

AUL-NX10AR/B, AUL-NX06AR

Installation, Operation, and Instruction Manual



SHIELD FIRE, SAFETY & SE
Unit 3, Endeavour Drive, Basildon-Essex, SS14 3WF, United Kingdom
+44 1708 377731 • FAX +44 1708 347637 • Shielduk@shieldglobal.com
www.shieldglobal.com

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Contents

Section 1: AUL-NX10AB/R	NX10:1
General Description	NX10:3
System Features	NX10:3
Mounting Instructions.....	NX10:3
Operating Instructions.....	NX10:3
Alarm Condition.....	NX10:3
Trouble Condition	NX10:4
Standby Operation.....	NX10:4
Testing and Maintenance	NX10:5
Battery Maintenance	NX10:5
Electrical Operating Characteristics	NX10:5
Notification Power Supply.....	NX10:6
Wiring Options.....	NX10:7
Class B Trigger and Class B Notification Circuit Trigger	NX10:7
Class A Trigger and Class A Notification Circuit	NX10:7
Class B - Multiple Supply Trigger.....	NX10:8
Class A - Multiple Supply Trigger.....	NX10:8
Pass Thru Mode	NX10:9
Wire Routing.....	NX10:10
Reference EOL.....	NX10:10
Dip Switch Programming	NX10:11
Input Trigger Type.....	NX10:11
Bulk Supply Options	NX10:11
Class A/B Selection	NX10:12
Door Holder AC Dropout delay	NX10:12
DC Output is Door Holder	NX10:12
Trouble Memory Enabled.....	NX10:12
Individual NAC Options.....	NX10:13
Battery Calculation Worksheet	NX10:15
 Section 2: AUL-NX06AR	 NX06:1
General Description	NX06:3
System Features	NX06:3
Mounting Instructions.....	NX06:3
Operating Instructions.....	NX06:3
Alarm Condition.....	NX06:3
Standby Operation.....	NX06:4
Trouble Condition	NX06:4
Testing and Maintenance	NX06:5
Battery Maintenance	NX06:5
Electrical Operating Characteristics	NX06:5
Notification Power Supply.....	NX06:6
Wiring Options.....	NX06:7
Class A Trigger and Class A Notification Circuit	NX06:7
Class B - Multiple Supply Trigger.....	NX06:8
Class A - Multiple Supply Trigger.....	NX06:8
Pass Thru Mode	NX06:9
Wire Routing.....	NX06:10
Reference EOL.....	NX06:10
Dip Switch Programming	NX06:11
Input Trigger Type.....	NX06:11
Bulk Supply Options	NX06:11
Class A/B Selection	NX06:12
Door Holder AC Dropout delay	NX06:12
DC Output is Door Holder	NX06:12
Trouble Memory Enabled.....	NX06:12
Individual NAC Options.....	NX06:13
Battery Calculation Worksheet	NX06:14

Section 1: AUL-NX10AB/R Installation, Operation, and Instruction Manual

Notification Power Supplies

(All specifications subject to revision.)

WARNING

The fire alarm system employing this power supply must be designed by people trained and competent in the design and layout of fire alarm systems. The system shall be designed and installed in accordance with all local and national codes and ordinances as well as the approval of the Authority Having Jurisdiction. Only trained, qualified and competent individuals should install, program and/or service the SHIELD FIRE POWER SUPPLY. Competent people would be aware of these warnings, limitations, and requirements.

High voltage electrocution hazard. Do not handle live AC wiring or work on the device while AC power is active.

This manual is designed to help with the specification, installation, and programming of the SHIELD FIRE POWER SUPPLY. It is imperative that this manual be completely read and understood before the installation or programming of the power supply. Save this manual for future reference.

General Description

The Shield AUL series of power supplies is designed to provide the power and flexibility needed for the most demanding fire system installations. The AUL-NX10AB/R is a 10 Amp 24Vdc switch mode power supply design, which is up to 50% more efficient than linear mode supplies, makes the AUL series the best choice for powering fire system notification appliances and accessories. New and retrofit construction requirements for ADA compliance are easily accomplished with ample power for additional notification appliances along with the ability to synchronize the notification appliances using built in sync generation for Potter, System Sensor®, Gentex® and Wheelock® notification appliances. The AUL series goes even further to make retrofits easier with the advanced QuadraSync feature which allows notification appliances from different manufacturers to sync with each other. You also have the option to monitor an existing circuit by placing a reference resistor of the same value on the power supply and continuing to monitor the circuit without changing the field EOL.

System Features

- Input voltage: 120/240VAC 50/60Hz
- Output voltage 24VDC @ 10A
- Six class “B” Style "Y" notification circuits on the AUL-NX10AB/R
 - Rated at 3 amps max each
 - Can be configured as up to three class “A” Style "Z" notification circuits
- Supervised Battery Charger: 27.3 @ 1A (supports 7-55 Ahr batteries)
- Integrated battery cut-off circuitry to protect batteries from deep discharge
- Two Trouble Relays (5A at 30VDC)
 - General System Trouble (programmable for AC delay via dip-switch)
 - Low AC Trouble
- Diagnostic LED's
 - Status LED's for Active NAC and NAC trouble conditions
 - Status LED's for Earth Fault (Amber), AC (Green), Battery Fault (Amber)
 - Trouble Memory feature captures troubles which have previously restored.
- Synchronized notification appliance circuits
 - Potter
 - Wheelock®
 - Gentex®
 - System Sensor®
- Configurable output circuits (D.I.P. switch sets options for each circuit)
 - ANSI temporal-coded
 - Constant Power
 - Door-Holder Power
- Separate DC Power Output (3A)
- Two Trigger Inputs (Class A, Style Z or Class B, Style Y)
- Reference EOL terminals, allows 2K – 27K EOL value to be used
- QuadraSync panel wide synchronization of same or multiple brands.
- PassThru mode copies input signals to output (can be used in conjunction with QuadraSync)

Mounting Instructions

The standard mounting is a surface mount cabinet. The unit must be securely attached to a permanent partition using suitable fasteners. Five mounting holes are provided to accept ¼ inch diameter screws maximum. There are seven knock outs provided.

Operating Instructions

Alarm Condition

Notification Appliance Circuit:

Alarm devices operate in unison with the Trigger inputs from the main Fire Alarm Control Panel (FACP). When activated by the corresponding trigger input the associated Notification Appliance Circuit (NAC) will reverse polarity from a supervision state to the alarm state and supply power to the associated notification appliances until the trigger is removed. Each activated NAC will also power the L.E.D. associated with it, the L.E.D. will follow the steady or pulsing state of the NAC. The alarm-activated outputs are reset through the operation of the reset function of the Main FACP.

*Trouble Condition***NOTICE**

If the trouble memory feature has been enabled the L.E.D. will provide two brief pulses every second to indicate a trouble condition has occurred but is now restored. This can be useful when troubleshooting brief trouble conditions that come and go over a period of time

Notification Appliance Circuit:

If a trouble occurs on a NAC the associated L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

DC Power Circuit:

If a trouble occurs on the DC Power output the DC L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

AC:

When the Power supply detects the A.C. power input has fallen below an acceptable level the AC Power L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type and after a programmed delay the Low AC relay will also activate. When the trouble condition has been restored the L.E.D. and trouble relays will return to their normal state. (See notice.)

Low Battery:

When the Power supply detects the Battery is no longer functioning properly the Low Battery L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

Ground Fault:

When the Power supply detects a ground Fault condition which indicates a short between the Power Supply ground and the Earth Ground circuits the Ground Fault L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

Communication Trouble:

If the Bulk Power Supply and Control Board lose communication with each other the Comm L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

*Standby Operation***Notification Appliance Circuit:**

When in standby operation the NAC will be in the reversed supervision polarity and the associated L.E.D. will be off. Exception: When the NAC is programmed to be an DC Power Output the associated L.E.D. will be on during normal standby operation.

DC Power Circuit:

When in standby operation the DC Power will be on and the DC Power L.E.D. will be illuminated.

AC:

When in normal operation the AC Power L.E.D. will be on steady.

Low Battery:

When in normal operation the Low Battery L.E.D. will be off.

Ground Fault:

When in normal operation the Ground Fault L.E.D. will be off

Communication

When in normal operation the Comm L.E.D. will flash occasionally to indicate normal communication traffic is occurring.

Testing and Maintenance

System Testing should be performed periodically to insure proper operation.

Test the indicating circuits by initiating an alarm or test at the Main FACP.

Test for proper operation by actuating the notification appliance circuit the AUL-NX10AB/R is monitoring.

Standby batteries and AC transfer are tested by interrupting the AC power line while an alarm condition exists.

Battery Maintenance

The AUL-NX10AB/R should be tested at least once a year for proper operation as follows:

Output Voltage Test: Under normal load conditions, the DC output voltage should be checked for proper voltage level. Refer to the Power Supply Output Specifications Chart).

Battery Test: Under normal load conditions, check that the battery is fully charged. Check specific voltage both at the battery terminal and at the board terminals marked [+BAT-] to ensure there is no break in the battery connection wires.

Note: Maximum charging current is 1 Amp.

Note: Expected battery life is 5 years; however it is recommended changing batteries in 4 years or less if needed.

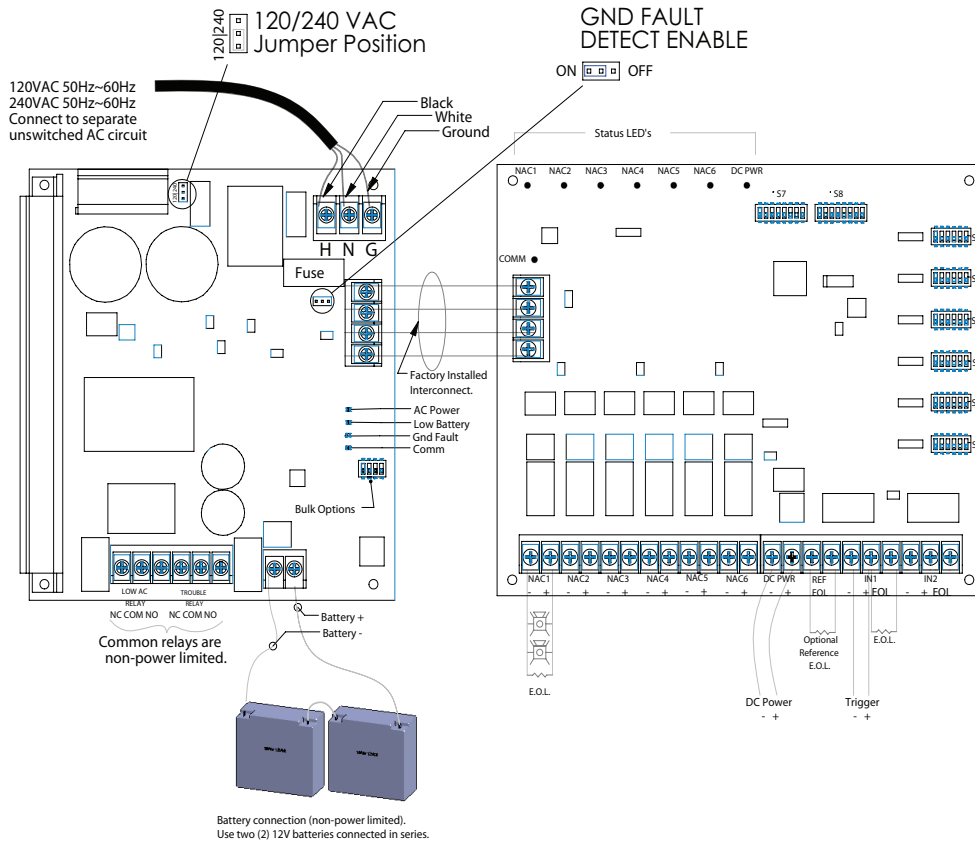
Electrical Operating Characteristics

Input Voltage	120 VAC @ 5.1 Amps or 240 VAC @ 2.5 Amps (Jumper selected) 50/60 Hz
Input Trigger	8 VDC to 33 VDC (15 ma) filtered or full wave rectified. Polarity reversal or continuous voltage
Output Voltage	24 VDC @ 10 Amps
Notification Outputs	24 VDC 3.0 Amps Maximum, Polarity Reversal
DC Power	3.0 Amps
Total System Current	AUL-NX10AB/R = 10 Amps (total system load from all output circuits must not exceed 10 amps total_

The system uses a "Sealed Lead Acid" or "Gel-Cell" type of battery with a capacity of from 7 to 55 amp-hours. Fuse must be replaced with same size and rating (8A-250VAC, Time Lag).

Please refer to Potter document 5403592 NAC Compatibility Document.

Notification Power Supply



Primary AC

120VAC 50Hz~60Hz, 5.1AMP
Min Low AC Detect 97VAC
240VAC 50~60Hz 2.5AMP
Min Low AC Detect 190VAC

Common Relays

3A @ 125VAC (Resistive)
3A @ 30VDC (Resistive)

Battery Charging

27.3VDC @ 1A
Low Battery Detect @20.4VDC

Earth Fault to Any Terminal

0 Ohms

Notification Appliance Circuits 1-6

24VDC @3A Power Limited
Regulated
Synchronization supported on NAC 1-6

DC Power Circuit

20.4VDC - 27.3VDC @3A Power Limited
Special Application RSG-DH1224
Listed Door Holder

Fuse Specification

8A-250VAC Time-Lag

Note: Total current draw from NAC 1-6 and DC Power must not exceed 10 amps.

F.C.C.

This device has been verified to comply with FCC Rules Part 15, Class A Operation is subject to the following conditions:

1. This device may not cause radio interference.
2. This device must accept any interference received including any that may cause undesired operation.

Requirements

System must be fully tested after installation.
Intended for indoor use in dry locations only.
Separation of power limited wiring from non-power limited wiring must be at least 1/4".

For proper operation the voltage drop to the farthest connected device must not exceed 3 volts. This can be calculated using the following formula:

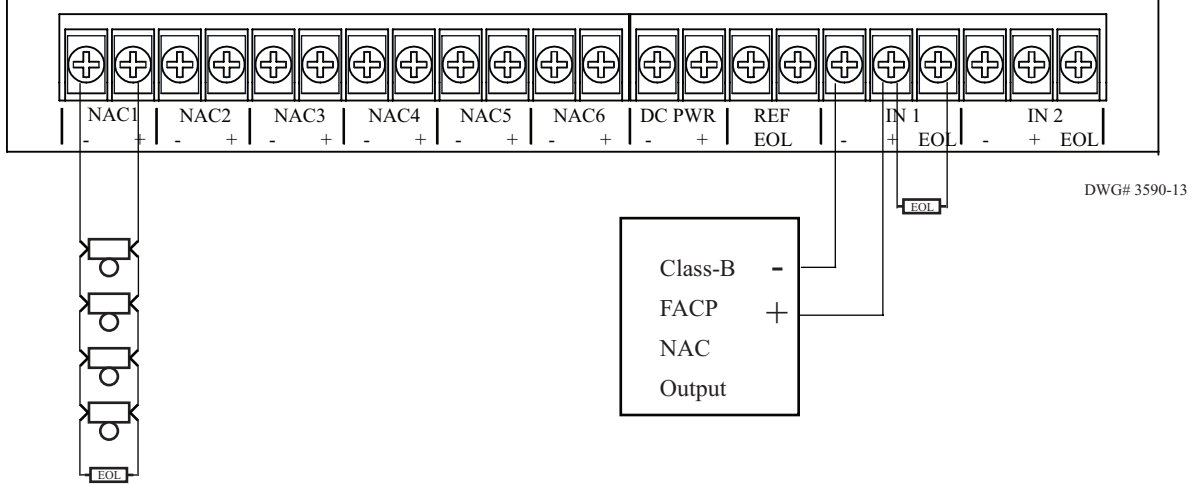
$$\frac{\text{(Alarm Current of Notification Appliances)}}{\text{x (Wire Resistance)}} < 3 \text{ volts}$$

Install in accordance with installation manual Part Number 5403590 Rev A, NFPA 70, and NFPA 72

Wiring Options

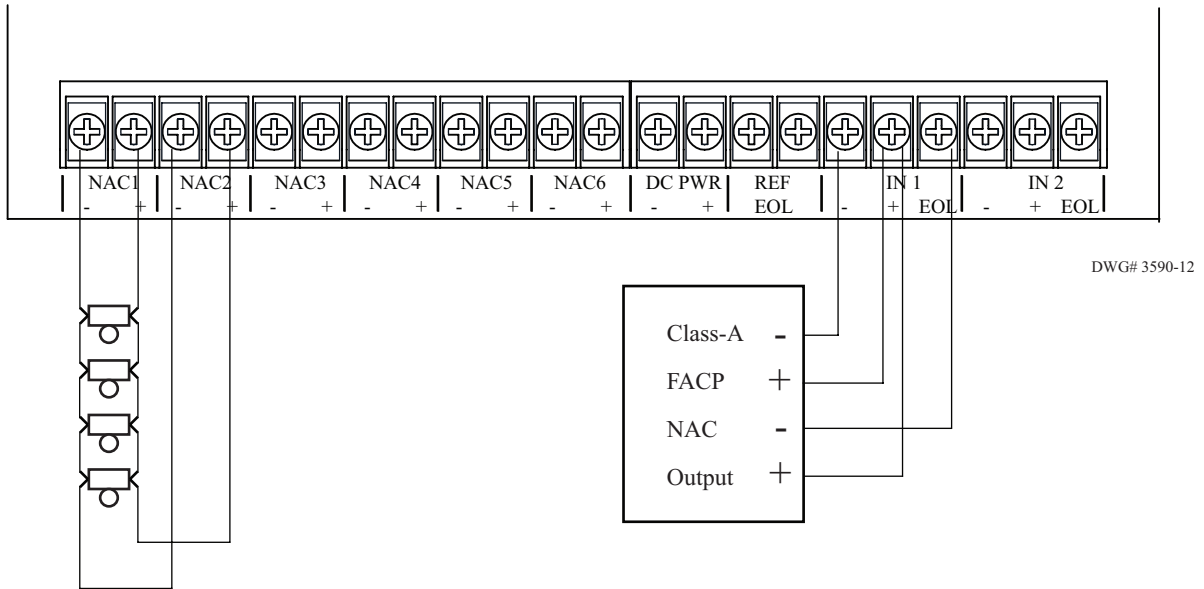
Class B Trigger and Class B Notification Circuit Trigger

Class B Style Y Trigger and Class B Style Y Notification Circuit Trigger inputs IN1 & IN2 can be connected to a Class B Style Y NAC trigger circuit as shown below. The AUL-NX10AB/R provides 6 Class B Style Y NAC circuits, each rated for 3 amps. Each NAC circuit is individually selectable for Class A Style Z/ Class B Style Y operation, refer to the Dip Switch Programming for information on dip switch programming.



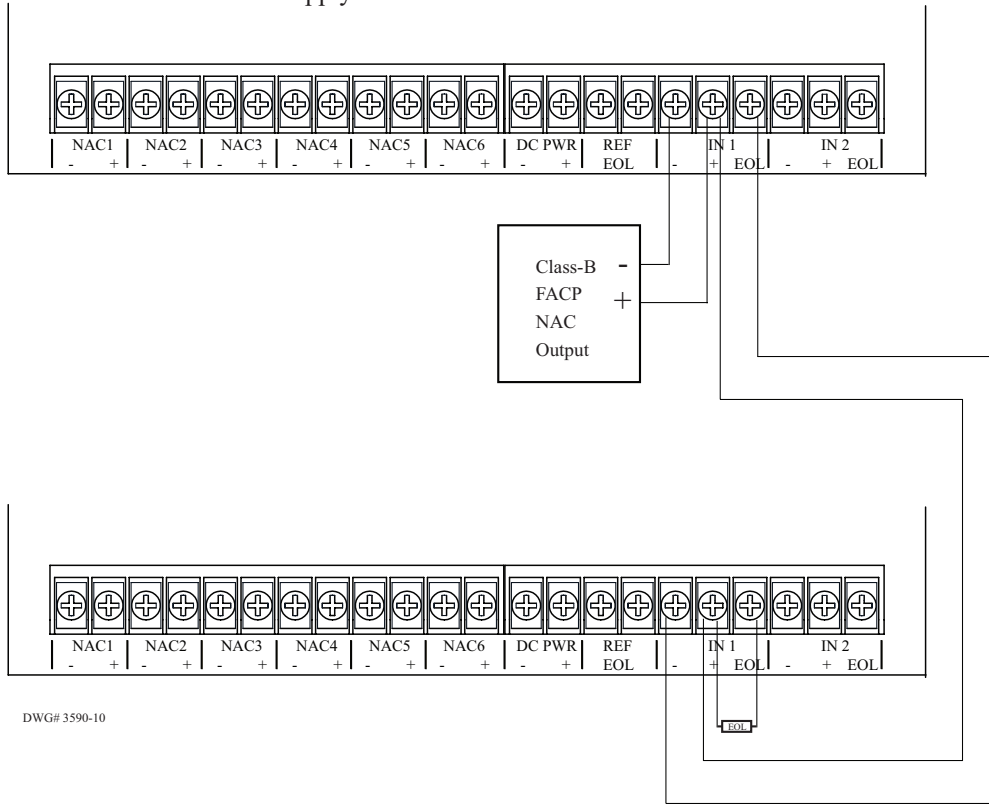
Class A Trigger and Class A Notification Circuit

Trigger inputs IN1 & IN2 can be connected to a class A NAC trigger circuit as shown below. The AUL-NX10AB/R provides 3 Class A NAC circuits, each rated for 3 amps. Each NAC circuit is individually selectable for Class A/B operation, refer to the Dip Switch Programming section for information on dip switch programming.



Class B - Multiple Supply Trigger

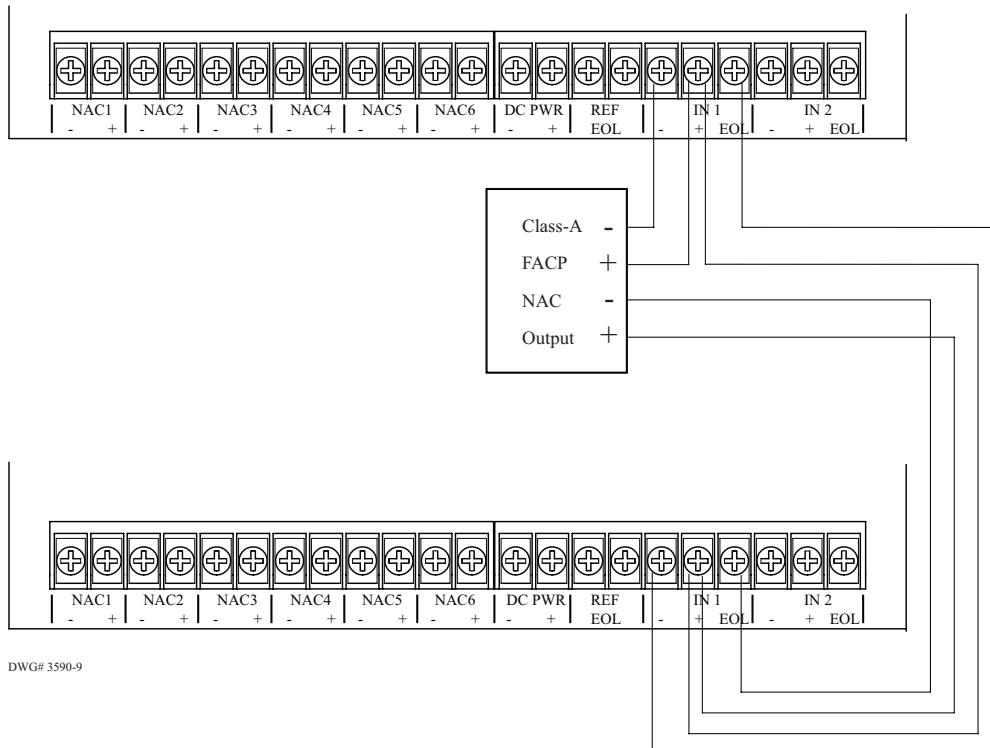
A single Class B Style Y trigger can be used to activate multiple supplies as shown below. The minimum wire gauge between supplies is 18 AWG. A maximum wiring distance of 10,000 feet is allowed from the triggering FACP and the last supply in the chain. The EOL resistor is located on the last supply in the chain.



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Class A - Multiple Supply Trigger

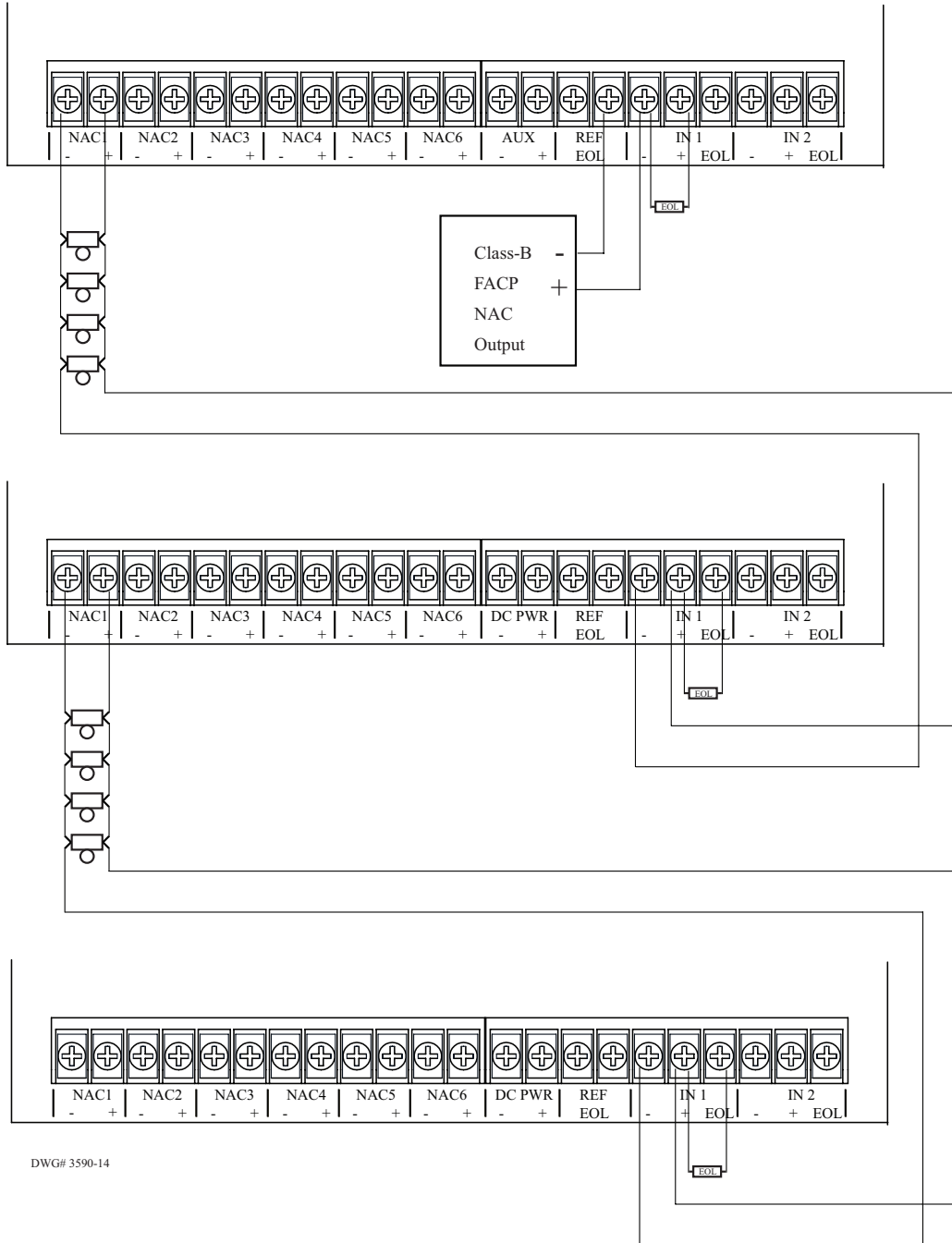
A single Class A Style Z trigger can be used to activate multiple supplies as shown below. The minimum wire gauge between supplies is 18 AWG. A total wiring distance of 10,000 feet is allowed from the triggering FACP to the last supply in the chain (including the return wiring).



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Pass Thru Mode

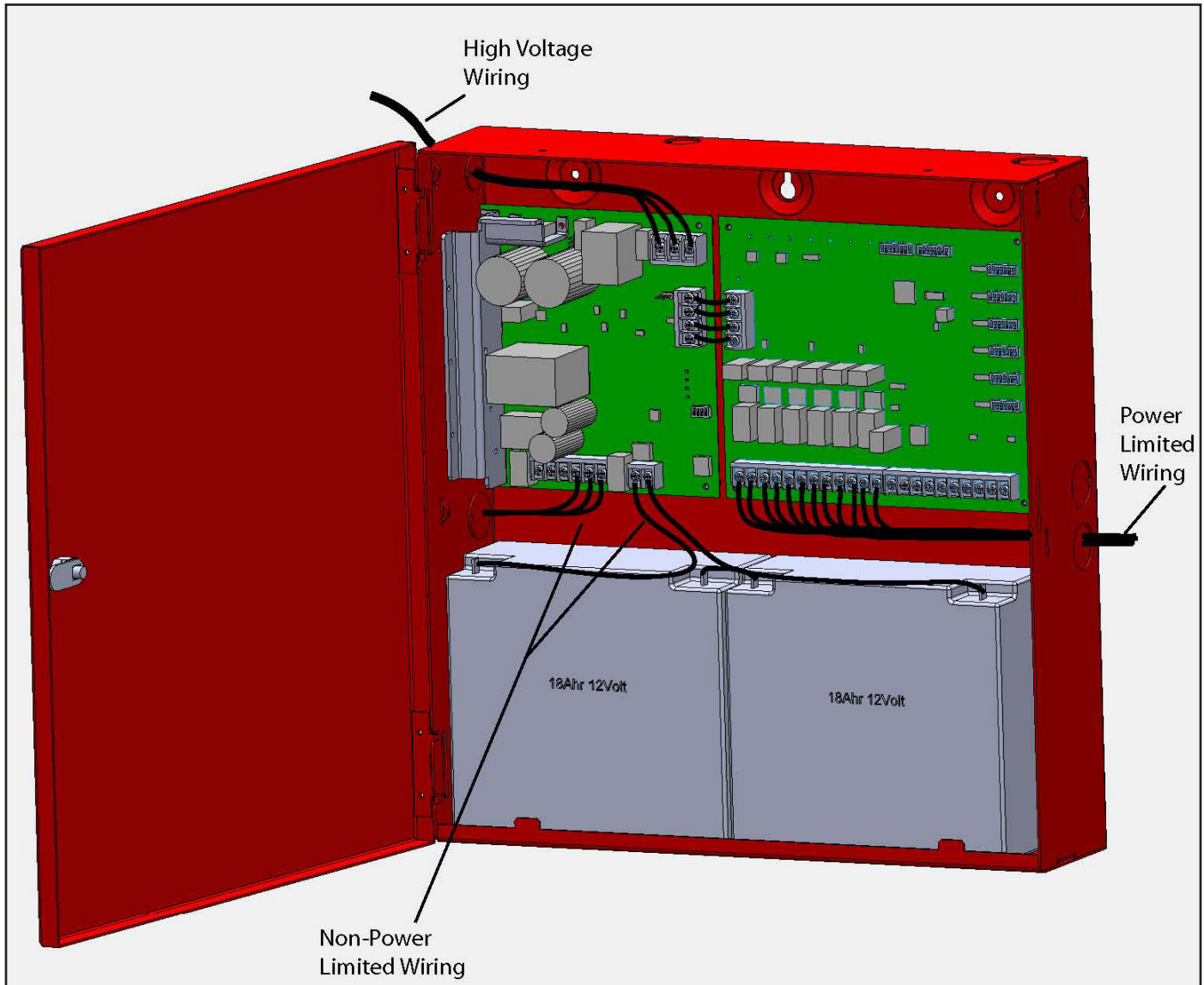
The NAC output of the AUL-NX10AB/R can be used to trigger additional supplies. Up to 3 supplies maximum can be configured in this manner. Full system synchronization is maintained. The minimum wire gauge between supplies is 18 AWG. A maximum wiring distance of 10,000 feet is allowed between each supply.



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Wire Routing

A minimum of ¼ inch separation must be maintained between Power Limited, Non-Power Limited, and High Voltage wiring. See illustration for suggested wire routing



Reference EOL

The AUL-NX10AB/R uses a standard 5.1k EOL resistor (part number 3005013).

In retrofit applications where a value other than 5.1k is already in use, a reference EOL input is provided. Simply connect a matching EOL resistor to the reference EOL input. All NAC wiring will then be supervised based on this value. Any EOL value from 2.0k to 27k can be used.

If no reference EOL is connected, 5.1k is assumed.

Dip Switch Programming

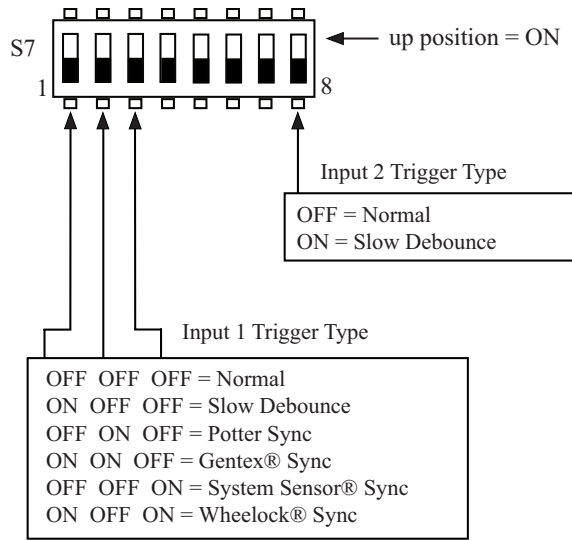
⚠ WARNING

Remove power before servicing or changing DIP switch programming selections

Input Trigger Type

(Selects the behavior of trigger inputs.)

- **Normal Trigger:** Trigger input is sampled at a high rate. Used for simple DC triggers, as well as for sync follow and pass-thru mode. A NAC configured as constant output will follow triggered and immediately activate.
- **Slow Debounce (Slow Trigger):** Allows a non-standard trigger signal to be used for activation. The slower response allows the outputs to remain active when the trigger signal is changing. This trigger will operate with ANSI Temporal Code 3.
- **Synchronization Triggers (Potter, Gentex®, Wheelock®, System Sensor®):** Used with QuadraSync to maintain synchronization of devices from different manufacturers.



Bulk Supply Options

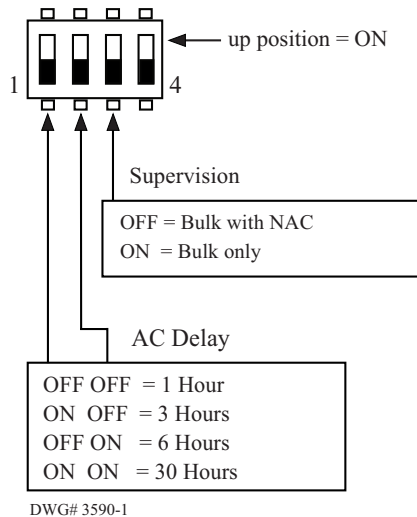
AC Report Delay:

Selects number of hours to delay before activating the general trouble relay in response to a low AC condition. Note that the Low AC relay is activated immediately.

Supervision:

This should always be in the OFF position to allow supervision of the wiring between the 24 VDC bulk supply board and the NAC control board.

NAC control board global options



Class A/B Selection

Each pair of NACs can be individually configured for class A/B operation. When class A is selected, the individual NAC options for the first NAC in the pair will apply. For example, if the circuit pair 1&2 is programmed for class A operation, then only the individual NAC option dip switch for circuit 1 will be used.

Door Holder AC Dropout delay

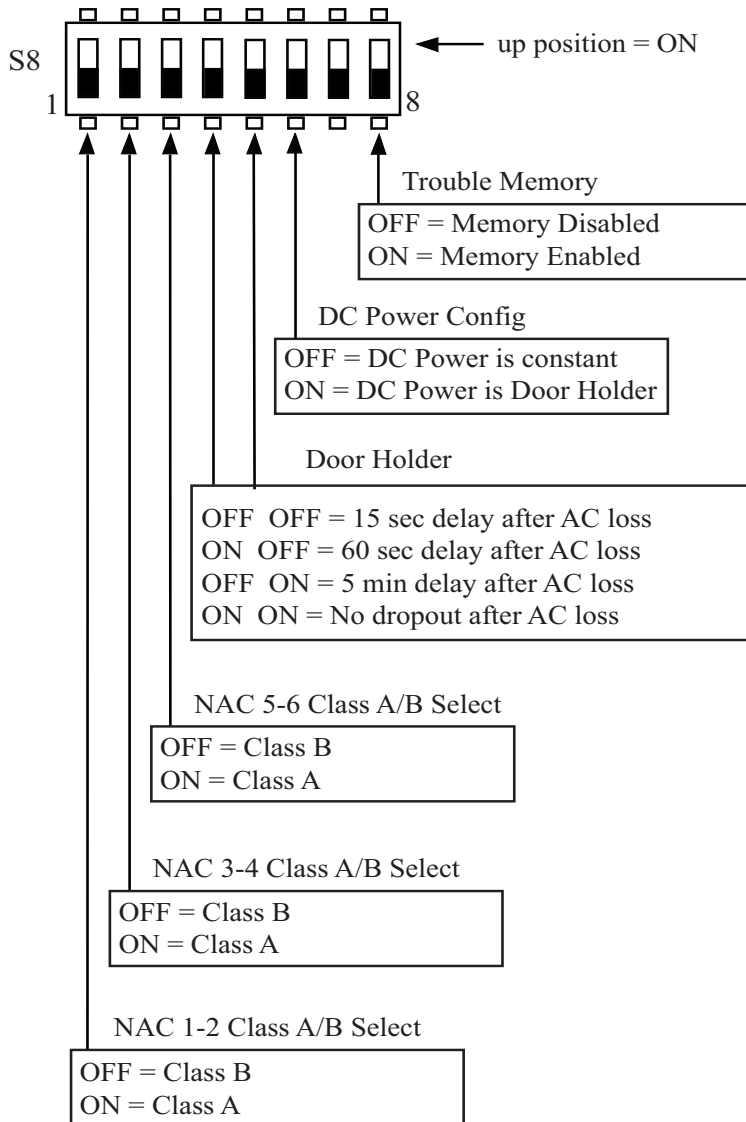
If the DC power output is used as door holder power, it can be configured to drop out in response to a low AC condition in order to minimize standby current. To minimize nuisance conditions a selectable AC dropout delay is provided. If “No doorholder dropout on AC Loss” is selected, door holder power will drop out in response to an alarm condition only.

DC Power Output is Door Holder

Specifies whether the DC power output will act as door holder power. If selected, the DC power will drop out in response to an alarm condition and optionally a low AC condition.

Trouble Memory Enabled

When enabled, any trouble conditions will be stored in memory after the condition has been corrected. Stored trouble conditions are indicated on the LED associated with the original trouble condition.



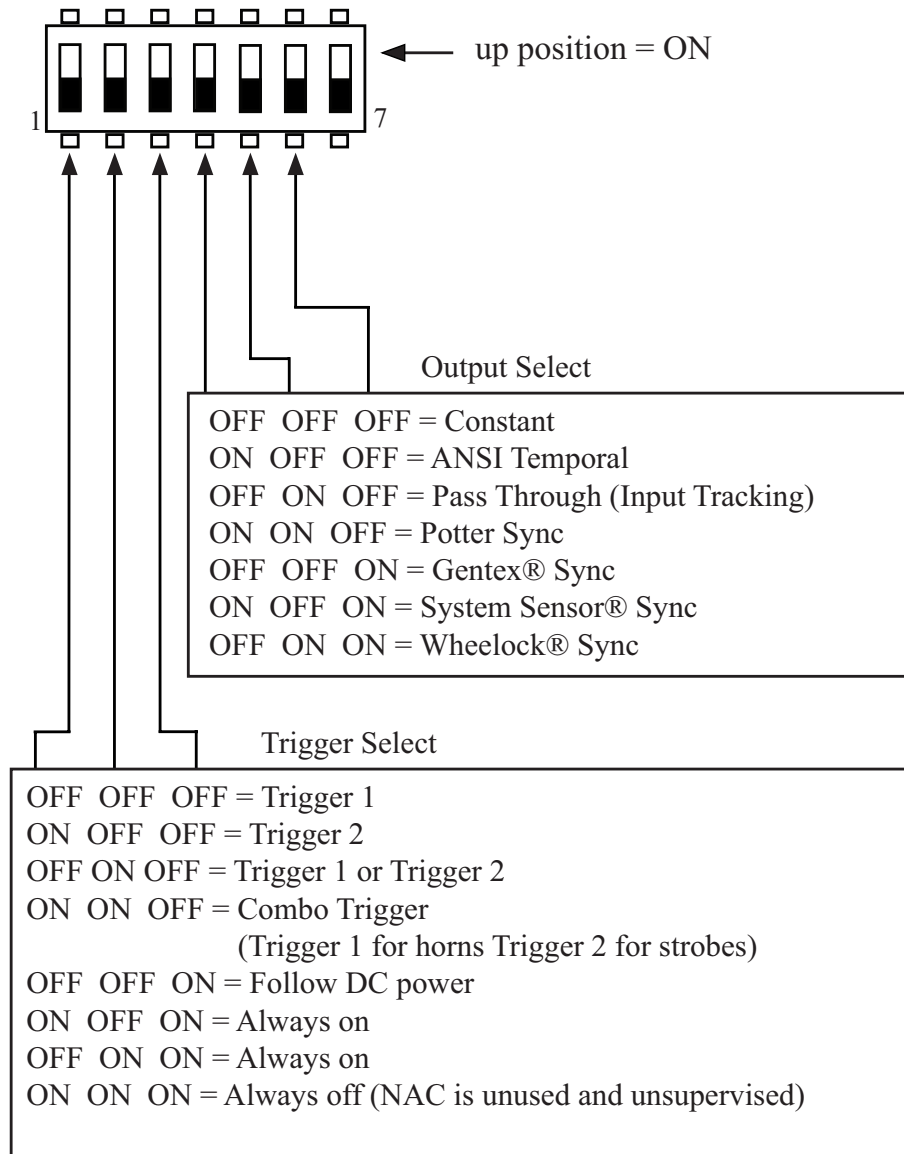
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Individual NAC Options

Conditions for activating each NAC are individually programmed.

Trigger Selection: specifies which trigger input(s) to respond to.

- Trigger 1: NAC will activate when Trigger 1 is activated
- Trigger 2: NAC will activate when Trigger 2 is activated
- Trigger 1 or Trigger 2: NAC will activate when either Trigger 1 or Trigger 2 is activated.
- Combo: Can be used to separately control horns & strobes when used with one of the supported synchronization protocols. If Trigger 1 is present, both horns and strobes will be activated. If only Trigger 2 is present, horns will be disabled, and strobes will be activated.
- Follow DC Power: When selected, the NAC will exactly follow the activation/deactivation of the DC power output. Can be used to create additional door-holder power circuits.
- Always ON: Used to create a constant ON power output.
- Unused: NAC circuit will be unused .
- Output Selection: Specifies the output pattern to be generated when the output is activated.



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Indicator LED Behavior

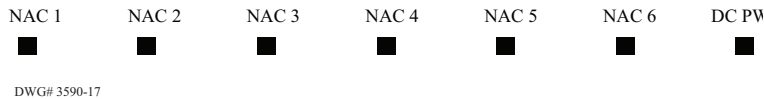
The NAC control board contains an indicator LED for each NAC circuit and a comm LED:

- NAC Led: Fast Flashing = NAC trouble (EOL missing, EOL shorted, or current limit condition)
- NAC Led: Solid or Pattern = NAC active. LED will follow pattern of NAC
- Comm: Used only to indicate supervision activity between bulk and control boards.

If the trouble memory option is enabled (Trouble Memory dip switch option on) the LEDs indicate if any previous trouble conditions are stored in memory.

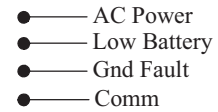
Example: Suppose Trouble Memory is enabled and a NAC circuit EOL is detected as missing. While the EOL is missing, the LED associated with the NAC will flash continuously to indicate the trouble. If the EOL is replaced and the trouble condition is no longer present, the LED will begin issuing the trouble memory flash. This flash indicates that a trouble existed previously, but is no longer present. The trouble memory indication consists of two short flashes issued once per second.

Clear/reset Trouble Memory by setting the Trouble Memory dip switch off, and then back on to enable the feature.



The bulk supply board contains four indicator LEDs:

- AC Power: ON = AC Present, OFF = AC not present).
- Low Battery: Fast Flashing = Low battery condition. ON = Battery Charger Failure
- Earth Ground Fault: Flashing = Earth fault detected.
- Comm: Used only to indicate supervision activity between bulk and control boards (about one per second).



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Battery Calculation Worksheet

Standby current for the AUL-NX10AB/R is 75 milli-amps.

Secondary Power Supply Requirements Table

Service Use	Standby Time	Alarm Time
NFPA 72 <ul style="list-style-type: none"> • Central Station (PPU) • Local 	24 hours 24 hours	5 minutes 5 minutes

Calculation Table

1	2	3	4	5	6
Module/Device	Quantity	Standby mA Per Unit	Total Standby Current	Alarm mA Per Unit	Total Alarm Current
AUL-NX10AB/R	1	75	75	75	75

	Total mA		Total mA
	Convert to A	x 0.001	Convert to A
(* Refer to Maximum allowable standby current)	Total A		Total A
	Multiply by hours	x ____	5 min/12 or 10 min/6
	Total Standby AH		÷ ____
			Total Alarm AH
			+ Total Standby AH
			Total AH
			Efficiency Factor
			÷ 0.85
			Required AH

Use a battery with a higher AH rating than Required AH

*** Maximum Allowable Standby Current (24-hour standby time)**

Battery Size	UL 24-hour	ULC 24-hour
7 AH	.213 Amps	.213 Amps
18 AH	.603 Amps	.603 Amps
33 AH	1.134 Amps	.603 Amps
55 AH	1.913 Amps	.603 Amps

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 - Rated at 3 amps max each
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 - Door-Holder Power
- Separate DC Power Output (3A)
- Two Trigger Inputs (Class A, Style Z or Class B, Style Y)
- Reference EOL terminals, allows 2K – 27K EOL value to be used
- QuadraSync panel wide synchronization of same or multiple brands.
- PassThru mode copies input signals to output (can be used in conjunction with QuadraSync)

Mounting Instructions

The standard mounting is a surface mount cabinet. The unit must be securely attached to a permanent partition using suitable fasteners. Five mounting holes are provided to accept ¼ inch diameter screws maximum. There are seven knockouts provided.

Operating Instructions

Alarm Condition

Notification Appliance Circuit:

Alarm devices operate in unison with the Trigger inputs from the main Fire Alarm Control Panel (FACP). When activated by the corresponding trigger input the associated Notification Appliance Circuit (NAC) will reverse polarity from a supervision state to the alarm state and supply power to the associated notification appliances until the trigger is removed. Each activated NAC will also power the L.E.D. associated with it, the L.E.D. will follow the steady or pulsing state of the NAC. The alarm-activated outputs are reset through the operation of the reset function of the Main FACP.

*Trouble Condition***NOTICE**

If the trouble memory feature has been enabled the L.E.D. will provide two brief pulses every second to indicate a trouble condition has occurred but is now restored. This can be useful when troubleshooting brief trouble conditions that come and go over a period of time.

Notification Appliance Circuit:

If a trouble occurs on a NAC the associated L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

DC Power Circuit:

If a trouble occurs on the DC Power output the DC Power L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

AC:

When the Power supply detects the A.C. power input has fallen below an acceptable level the AC Power L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type and after a programmed delay the Low AC relay will also activate. When the trouble condition has been restored the L.E.D. and trouble relays will return to their normal state. (See notice.)

Low Battery:

When the Power supply detects the Battery is no longer functioning properly the Low Battery L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

Ground Fault:

When the Power supply detects a ground Fault condition which indicates a short between the Power Supply ground and the Earth Ground circuits the Ground Fault L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

Communication Trouble:

If the Bulk Power Supply and Control Board loose communication with each other the Comm L.E.D. will flash at a 50% rate to indicate a trouble condition, the trouble relay will also activate during a trouble condition of this type. When the trouble condition has been restored the L.E.D. and trouble relay will return to their normal state. (See notice.)

*Standby Operation***Notification Appliance Circuit:**

When in standby operation the NAC will be in the reversed supervision polarity and the associated L.E.D. will be off.

Exception: When the NAC is programmed to be an DC Power Output the associated L.E.D. will be on during normal standby operation.

DC Power Circuit:

When in standby operation the DC Power Circuit will be on and the DC Power L.E.D. will be illuminated.

AC:

When in normal operation the AC Power L.E.D. will be on steady.

Low Battery:

When in normal operation the Low Battery L.E.D. will be off.

Ground Fault:

When in normal operation the Ground Fault L.E.D. will be off

Communication

When in normal operation the Comm L.E.D. will flash occasionally to indicate normal communication traffic is occurring.

Testing and Maintenance

System Testing should be performed periodically to insure proper operation.

Test the indicating circuits by initiating an alarm or test at the Main FACP.

Test for proper operation by actuating the notification appliance circuit the AUL-NX06AR is monitoring.

Standby batteries and AC transfer are tested by interrupting the AC power line while an alarm condition exists.

Battery Maintenance

The AUL-NX06AR should be tested at least once a year for proper operation as follows:

Output Voltage Test: Under normal load conditions, the DC Power output voltage should be checked for proper voltage level. Refer to the Power Supply Output Specifications Chart).

Battery Test: Under normal load conditions, check that the battery is fully charged. Check specific voltage both at the battery terminal and at the board terminals marked [+BAT-] to ensure there is no break in the battery connection wires.

Note: Maximum charging current is 1 amp.

Note: Expected battery life is 5 years; however it is recommended changing batteries in 4 years or less if needed.

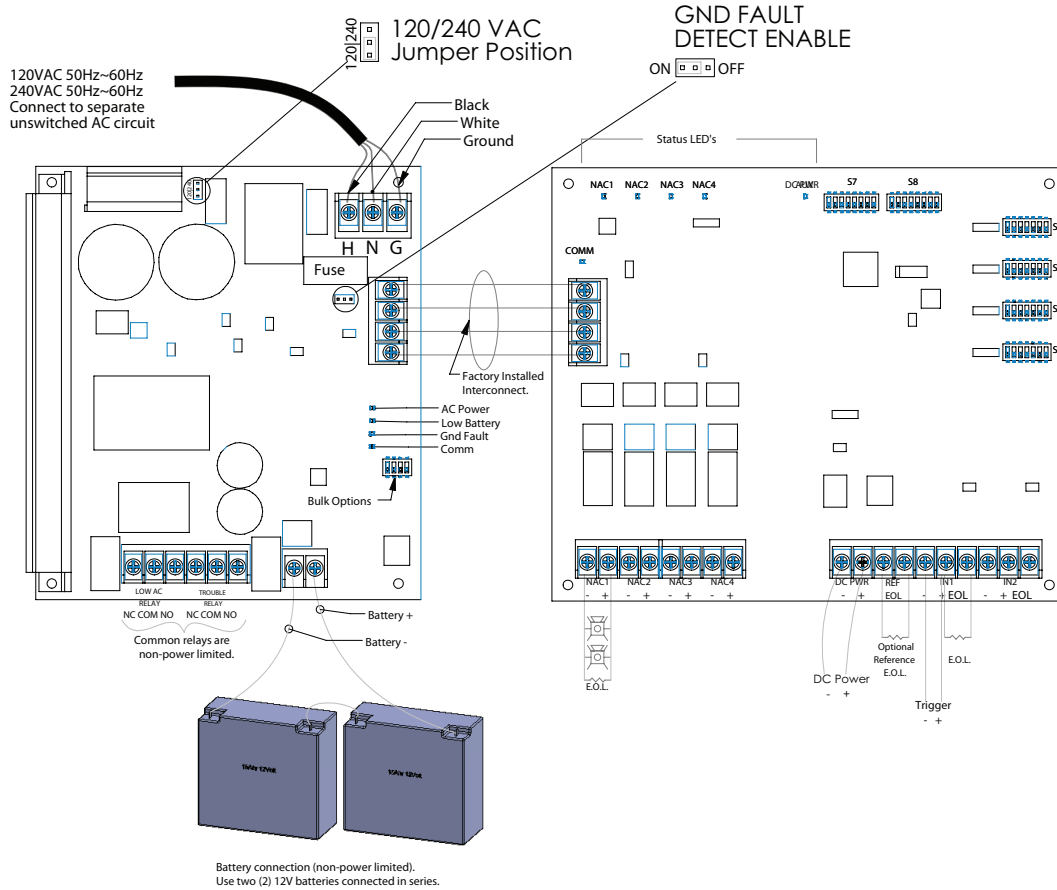
Electrical Operating Characteristics

Input Voltage	120 VAC @ 5.1 Amps or 240 VAC @ 2.5 Amps (Jumper selected) 50/60 Hz
Input Trigger	8 VDC to 33 VDC (15 ma) filtered or full wave rectified. Polarity reversal or continuous voltage
Output Voltage	24 VDC @ 6 Amps
Notification Outputs	24 VDC 3.0 Amps Maximum, Polarity Reversal
DC Power	3.0 Amps
Total System Current	AUL-NX06AR = 6 Amps (total system load from all output circuits must not exceed 6 amps total)

The system uses a "Sealed Lead Acid" or "Gel-Cell" type of battery with a capacity of from 7 to 55 amp-hours. Fuse must be replaced with same size and rating (8A-250VAC, Time Lag).

Please refer to Potter document 5403592 NAC Compatibility Document.

Notification Power Supply



Primary AC

120VAC 50Hz~60Hz, 5.1AMP
Min Low AC Detect 97VAC
240VAC 50~60Hz 2.5AMP
Min Low AC Detect 190VAC

Common Relays

3A @ 125VAC (Resistive)
3A @ 30VDC (Resistive)

Battery Charging

27.3VDC @ 1 A
Low Battery Detect @20.4VDC

Earth Fault to Any Terminal

0 Ohms

Notification Appliance Circuits 1-4

27.3VDC @3A Power Limited
Regulated
Synchronization supported on NAC 1-4

DC Power Circuit

20.4VDC - 27.3VDC @3A Power Limited
Special Application RSG-DH1224
Listed Door Holder

Fuse Specification

8A-250VAC Time-Lag

Note: Total current draw from NAC 1-4 and DC Power
must not exceed 6 amps.

F.C.C.

This device has been verified to comply with FCC Rules Part 15,
Class A Operation is subject to the following conditions:

1. This device may not cause radio interference.
2. This device must accept any interference received including
any that may cause undesired operation.

Requirements

System must be fully tested after installation.
Intended for indoor use in dry locations only.
Separation of power limited wiring from non-power limited
wiring must be at least 1/4".

For proper operation the voltage drop to the farthest connected
device must not exceed 3 volts. This can be calculated using the
following formula:

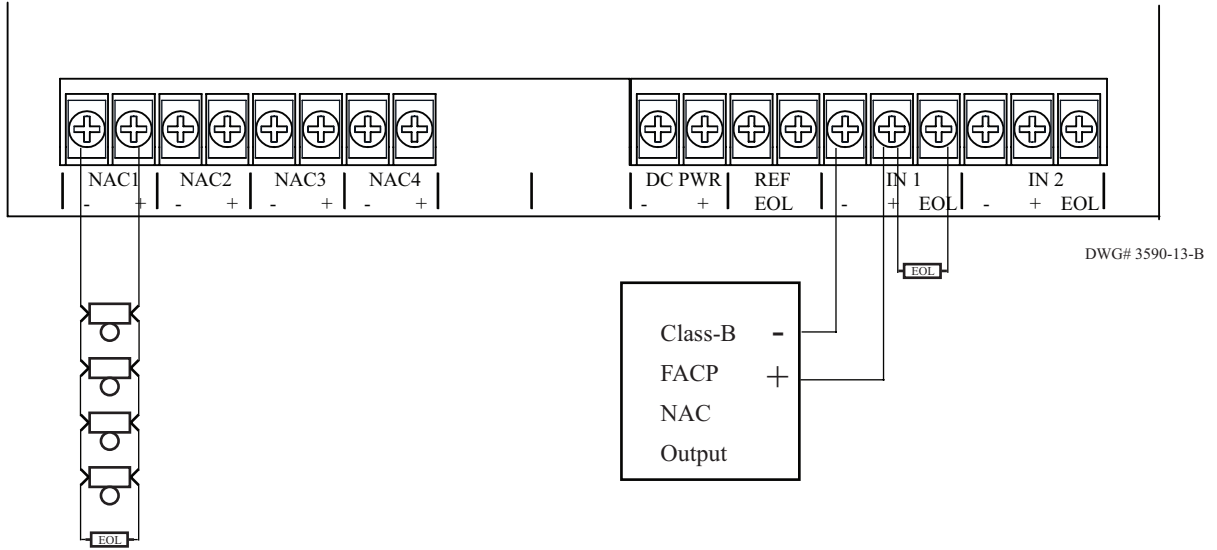
$$\frac{\text{(Alarm Current of Notification Appliances)}}{\text{x}} \times \text{(Wire Resistance)} < 3 \text{ volts}$$

Install in accordance with installation manual Part Number
5403590 Rev A, NFPA 70, and NFPA 72

Wiring Options

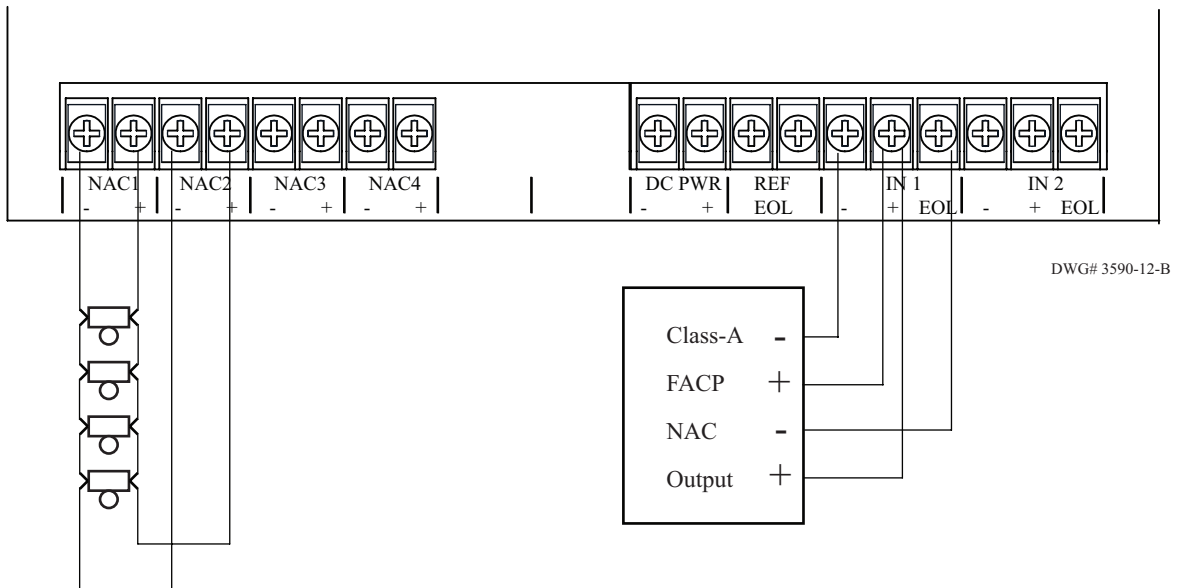
Class B Trigger and Class B Notification Circuit Trigger

Class B Style Y Trigger and Class B Style Y Notification Circuit Trigger inputs IN1 & IN2 can be connected to a Class B Style Y NAC trigger circuit as shown below. The AUL-NX06AR provides 4 Class B Style Y NAC circuits, each rated for 3 amps. The AUL-NX06AR provides 4 Class B Style Y NAC circuits, each rated at 3 amps. Each NAC circuit is individually selectable for Class A Style Z/Class B Style Y operation, refer to the Dip Switch Programming section for information on dip switch programming.



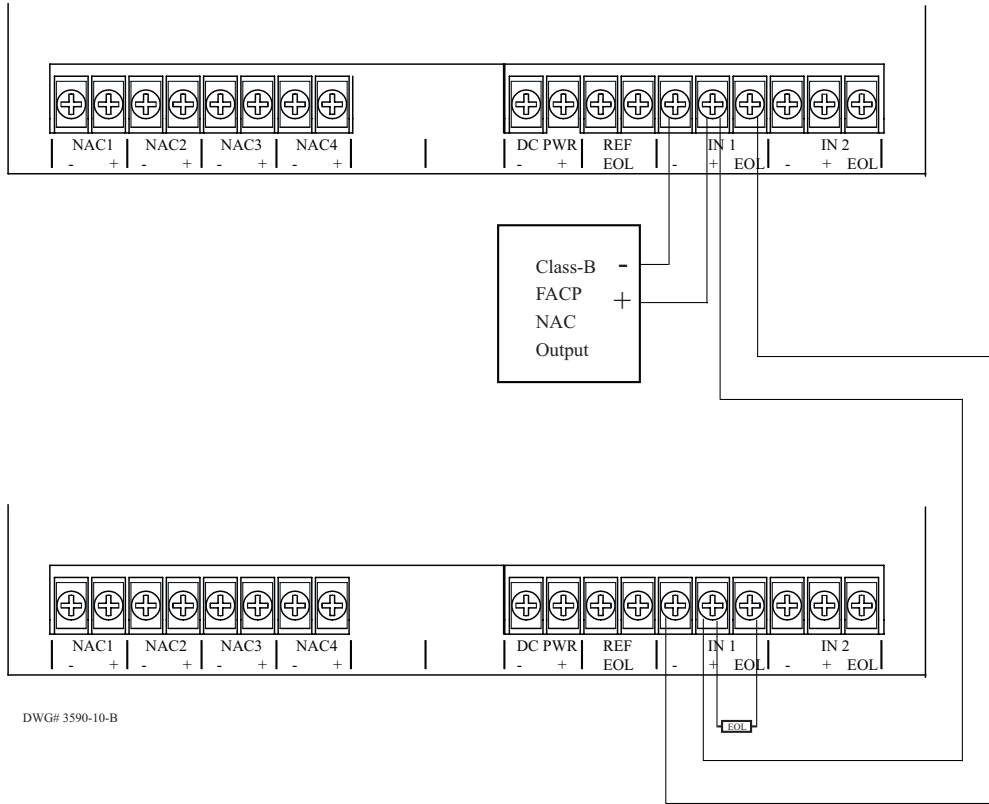
Class A Trigger and Class A Notification Circuit

Trigger inputs IN1 & IN2 can be connected to a class A NAC trigger circuit as shown below. The AUL-NX06AR provides 3 Class A Style Z NAC circuits, each rated for 3 amps. The AUL-NX06AR provides 4 Class B Style Y NAC circuits, each rated at 3 amps. Each NAC circuit is individually selectable for Class A Style Z/Class B Style Y operation, refer to the Dip Switch Programming section for information on dip switch programming.



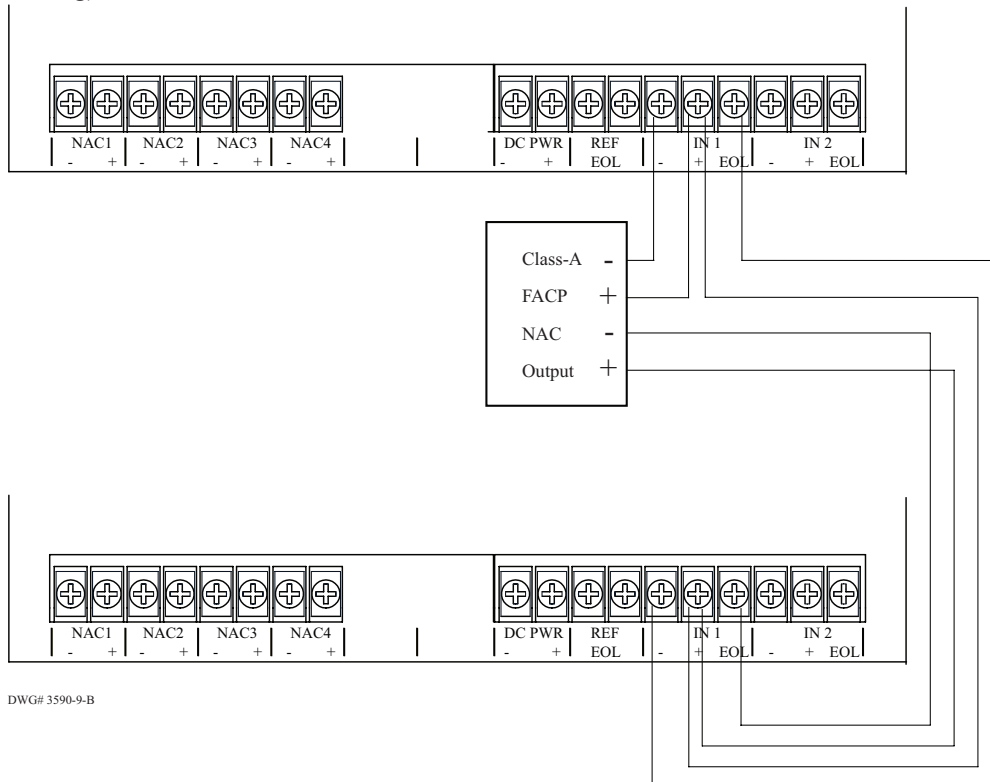
Class B - Multiple Supply Trigger

A single Class B Style Y trigger can be used to activate multiple supplies as shown below. The EOL resistor is located on the last supply in the chain. The minimum wire gauge between supplies is 18 AWG. A maximum wiring distance of 10,000 feet is allowed from the triggering FACP and the last supply in the chain.



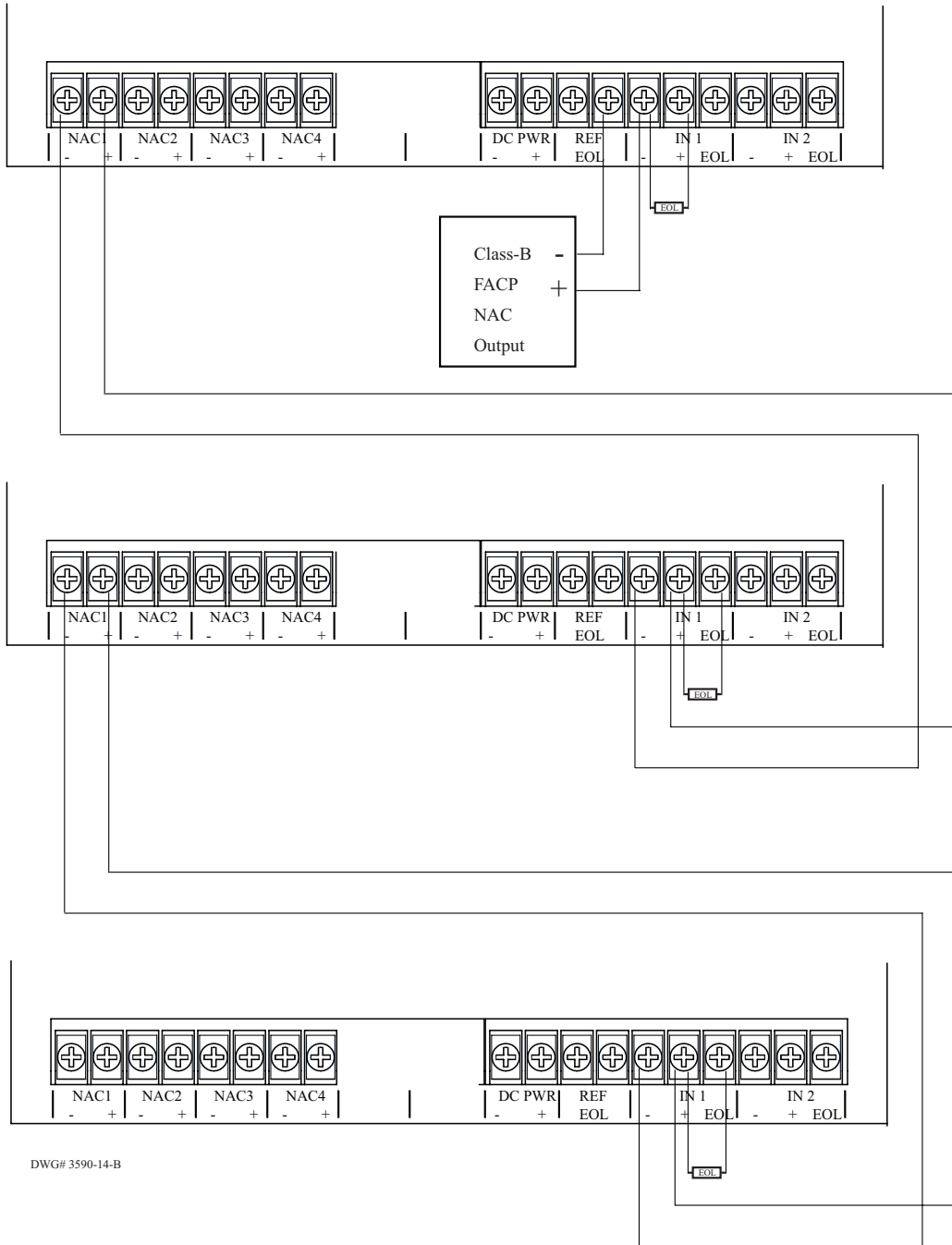
Class A - Multiple Supply Trigger

A single Class A Style Z trigger can be used to activate multiple supplies as shown below. The minimum wire gauge between supplies is 18 AWG. A total wiring distance of 10,000 feet is allowed from the triggering FACP to the last supply in the chain (including the return wiring).



Pass Thru Mode

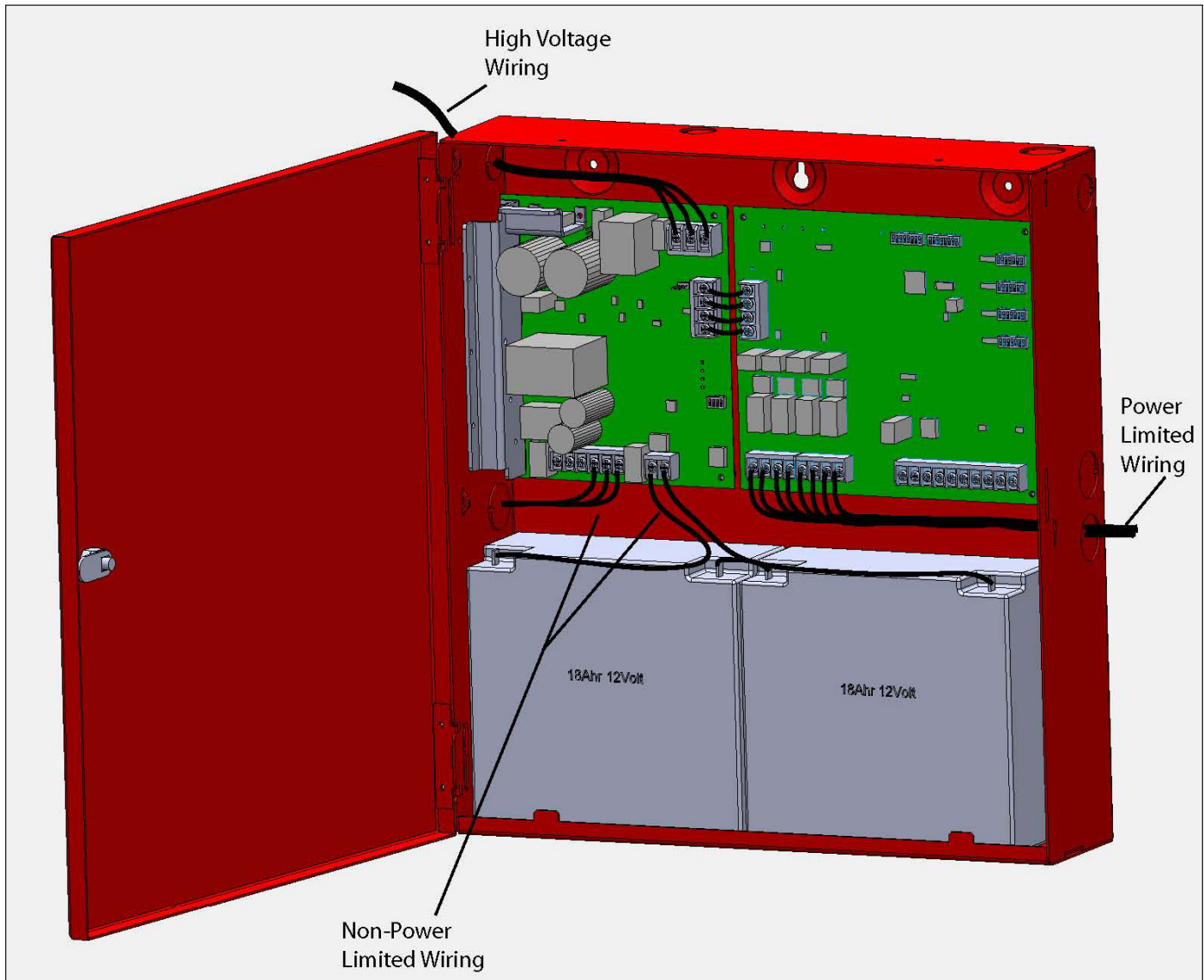
The NAC output of the AUL-NX06AR can be used to trigger additional supplies. Up to 3 supplies maximum can be configured in this manner. Full system synchronization is maintained. The minimum wire gauge between supplies is 18 AWG. A maximum wiring distance of 10,000 feet is allowed between each supply.



DWG# 3590-14-B

Wire Routing

A minimum of ¼ inch separation must be maintained between Power Limited, Non-Power Limited, and High Voltage wiring. See illustration for suggested wire routing



Reference EOL

The AUL-NX06AR uses a standard 5.1k EOL resistor (part number 3005013).

In retrofit applications where a value other than 5.1k is already in use, a reference EOL input is provided. Simply connect a matching EOL resistor to the reference EOL input. All NAC wiring will then be supervised based on this value. Any EOL value from 2.0k to 27k can be used.

If no reference EOL is connected, 5.1k is assumed.

Dip Switch Programming

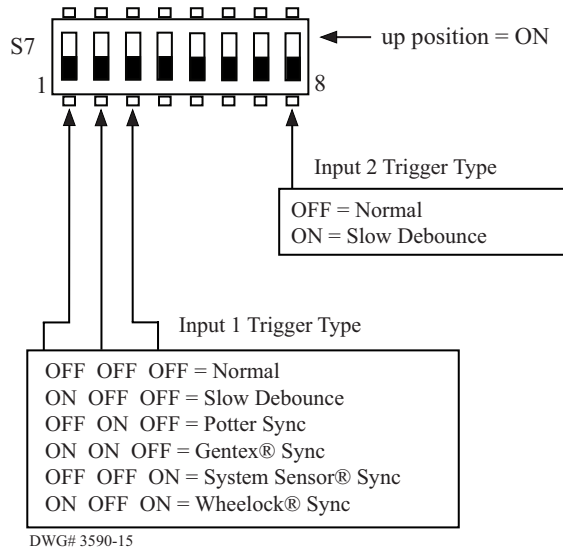
WARNING

Remove power before servicing or changing DIP switch programming selections

Input Trigger Type

(Selects the behavior of trigger inputs.)

- **Normal Trigger:** Trigger input is sampled at a high rate. Used for simple DC Power triggers, as well as for sync follow and pass-thru mode. A NAC configured as constant output will follow triggered and immediately activate.
- **Slow Debounce (Slow Trigger):** Allows a non-standard trigger signal to be used for activation. The slower response allows the outputs to remain active when the trigger signal is changing. This trigger will operate with ANSI Temporal Code 3.
- **Synchronization Triggers (Potter, Gentex®, Wheelock®, System Sensor®):** Used with QuadraSync to maintain synchronization of devices from different manufacturers.



Bulk Supply Options

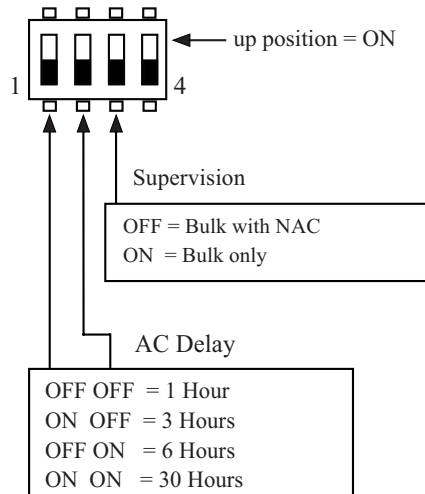
AC Report Delay:

Selects number of hours to delay before activating the general trouble relay in response to a low AC condition. Note that the Low AC relay is activated immediately.

Supervision:

This should always be in the OFF position to allow supervision of the wiring between the 24 VDC bulk supply board and the NAC control board.

NAC control board global options



Class A/B Selection

Each pair of NACs can be individually configured for class A/B operation. When class A is selected, the individual NAC options for the first NAC in the pair will apply. For example, if the circuit pair 1&2 is programmed for class A operation, then only the individual NAC option dip switch for circuit 1 will be used.

Door Holder AC Dropout delay

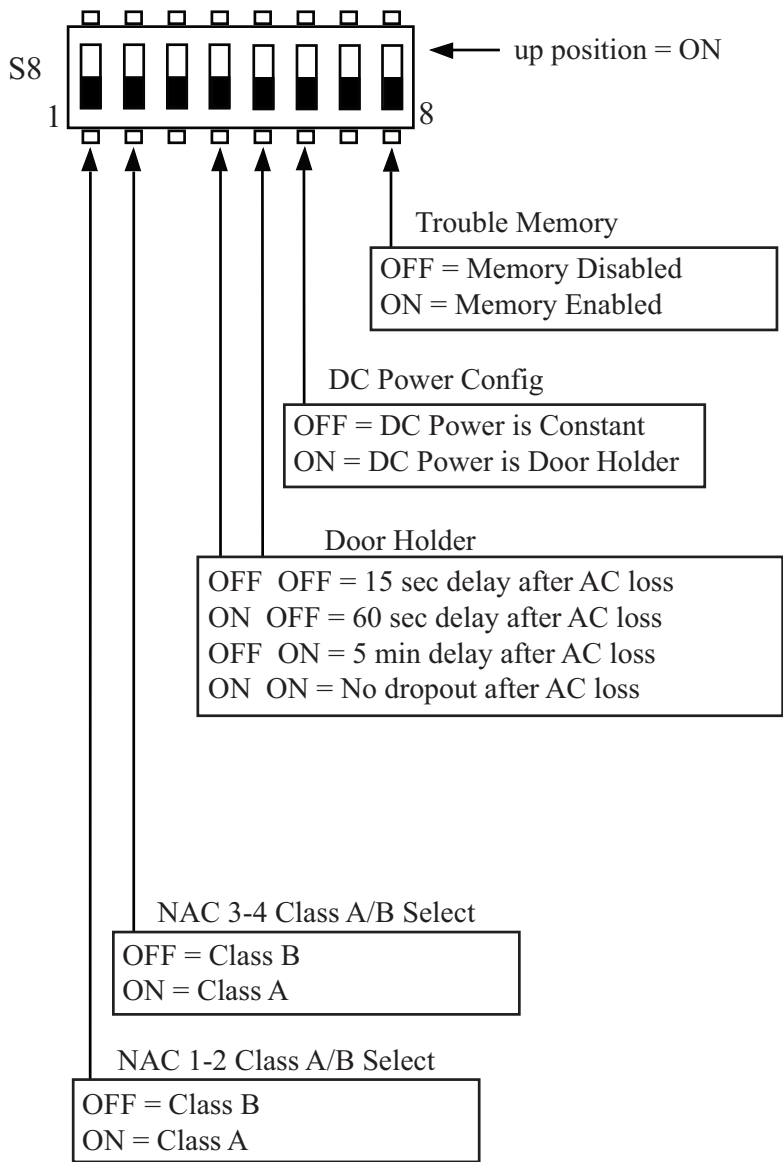
If the DC power output is used as door holder power, it can be configured to drop out in response to a low AC condition in order to minimize standby current. To minimize nuisance conditions a selectable AC dropout delay is provided. If “No doorholder dropout on AC Loss” is selected, door holder power will drop out in response to an alarm condition only.

DC Output is Door Holder

Specifies whether the DC power output will act as door holder power. If selected, the DC power will drop out in response to an alarm condition and optionally a low AC condition.

Trouble Memory Enabled

When enabled, any trouble conditions will be stored in memory after the condition has been corrected. Stored trouble conditions are indicated on the LED associated with the original trouble condition.



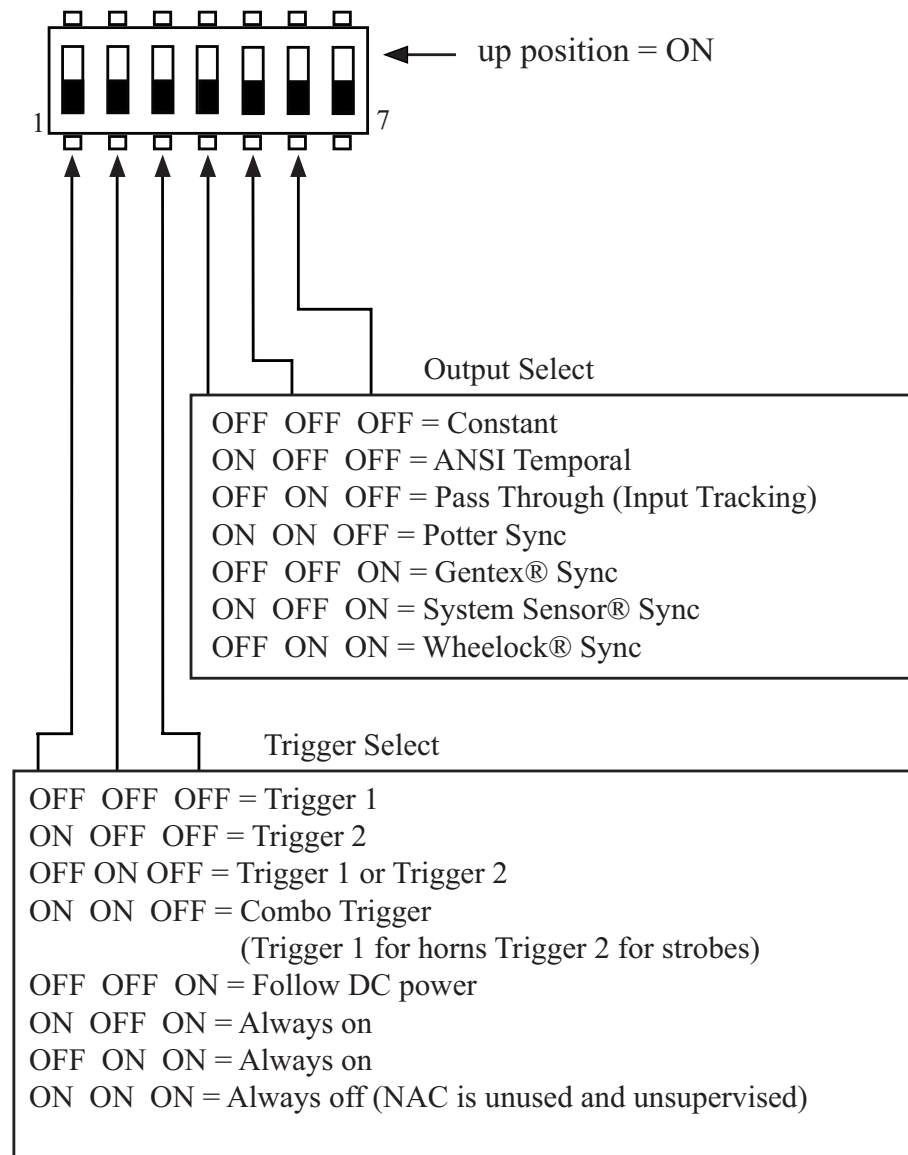
DWG# 3590-16-B

Individual NAC Options

Conditions for activating each NAC are individually programmed.

Trigger Selection: specifies which trigger input(s) to respond to.

- Trigger 1: NAC will activate when Trigger 1 is activated
- Trigger 2: NAC will activate when Trigger 2 is activated
- Trigger 1 or Trigger 2: NAC will activate when either Trigger 1 or Trigger 2 is activated.
- Combo: Can be used to separately control horns & strobes when used with one of the supported synchronization protocols. If Trigger 1 is present, both horns and strobes will be activated. If only Trigger 2 is present, horns will be disabled, and strobes will be activated.
- Follow DC Power: When selected, the NAC will exactly follow the activation/deactivation of the DC power output. Can be used to create additional door-holder power circuits.
- Always ON: Used to create a constant ON power output.
- Unused: NAC circuit will be unused .
- Output Selection: Specifies the output pattern to be generated when the output is activated.



DWG# 3590-11

Indicator LED Behavior

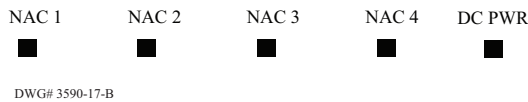
The NAC control board contains an indicator LED for each NAC circuit and a comm LED:

- NAC Led: Fast Flashing = NAC trouble (EOL missing, EOL shorted, or current limit condition)
- NAC Led: Solid or Pattern = NAC active. LED will follow pattern of NAC
- Comm: Used only to indicate supervision activity between bulk and control boards.

If the trouble memory option is enabled (Trouble Memory dip switch option on) the LEDs indicate if any previous trouble conditions are stored in memory.

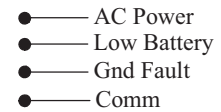
Example: Suppose Trouble Memory is enabled and a NAC circuit EOL is detected as missing. While the EOL is missing, the LED associated with the NAC will flash continuously to indicate the trouble. If the EOL is replaced and the trouble condition is no longer present, the LED will begin issuing the trouble memory flash. This flash indicates that a trouble existed previously, but is no longer present. The trouble memory indication consists of two short flashes issued once per second.

Clear/reset Trouble Memory by setting the Trouble Memory dip switch off, and then back on to enable the feature.



The bulk supply board contains four indicator LEDs:

- AC Power: ON = AC Present, OFF = AC not present).
- Low Battery: Fast Flashing = Low battery condition. ON = Battery Charger Failure
- Earth Ground Fault: Flashing = Earth fault detected.
- Comm: Used only to indicate supervision activity between bulk and control boards (about one per second).



DWG# 3590-18

Battery Calculation Worksheet

Standby current for the AUL-NX06AR is 75 milli-amps.

Secondary Power Supply Requirements Table

Service Use	Standby Time	Alarm Time
NFPA 72 <ul style="list-style-type: none"> • Central Station (PPU) • Local 	24 hours 24 hours	5 minutes 5 minutes

Calculation Table

1	2	3	4	5	6
Module/Device	Quantity	Standby mA Per Unit	Total Standby Current	Alarm mA Per Unit	Total Alarm Current
AUL-NX06AR	1	75	75	75	75
Total mA				Total mA	
Convert to A			x 0.001	Convert to A	
(* Refer to Maximum allowable standby current)Total A				Total A	
Multiply by hours			x ____	5 min/12 or 10 min/6	
Total Standby AH				Total Alarm AH	
				+ Total Standby AH	
				Total AH	
				Efficiency Factor	
				÷ 0.85	
				Required AH	

Use a battery with a higher AH rating than Required AH

*** Maximum Allowable Standby Current (24-hour standby time)**

Battery Size	UL 24-hour	ULC 24-hour
7 AH	.213 Amps	.213 Amps
18 AH	.603 Amps	.603 Amps
33 AH	1.134 Amps	.603 Amps
55 AH	1.913 Amps	.603 Amps

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