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N24 Installation Manual

LifeSafety Power®



FLEXPOWER®



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### Description

The N24 NAC Expander accessory provides up to four NAC outputs, controlled by one or two NAC inputs. Inputs and Outputs can be configured as Class A or Class B. Maximum output is 3A per output zone. The N24 is powered from a 100W or larger FPO power supply set for 24VDC. The N24 works either as a follower (passing along synchronization or audible coding) or generates its own synchronization or audible coding.

### Electrical Specifications

<b>Power Input</b>	Voltage	24VDC nominal $\pm 15\%$
	Current	12A maximum
	Standby Current	100mA maximum
	Alarm Current	250mA max. plus output load
<b>Zone Inputs</b>	Voltage	24VDC maximum
	Current	25mA maximum
<b>Zone Outputs</b>	Voltage	24VDC (Regulated 24V DC rating)
	Current	3A max per output Max. line impedance 1.5 Ohms
<p><b>⚠ Note that the total current draw from any buss must not exceed the capability of the power supply powering that buss</b></p>		
<b>Fuse</b>	30A ATM automotive style	

### Regulatory Information

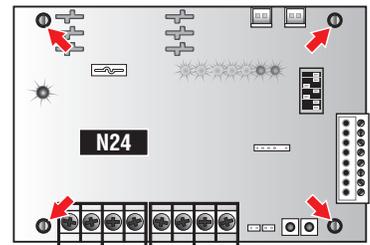
The equipment discussed within this manual has been tested to the following standards:

- UL864
- ULC S527
- CSFM Approved

### Mounting the N24 Power Distribution Module

Mounting of the board to an enclosure is via the four snap-in standoffs supplied.

1. Locate the appropriate mounting holes in the enclosure and snap the standoffs into the holes.
2. Align the board mounting holes with the standoffs (be sure the PC board is properly oriented) and snap the board onto the standoffs.



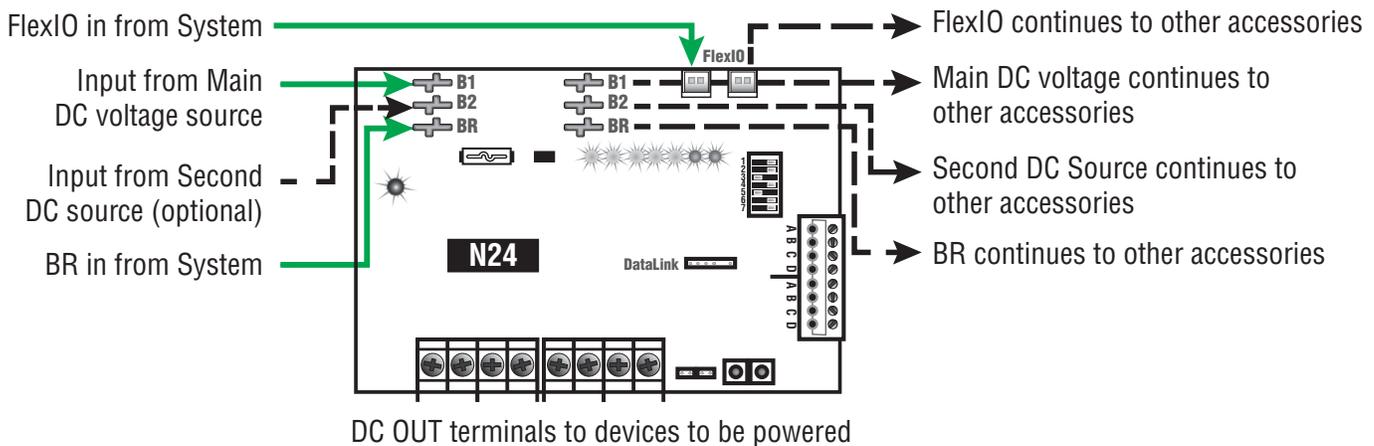
### Connecting the N24 Power Distribution Module

**⚠ Remove all AC and battery power from the FPO system before adding or replacing an N24 module.**



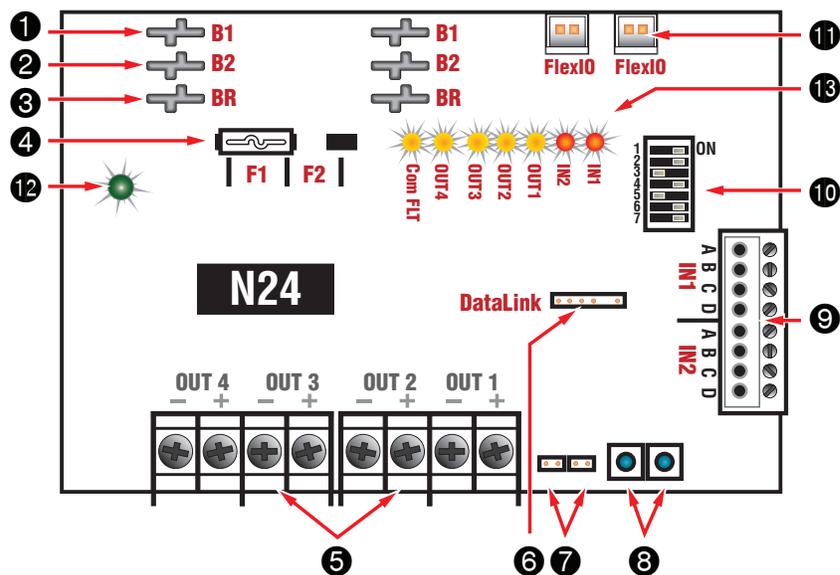
Each of the **B1**, **B2**, **BR**, and **FlexIO** busses has *two connectors*. These connectors may be used interchangeably.

For example: **FlexIO** from the power supply may be connected to either of the N24's FlexIO connectors, the Main DC voltage source may connect to either B1 terminal, etc.





## N24 – Accessory Overview



### 1 B1 Connectors (J1 & J2)

These fastons are for connection to the B1 voltage buss in the system. The voltage on the B1 buss comes from the DC1 faston of an FPO power supply. This voltage will supply the outputs of the N24 board when the input fuse is set in the “B1” position.

### 2 B2 Connectors (J5 & J6)

These fastons are for connection to the B2 voltage buss in the system. The voltage on the B2 buss comes from the DC1 faston of an FPO power supply in a dual voltage system. This voltage will supply the outputs of the N24 board when the input fuse is set in the “B2” position. If the N24 is being used in a single voltage system, these fastons can be left unused.

### 3 BR Connectors (J3 & J4)

The DC common buss in the system. All boards in the system must have their BR fastons wired together for proper operation (except for hybrid systems with both AC and DC output voltages).

### 4 Input Fuse (JP4, JP5, & JP6)

The input power source can be selected by placing the input fuse in the appropriate position. The B1 and B2 markings correspond with the B1 and B2 power inputs. See the Specifications section of this manual for fuse type and ratings.

### 5 NAC Output Terminals (TB1 & TB2)

The NAC outputs of the N24 board. The outputs are configurable as four class B outputs, two class A outputs, or one class A and 2 class B outputs. Output configuration is set by Dip Switches 3 and 4 in SW3 (See chart in item 10).

Any output configured as a Class B output requires a 4.7K ohm resistor to be used as an EOL at the last device on the loop. Outputs configured as Class A do not require an external EOL. (See output example wiring diagrams for details on Page 4.)

These terminals are supervised and can accept synchronized devices based on the settings of SW3.

These terminal strips are non-removable and accept wire sizes from AWG12-AWG22.

### 6 DataLink Connection

For use with a LifeSafety Power NL1 board. See the NL1 manual for more information.

### 7 FAI Bridge Jumpers (JP1 & JP2)

These jumpers the FAI buss of the FPO power supply connect to the input(s) of the N24 to allow activation of the N24 by a dry contact connection on the FAI input of the FPO power supply. In typical installations these jumpers are left OFF.

### 8 Test Buttons (SW1 & SW2)

These buttons allow testing of the N24 and its output circuits without the need to alarm the entire FACP. Press SW1 to simulate activation of Input 1 and press SW2 to simulate activation of Input 2.

## N24 – Accessory Overview

### 9 Zone Inputs (TB3)

The inputs for activating the outputs of the N24 board. The usage of these inputs varies based on the settings of the DIP switches – see DIP Switch settings for more information (item 10).

- INxA EOL (Class B) or Return + (Class A)
- INxB EOL (Class B) or Return – (Class A)
- INxC Input -
- INxD Input +

(See input example wiring diagrams for details on Page 4.)

These terminals are not supervised by the N24 board - supervision of these terminals and the entire input loop is performed by the FACP.

These terminals are removable and accept wire sizes from AWG14-AWG22.

### 10 Configuration DIP Switches (SW3)

These switches configure the operation of the N24 board.

Note that Switches 1 and 2 **MUST** be ON when using any of the Output Synchronization Protocols.

Refer to the chart below for settings:

	Switch Number						
	1	2	3	4	5	6	7
<b>Input Configuration</b>							
IN1 controls all outputs	Off	Off					
IN2 not used	Off	Off					
IN1 controls all outputs	Off	On					
IN2 controls all outputs	On	Off					
IN1 controls OUT1 and OUT2	On	Off					
IN2 controls OUT3 and OUT4	On	On					
<i>Use this setting when using an Output Synchronization Protocol setting</i>							
IN1 controls strobes	On	On					
IN2 controls horns (only when IN1 is also active)	On	On					
<b>Output Wiring Configuration</b>							
Four Class B Outputs (OUT1, 2, 3, 4)			Off	Off			
Two Class A Outputs (OUT1-2 & OUT3-4)			Off	On			
Two Class B (OUT1, 2) and One Class A Output (OUT3-4)			On	Off			
One Class A Output (OUT1-2) and Two Class B Outputs (OUT3,4)			On	On			
<b>Output Protocol Configuration</b>							
Steady (follower mode) on OUT1 and 2					Off	Off	Off
ANSI Temporal Code on OUT3 and 4					Off	Off	On
ANSI Temporal Code on OUT1, 2, 3, 4					Off	On	On
Gentex Synchronization Protocol					Off	On	On
Wheelock Synchronization Protocol					On	Off	On
AMSECO/Potter Synchronization Protocol					On	On	Off

### 11 FlexIO Connection

This connector supplies the fault and FAI status between the FPO power supply system and the N24 board. The appropriate cable is supplied with the N24 board. See the FPO power supply manual for more information.

### 12 Input Power LED

This LED indicates that power is available at the input of the N24 board. If this LED is not lit, check the Input Fuse of the N24 and voltage at the B1/B2 power input.

### 13 Status LEDs

These LEDs indicate the status of the N24 board as follows:

**IN1 / IN2** Light RED when a valid signal is received at the corresponding input terminals. These LEDs may flash if a coded input is applied to the respective input.

**OUT1 - OUT4** Light YELLOW if a fault is detected on the corresponding output terminals. Faults detected include open, short, or overcurrent.

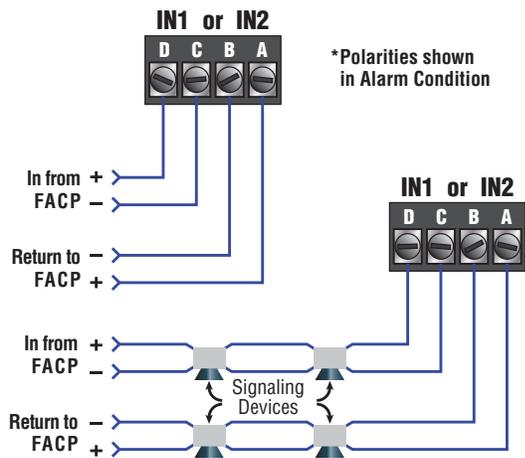
**COMFLT** Lights YELLOW if any fault condition is detected by the N24 board. Faults detected include open or shorted outputs, output overcurrent, and invalid Dip switch configurations.



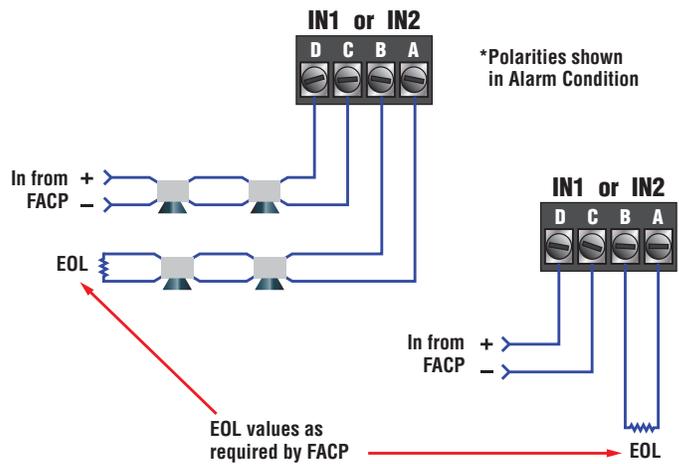
# N24 Input and Outputs

## N24 Inputs

### Class A

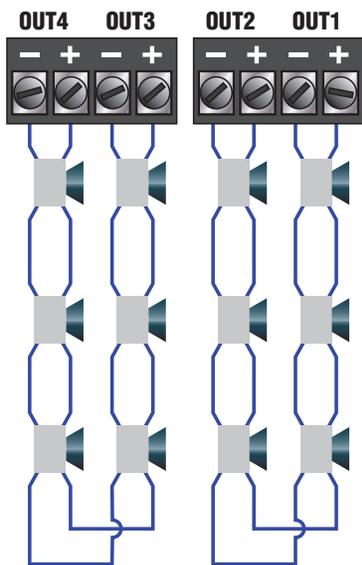


### Class B

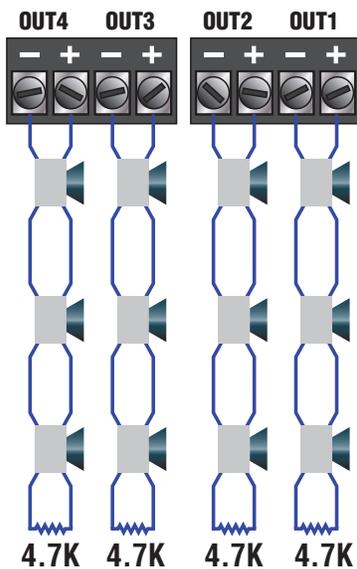


## N24 Outputs

### Class A



### Class B



## N24 Troubleshooting Chart

Symptom	Possible Problem	Information / Possible Solution
Green Input Power LED on the N24 is not lit	Wiring missing or incorrect	<ul style="list-style-type: none"> <li>Verify proper wiring between the FPO power supply and the N24 board</li> <li>Verify that the Input Fuse is placed in the proper position for the Buss being used</li> </ul>
	Input Fuse ruptured, missing, or placed incorrectly	<ul style="list-style-type: none"> <li>Verify that the fuse is intact and placed properly as described in this manual</li> </ul>
	No voltage from FPO power supply system	<ul style="list-style-type: none"> <li>Verify that voltage is available on the Buss being used to power the N24 board</li> <li>See the FPO Power Supply manual for more information</li> </ul>
	Internal problem	<ul style="list-style-type: none"> <li>Contact LifeSafety Power</li> </ul>
Yellow COMFLT LED Lit on the N24 Board	Output wiring problem	<ul style="list-style-type: none"> <li>An Output Wiring problem will also light a Yellow "OUTx" LED for the output with the problem</li> <li>Verify output wiring is as described in this manual</li> <li>Verify that the correct EOL is installed on Class B Outputs - for Class A outputs, verify that the output loop returns to the N24 board properly</li> <li>Verify that no shorts, opens, or high impedances are present on the output loop</li> </ul>
	Invalid configuration	<ul style="list-style-type: none"> <li>Verify that the configuration DIP Switches are set in a valid configuration as described in this manual</li> </ul>
	Internal problem	<ul style="list-style-type: none"> <li>Contact LifeSafety Power</li> </ul>
Yellow OUTx LED lit on the N24 Board		<ul style="list-style-type: none"> <li>Verify output wiring is as described in this manual</li> <li>Verify that the correct EOL is installed on Class B Outputs - for Class A outputs, verify that the output loop returns to the N24 board properly</li> <li>Verify that no shorts, opens, or high impedances are present on the output loop</li> </ul>
	Internal problem	<ul style="list-style-type: none"> <li>Contact LifeSafety Power</li> </ul>
Notification Appliances not Synchronized when N24 is in alarm	Switch setting incorrect	<ul style="list-style-type: none"> <li>If synchronization is to be provided by the N24, verify that the Configuration DIP Switches are set for the proper synchronization protocol. If synchronization is generated by the FACP or sync module installed before the N24, the N24 must be set for "Follower Mode". This also applies to any N24 installed after another N24 which is generating synchronization</li> </ul>
Notification Appliances not activating when N24 is in alarm	Output wiring problem	<ul style="list-style-type: none"> <li>Verify output wiring is as described in this manual</li> <li>Verify that no shorts, opens, or high impedances are present on the output loop</li> <li>Verify that the polarity of the Notification Appliances is correct with respect to the N24's output terminals (polarity shown on the N24 is in the alarm condition)</li> </ul>
	Input wiring problem	<ul style="list-style-type: none"> <li>Verify that the input wiring is as described in this manual</li> <li>Verify that the polarity of the N24's input is correct with respect to the FACP</li> <li>Verify that no shorts, opens, or high impedances are present on the input loop</li> </ul>
	Output overcurrent condition	<ul style="list-style-type: none"> <li>Verify that the total load on the output zone does not exceed 3A</li> <li>Verify that no shorts are present on the output loop</li> </ul>



## Power-Up and Basic System Verification Checklist

- 1. Ensure proper configuration of all jumpers and switches.
- 2. Apply AC power to the FPO power supply and connect the battery set. Verify that no yellow LEDs are lit on the FPO power supply.
- 3. Ensure the Green "Input Power" LED on the N24 board is lit and that no yellow fault LEDs or red Zone Input LEDs are lit.
- 4. Remove one wire from output zone 1 and verify that the corresponding output fault LED lights. Verify that the FACP is in fault. Reconnect the wire and verify that the fault LED extinguishes. Place a short circuit across the output and verify that the corresponding output fault LED lights. Remove the short and verify that the fault LED extinguishes. Repeat for all output zones.
- 5. Press each "Test" button on the N24 and verify that the devices connected to the corresponding output are activated.

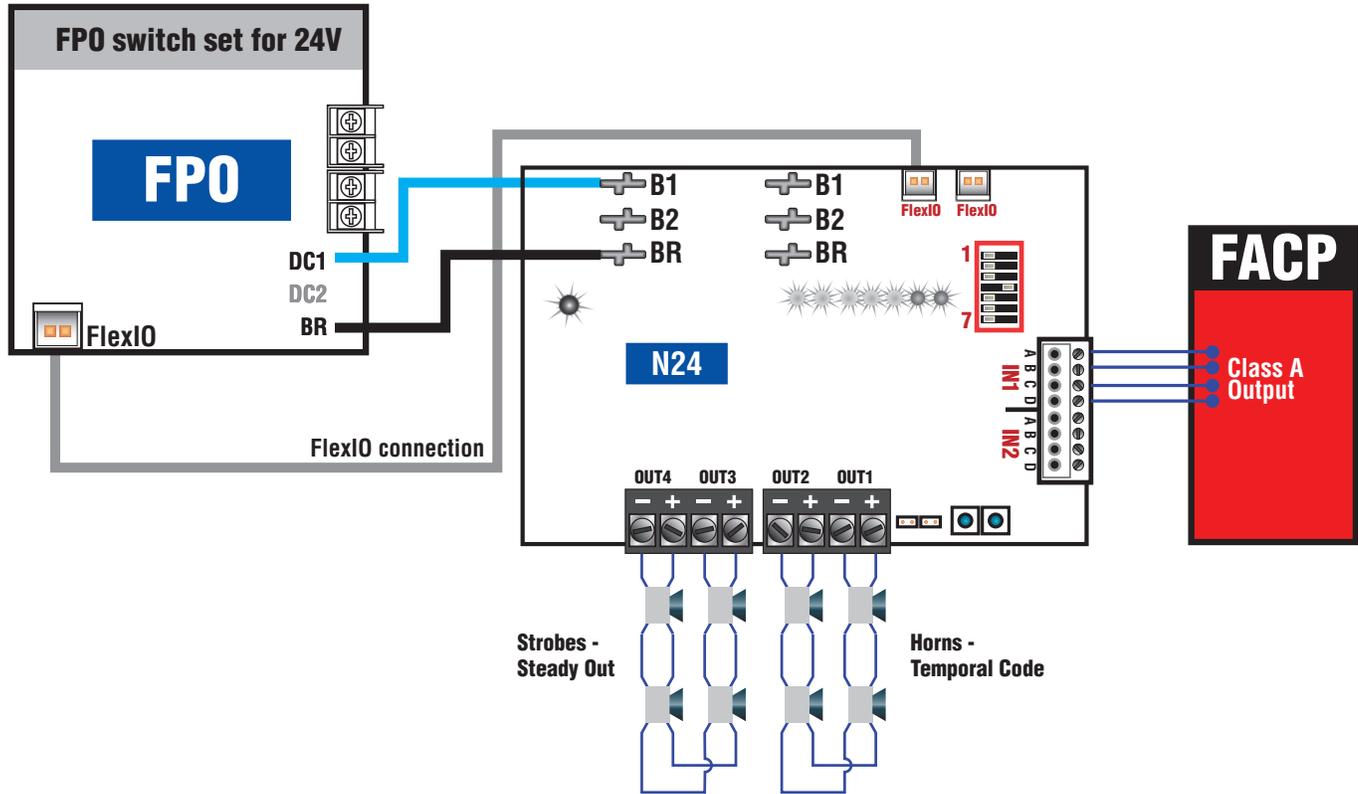
## Maintenance Instructions

The following are the maintenance instructions for the FPO Series power supply system.

- Disconnect AC power prior to servicing
- Verify that there are no fault conditions displayed on any of the yellow fault LEDs as indicated in this instruction manual
- Verify the integrity of all fuses and replace as necessary using the fuse ratings supplied in the Specifications section of this manual
- The battery set should be checked and replaced if found to be defective or if more than 4 years old (or as required by local code)
- Verify that all output voltages are within range as specified in the Specifications section of this document

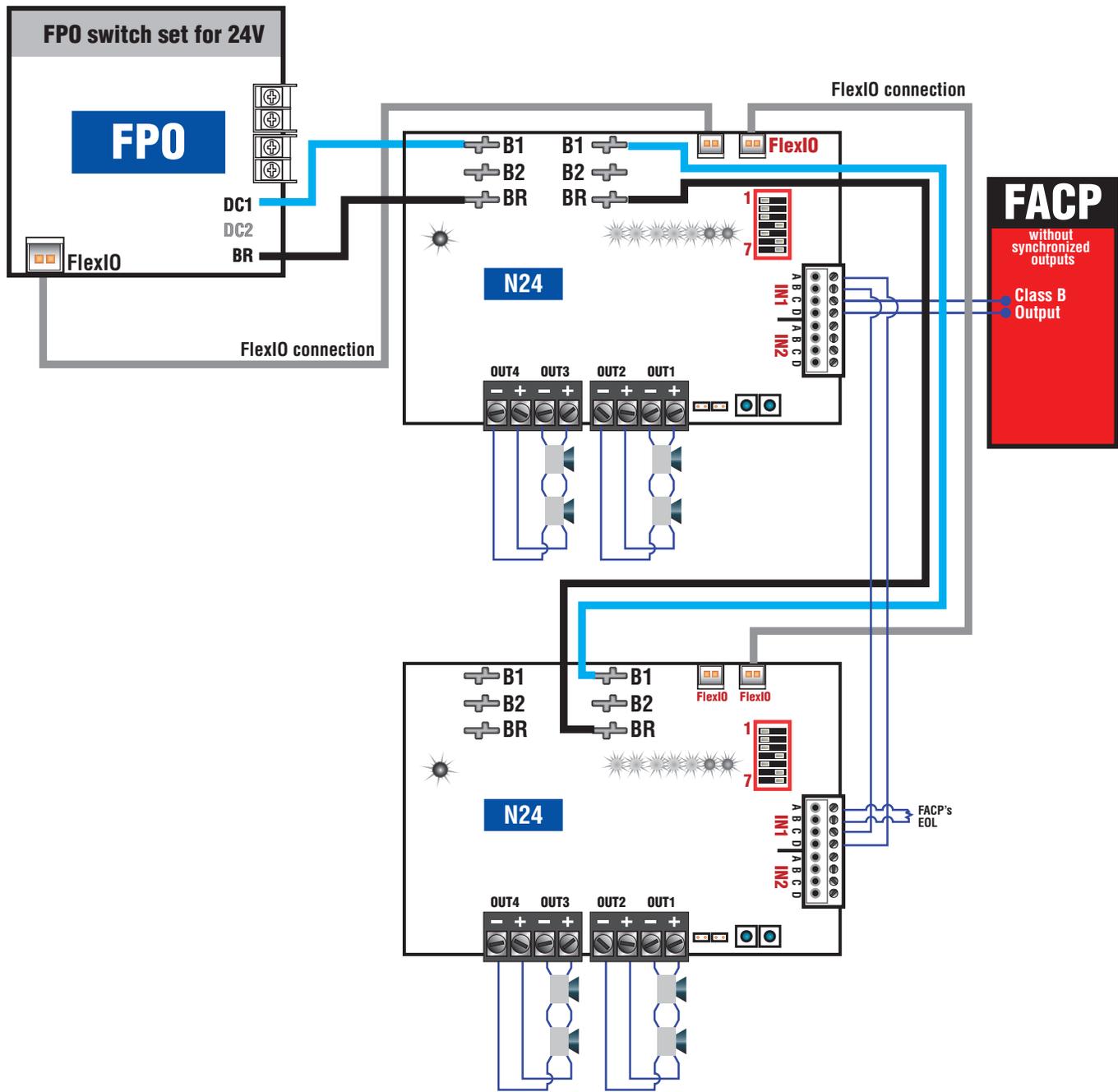
### One Class A Input, Two Class A Outputs, Strobes & Temporal Horns

The following are the maintenance instructions for the FPO Series power supply system.



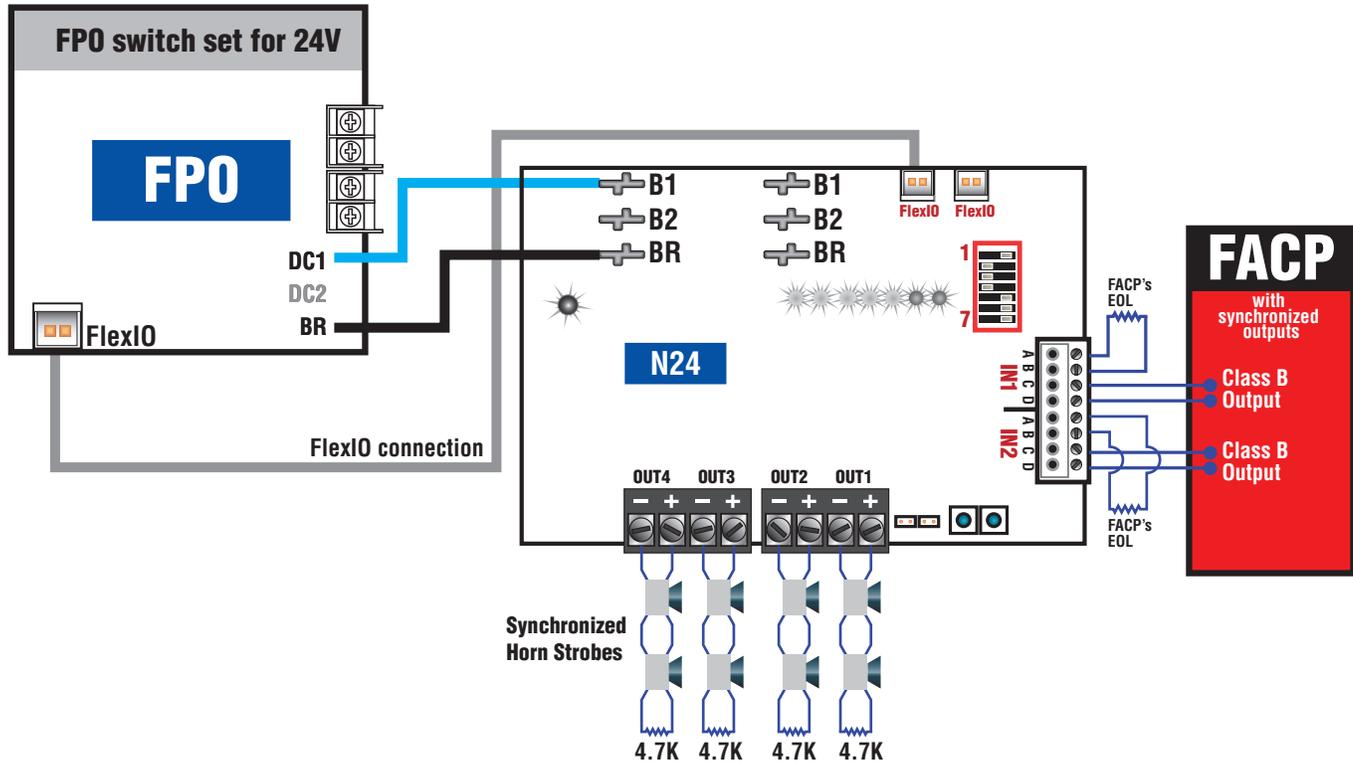


# One Class B Input, Four Class A Gentex Synchronized Outputs



**Two Class B Synchronized Inputs, Four Class B Synchronized Outputs (Follower Mode)**

Note: The N24 outputs will repeat the synchronization pulses from the FACP



**IMPORTANT**

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