device type, address, trouble type, customer text and time/date, as shown in Figure 29
- The same message is sent to the optional printer and the archive buffer

Note that specific troubles will initiate additional actions; for example, loss of AC power will turn off the Power ON indicator, etc.

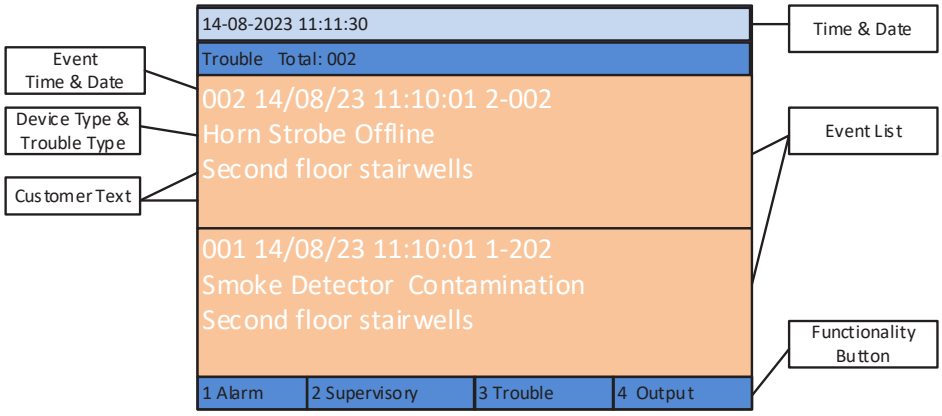


Figure 29 LCD Display (Trouble)

Pressing the Acknowledge key will cause the pulsing piezo to silence and the system Trouble indicator to change from flashing to on steady. When the Acknowledge key is pressed and at least one new trouble exists in the system, the 'acknowledge' message is sent to the printer and archive file.

The panel has a 24-hour Supv/Trouble Resound reminder. If the trouble condition is not corrected and the Supv/Trouble Resound Reminder timer has elapsed, the panel will re-annunciate the trouble condition.

If the trouble clears, either before or after the Acknowledge key is pressed, the 'clear trouble' message is sent to the printer and history file. If all troubles clear and there are no supervisory or alarm conditions in the system, the system returns to normal mode operation and the System All Normal message is shown on the LCD display and sent to the history and printer files. The auto-restore feature will restore cleared troubles even if the troubles were never acknowledged.

Refer to Table 7 for trouble event types and explanation of the events.

Table 7 Trouble Event Type

Category	Trouble Event Type	Explanation
System	PrimaryPower_Loss	Primary power is lost
	Battery_Loss	Battery is disconnected
	ControlPanel_Grounding	Control panel detects ground condition
	PrimaryPower_OverVoltage	Primary power voltage is too high
	Charger_OverVoltage	Charger voltage is too high
	ConfigFile_Missing	Configuration file is missing
	ConfigFile_Damaged	Configuration file is damaged
Unit	Unit_Missing	NOU is missing
	Unit_ Illegal	The unit is working, but it is not configured
Circuit	Ext._Grounding	The network circuit is grounded
	Bus_Short	The Signaling Line Circuit is shorted
	Bus_Open	The Signaling Line Circuit is open
Field Device	Heat_SensingError	The heat detector sensing has an error
	Smoke_Contamination	The chamber of the smoke detector is contaminated
	Init.Device_Duplicate	Two or more devices have the same address
	Init.Device_Illegal	The device is working online, but it is not configured
	Init.Device_Missing	The device is configured, but it is missing
	Init.Device_WrongType	The device type is incorrectly configured
	Init.Device_GeneralTrbl	The device has internal hardware trouble

4.4 Supervisory Operation

Supervisory operation is similar to alarm operation but with the following differences:

- System supervisory LED and any programmed supervisory LEDs to flash
- Buzzer to sounds in supervisory pattern
- Supervisory relay to activate
- LCD identifies the supervisory event with device type, address, customer text and time/date
- The same message is sent to the optional printer and the archive buffer

Supervisory event can be configured as latched or non-latched by setting from the device attribute interface. Returning to normal condition will not cause the supervisory event to disappear until manually reset if it is

programmed as latched. Returning to normal condition will cause the supervisory event to disappear when it is programmed as non-latched

When the supervisory condition has occurred, pressing ACKNOWLEDGE button will silence the buzzer and change the supervisory LED to steady ON.

The panel has a 24-hour Supv/Trouble Resound Reminder, if the supervisory condition is not corrected and the Supv/Trouble Resound Reminder timer has elapsed, the panel will re-annunciate the supervisory condition.

4.5 Alarm Operation

Alarm operation is similar to trouble operation with the following differences:

- System alarm LED and any programmed alarm LEDs to flash
- Buzzer activates in alarm pattern
- Alarm relay to activate
- LCD identifies the alarm event with device type, address, customer text and time/date
- The same message is sent to the optional printer and the archive buffer

When an alarm is received, proceed in accordance with the established emergency plan. Make sure all personnel is accounted for and notify the Fire Department.

To silence the visible and audible devices after the evacuation (where permitted by the codes and control panel programming), press the SIGNAL SILENCE button, then the SILENCE HORN&STROBE button. The alarm visible and audible signaling devices will be silenced and the alarm silence LED will change from off to on.

Pressing the ACKNOWLEDGE button will silence the local buzzer and change the LED alarm indicator from flashing to steady.

Do not attempt to reset the system until the alarm condition has been cleared. The LCD will indicate the zone in which the alarm was detected. The LEDs on activated detectors or modules (if applicable) will illuminate.

When the alarm condition has been corrected, return the system to normal standby operation by pressing the RESET button.

4.6 AV、PAS、Two-Stage

4.6.1 Alarm Verification

The Alarm Verification function is supported by this panel. One typical alarm verification phase can be divided into 2 periods. The first period is a retard period in which no alarm reports on the Fire Alarm Control Panel (FACP). The second period is a confirmation period in which alarm reports on the Fire Alarm Control Panel if a device is in alarm status. The detail alarm verification phase is illustrated in Figure 39.

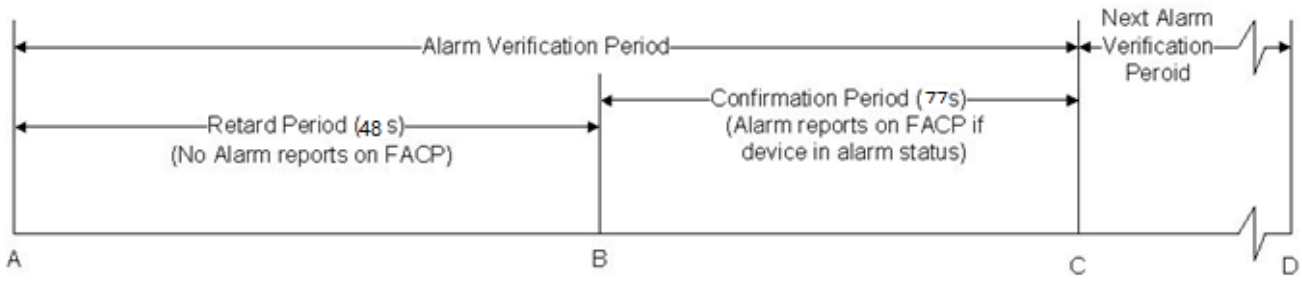


Figure 30 Alarm Verification

A - Smoke detector goes into alarm. (LED on device turns to steady on)

AB - Retard Period: Fire Alarm Control Panel senses detector in alarm and delays alarm signal for 48s. During this period, no alarm event reports on the Fire Alarm Control Panel.

BC - Confirmation Period: Detector is operational for alarm at point B. If the detector is still in alarm at point B, the Fire Alarm Control Panel will report an alarm. If the detector is not in alarm, the system returns to standby. If the detector re-alarms at any time during the confirmation period the Fire Alarm Control Panel will alarm. The period length is 77s.

CD – Restart next alarm verification period if new alarm occurs.

4.6.2 Positive Alarm Sequence (PAS)

When an alarm causing device associated with a zone with PAS feature is initiated, the alert condition is reported on the panel. The activation of all system evacuation signals are delayed for 15 seconds (PAS delay time) waiting for a manual acknowledgement response.

If no response is received within 15 seconds, the panel proceeds to activate system evacuation signals. See Figure A.

If the alarm event is acknowledged during the PAS delay time, the programmable PAS investigation time (180 seconds) is added to the PAS delay time before system evacuation signals are activated. See Figure B.

However, if a 2nd alarm is initiated anytime during the PAS delay time or PAS investigation time, the system evacuation signals are immediately activated. See Figure C.

Pressing the Reset button at any time during the PAS sequence will initiate a reset condition and try to restore the panel to stand-by state.

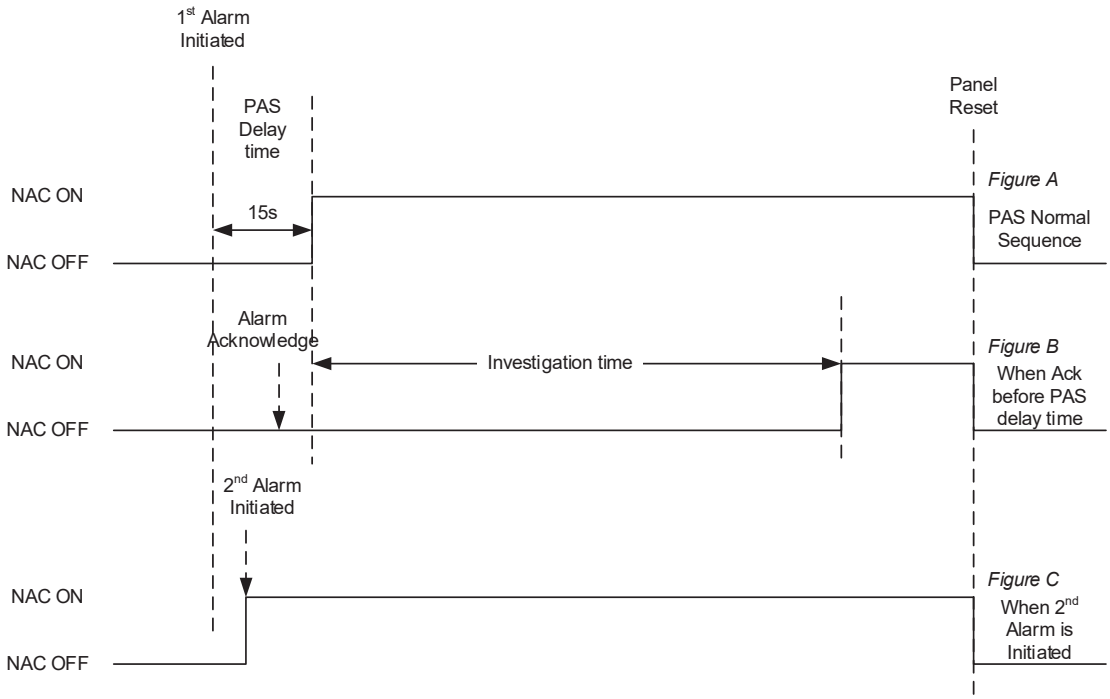


Figure 31 Positive Alarm Sequence

4.6.3 Two-Stage

When an alarm causing device associated with a zone with two-stage feature is initiated, it will enter first stage alarm and the alert condition is reported on the panel. A countdown timer will start at the moment and buzzer will sound in alert tone. Notification appliance will sound in alert tone.

If the timer counts down to 0 or pressing “To Second Stage” button, system will enter second stage alarm status. Alarm event will display on LCD, along with buzzer with alarm tone and notification appliance in alarm tone (Temporal 3).

If “Auto Alarm Signal Cancel” button or “Signal Silence” button is pressed during first stage alarm, the system will enter the automatic alarm signal cancel status. Automatic alarm signal cancel event will display on LCD. The countdown timer is cancelled, buzzer keeping in alert tone, and notification appliance sounding in alert tone (if it’s not silenced).

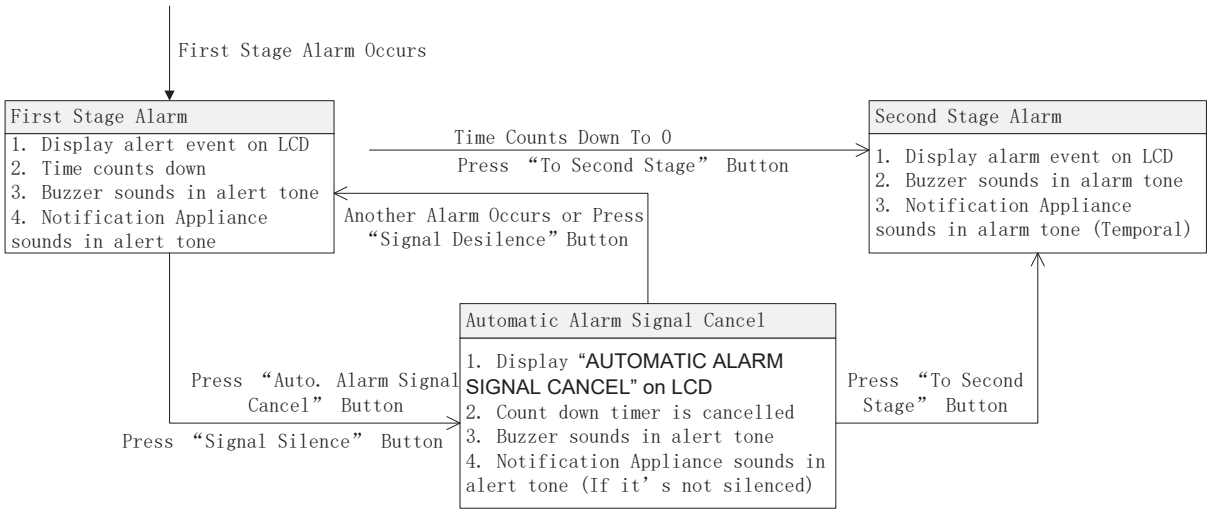


Figure 32 Two-Stage Alarm

4.7 Bypass Operation

The by-pass function is provided for user if they don't want to receive message from specified devices. Bypassed NACs are held in the off state. Bypassed zones/NACs are treated as if they were in trouble, with the exception being the LCD status label that will be displayed is Bypassed.

4.8 Releasing Operation

This control panel can be used for automatic extinguishing, deluge and preaction sprinkler system releasing control applications via the SLC loop. The FACP simultaneously support two releasing zone, and up to 20 release modules can be install in the SLC loop.

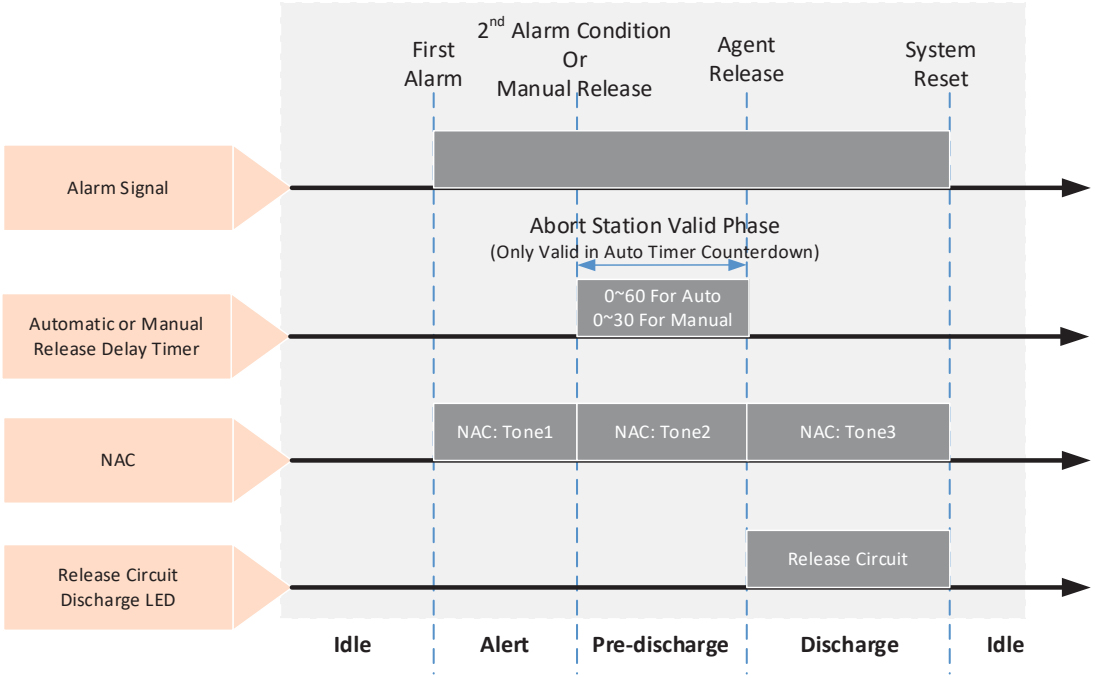


Figure 33 Releasing zone State

The escalating releasing zone states include Idle, Alert, Pre-discharge and Discharge, as shown in Figure 33. They

are defined based on the status of input signals, correlated Abort Switch and Manual Release Station.

4.8.1 Releasing zone Idle

- No correlated alarm zone active.
- Auto Release Delay Timer is not started.
- Manual Release Delay Timer is not started.
- Abort Switch is off.
- Manual Release Switch is off.
- Corresponding NAC circuit is off.
- Releasing circuit(s) is off.
- Releasing zone LEDs are off.

4.8.2 Releasing zone Alert

- The Releasing zone enters the Alert state when
  - a single alarm comes in for a cross-zoned release. For non cross-zoned hazard area, a single alarm will put Releasing zone into Pre-discharge state directly.
  - the Abort Switch becomes active during Pre-discharge state, so that the Releasing zone state downgrades from Pre-discharge to Alert.
- Release Timer is not started.
- Manual Release Delay Timer is not started.
- Correlated NAC circuit(s) turns on at alert rate.

4.8.3 Releasing zone Pre-discharge

- The Releasing zone enters the Pre-discharge state when
  - it detects the confirming alarm for Releasing zone (single alarm active for the non cross-zoned system, or 2nd alarm active in the cross-zoned system), or
  - Manual Release Switch is active.
- Release Timer (RT) is started when the panel enters Pre-discharge state after by detecting the 2nd alarm in cross-zoned hazard or 1st alarm in non cross-zoned hazard.
- Manual Release Delay Timer is started when the panel enters Pre-discharge state by detecting the correlated Manual Release Switch active.
- Releasing circuit(s) will be activated after the Release Timer or Manual Release Timer expires.
- Corresponding NAC(s) turns on at Pre-discharge rate.
- During Pre-discharge State, when the release timer is running and the Abort Switch turns on, the Releasing zone state will change from Pre-discharge to Alert. Release Timer is held and the corresponding NAC sounds the Alert rate. If the Abort Switch is released, the hazard state will go back to

Pre-discharge and the Release Timer resumes running. The value of release timer depends on configuration. The corresponding NAC sounds Pre-discharge rate again.

- Corresponding Pre-discharge LED is on.

4.8.3 Releasing zone Discharge

- Panel enters discharge when the Release Timer or Manual Release Timer expires. The correlated releasing circuit is activated.
- Corresponding NAC(s) turns on at Discharge rate.
- Corresponding discharge LED is on.