



Expansion Power Supply (EPS) Installation Instructions

Introduction

The 4008/4006-9801 Expansion Power Supply (EPS) is an option module that installs into the main fire alarm control panel. The EPS provides two additional NACs, and filtered/regulated 24 VDC, alarm power.

The 3 A alarm power may be split between the two NACs and the 0.5 A auxiliary 24 VDC power tap. Refer to the NAC ratings section of these instructions for circuit loading restrictions. The expansion power supply is mounted to the right of the main system board (MSB) at the bottom of the chassis, and is connected by the installer via three separate harnesses.

One EPS per system is allowed.

Figure 1, below, is an illustration of the EPS assembly.

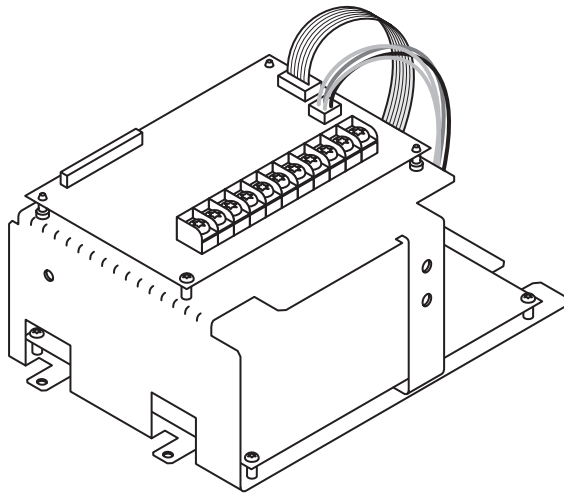


Figure 1 The Expansion Power Supply

The EPS assembly is shipped with the following:

- EPS assembly (bracket with two PCBs)
- Screws/washers (441-002; qty: 2)
- AC harness (734-179): black/white leads
- Battery harness (734-180): red/black leads
- Data flex harness (166-438): flat cable

Note: This document contains instructions on installing the EPS into the fire alarm control panel. For programming instructions, refer to the *Front Panel Installing, Operating, and Programming Instructions* (579-704 for 4006, or 579-716 for 4008).

Specifications

General	
System Compatibility	4006/4008 Fire Alarm System
Operating Temperature	0 to 49 degrees C 32 to 120 degrees F
Operating Humidity	Up to 93% relative humidity (non condensing)
Mounting	
Dimensions	Width = 4.38 in (11.2 cm) Height = 7 in (17.8 cm) Depth = 4 in (10.2 cm)
Power	
Current Rating	2 A per NAC; 3 A alarm power @ 24 VDC
AC Input Voltage	120 V, 60Hz, 2 A max 240 V, 50 Hz, 1.5 A max

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Mounting

Mount the EPS to the main annunciation cabinet as shown in the figure below

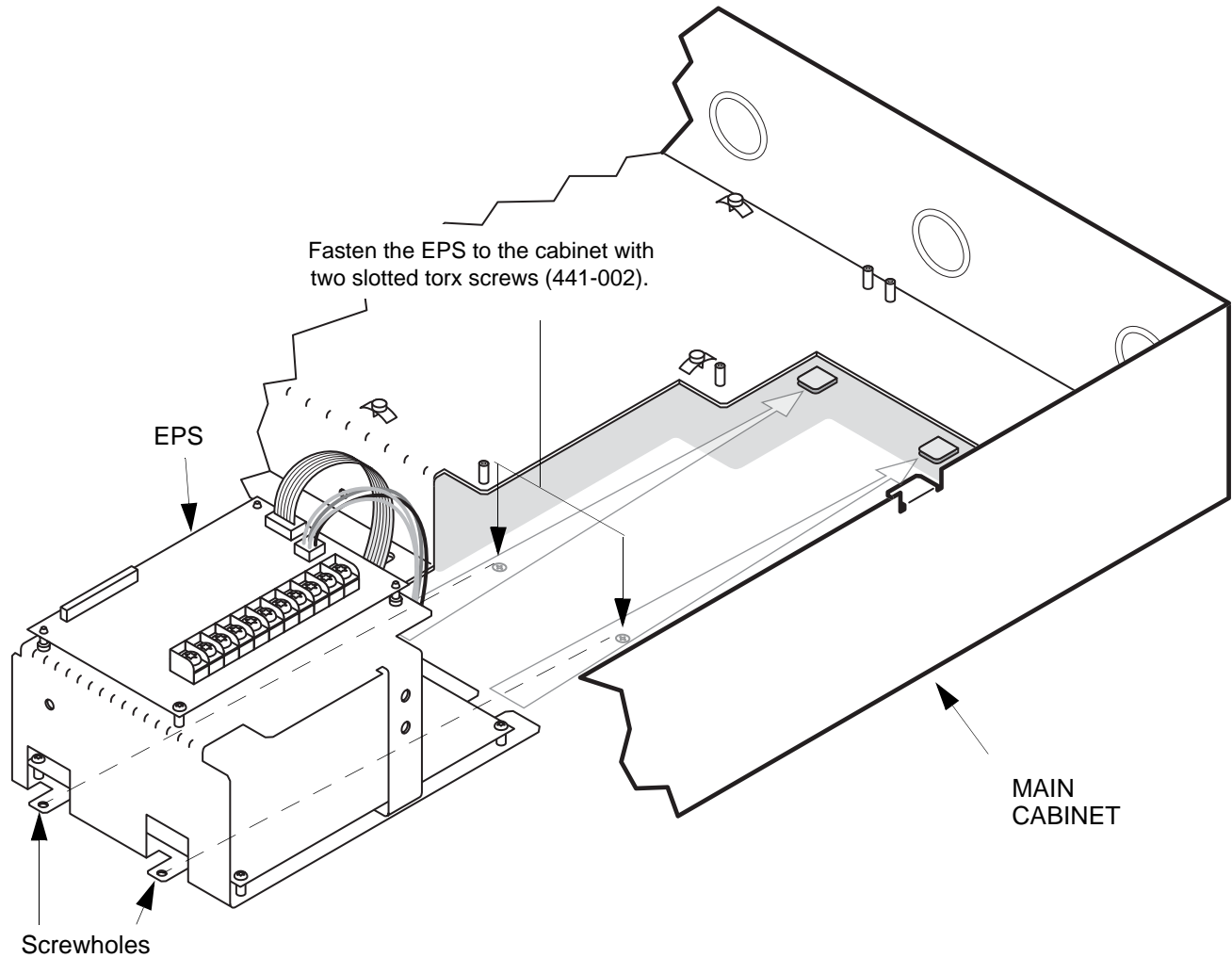


Figure 2 Mounting the EPS

Panel interconnections

Use the following steps and the figure on the next page to connect the EPS to the Main System Board (MSB).

1. Remove AC and battery power from the panel. **You will be wiring to the AC line.** Be sure the circuit breaker is OFF and tagged.
2. You have the option of removing the Depleted Battery Cutout jumper (**R76**) on the EPS. Removing the jumper has the following effects:
 - The system will NOT initiate an alarm if the first alarm occurs after the depleted battery state has been detected.
 - The system will shut down 60 seconds after the depleted battery condition is detected.

Remove the jumper if required. Note that there is a corresponding option in the programmer that must be set; see the *Front Panel Installing, Operating, and Programming Instructions* (579-704 for 4006, 579-716 for 4008).

3. Connect the data flex harness (166-438) from **J1** on the EPS to
 - **J8** on the 4006-9801
 - **J3** on the 4008-9801
4. The AC harness (734-179) is used to connect AC power from the MSB to the EPS.
 - AC source is 120 VAC, 60 Hz (single phase) **or** 240 VAC (nominal), 50 Hz (single phase).
 - Strip 3/8" insulation from the black and white wires.
 - Connect the black wire lead to the LEFT MSB AC power terminal (**TB4**) marked "LINE."
 - Connect the white wire lead to the RIGHT MSB AC power terminal (**TB4**) marked "NEUTRAL."
 - Connect the snap-on AC harness connector to **P6** on the EPS.
5. Connect the battery harness (734-180) from **P3** on the EPS to the battery connector on the MSB (**P13** on the 4006; **P14** on the 4008). Do not connect the harness to the batteries until you are ready to power up the system. Connectors should be aligned such that:
 - On P13 or P14 on the MSB, the red wire is on the left and the black wire is on the right.
 - On P3 on the EPS, the red wire is on the bottom and the black wire is on top (closer to R76; see the figure on the next page).

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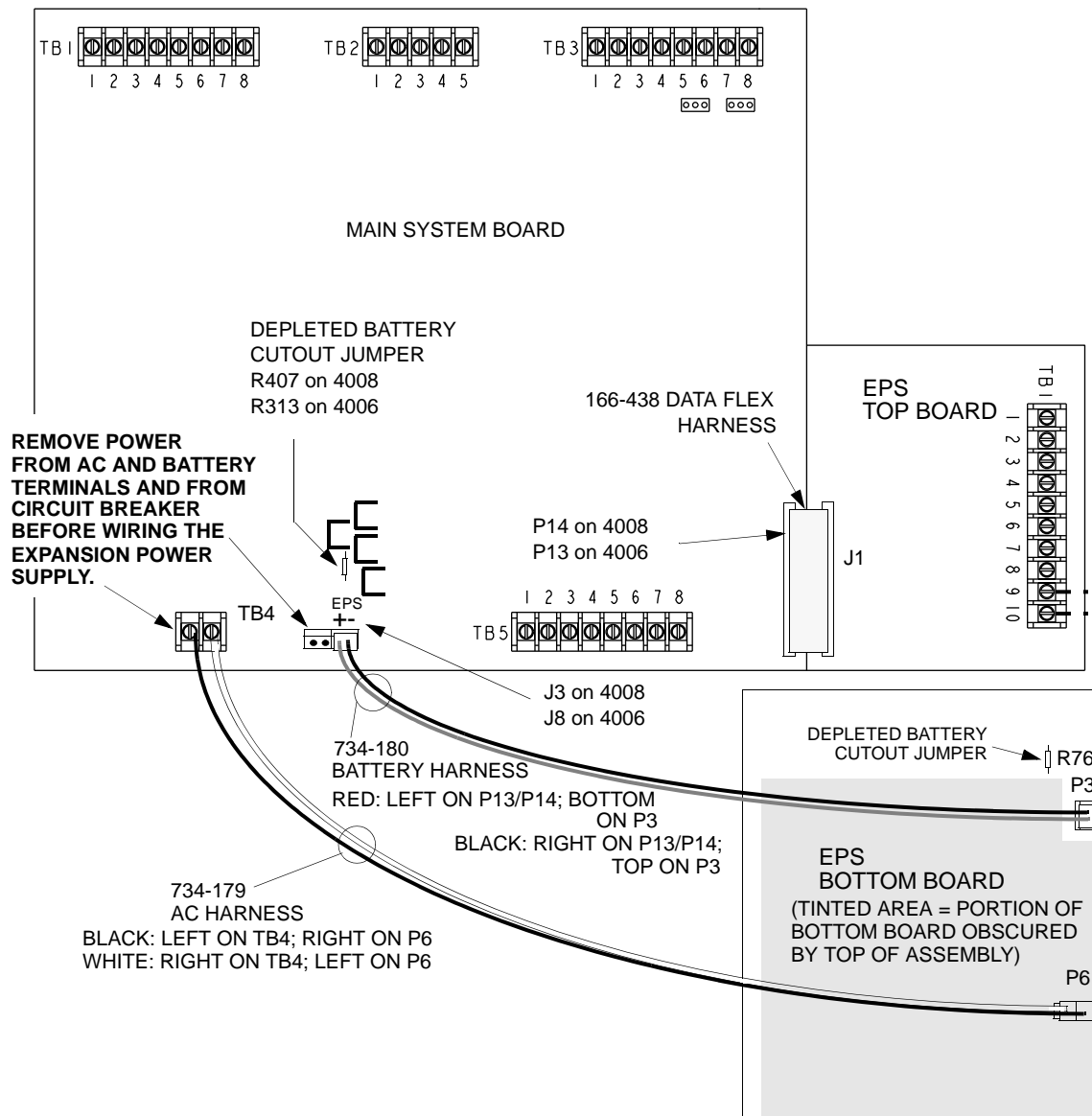
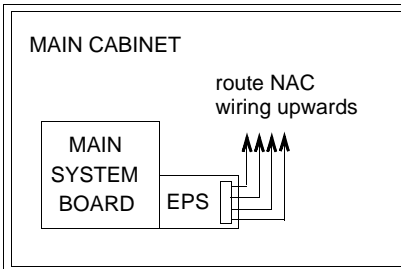


Figure 3 Interconnections between the MSB and EPS

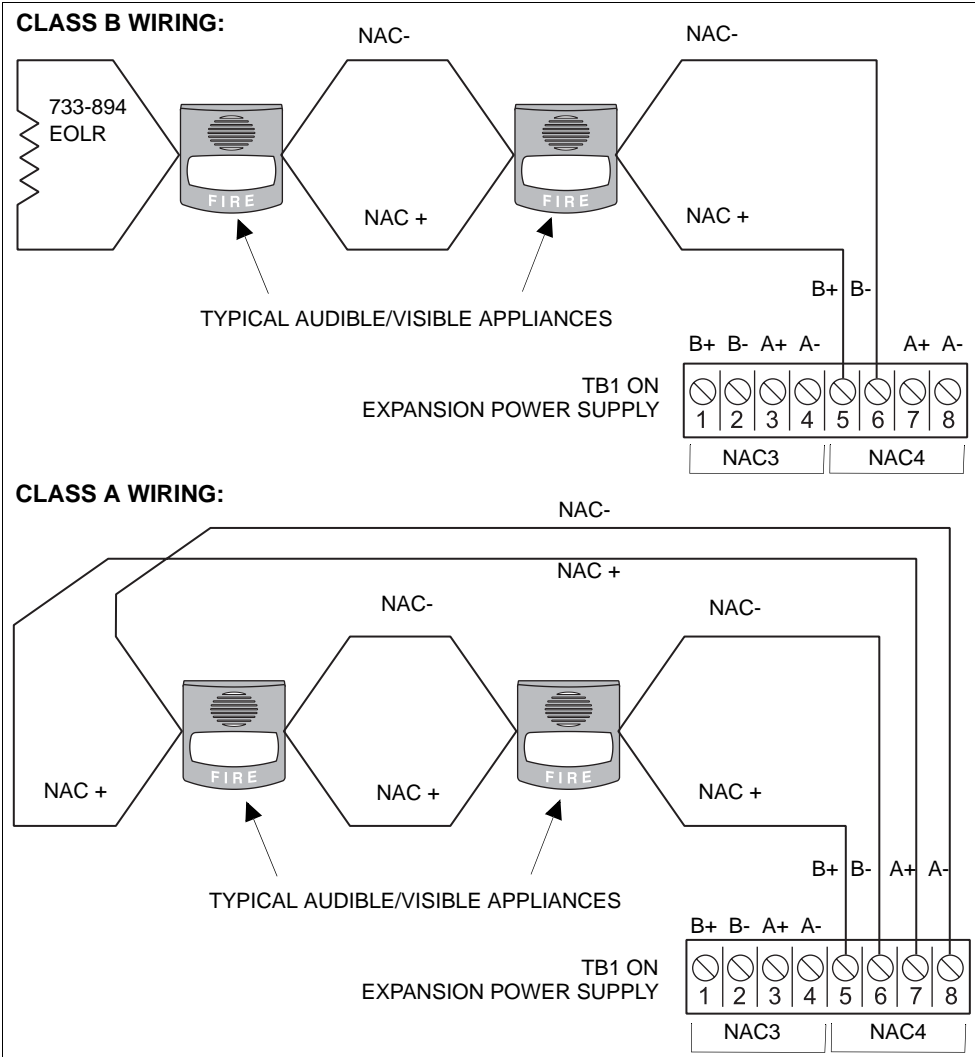
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NAC wiring



- NAC wiring from the EPS is routed within the cabinet as shown above.
- NAC terminals accept 18 AWG to 12 AWG wire. Larger wire reduces line loss and allows longer wiring distance from the FACP to the notification appliances.
- Use a VOM to test conductors for grounds and stray voltages before connection to appliances and panel.
- All wiring is supervised and Power Limited.
- Circuits must not be "T"-tapped.
- Terminate each Class B circuit with a 10 k, 0.5 W resistor (733-894). For Canadian applications, mount the end-of-line resistor to TEPG-US Model 431537 EOL Plate per Standard ULC-5524.
- Wire Class A (Style Z) NACs from "B+" and "B-" to each appliance. No end-of-line is needed for Class A. Connect wires from "+" and "-" on the last appliance to "A+" and "A-" on the EPS.
- The 10 k, 0.5 W (brown/black/ orange) resistor (factory installed) should remain installed across "B+" and "B-" on unused NACs to keep them in the "normal" state.
- Current rating: Each NAC supplies 2 A (special application). EPS provides 3 A, which is split between AUX 24 V and NAC loads. Refer to the NAC ratings section of these instructions for circuit loading restrictions.

- Terminal designations are for the alarm state (+/-).
- If wiring is routed outside the building, use of a listed secondary protector is required. Use 2081-9028 or 2081-9044. A protector must be installed at each building exit/entrance. Each 2081-9028 adds 0.2 Ohms wiring resistance. 2081-9044 adds 6 Ohms resistance.
- The wiring chart to the right gives the maximum distance for 0.25 A to 2 A loads. For Class B, distance = panel terminals to the last appliance. For Class A, distance = EPS terminals to the last appliance and back to the EPS terminals.
- When using non-addressable Series 4901, 4903, and 4904 two-wire audible/visible appliances, maximum wiring capacitance is 0.22 uF. Determine wiring capacitance by adding wire-to-wire capacitance plus wire-to-shield capacitance (if shield is used). Multiply the result by the wire length in feet. Example: A 12 AWG FPLR is rated at 100 pF/foot, with no shield. The 0.22 uF limit allows a maximum length of 2,200 ft. Also check the wiring distance chart, right, to determine that the voltage drop will not be excessive.
- Max. number of Smart Sync appliances = 2 A divided by the current draw amperage of the appliances used.



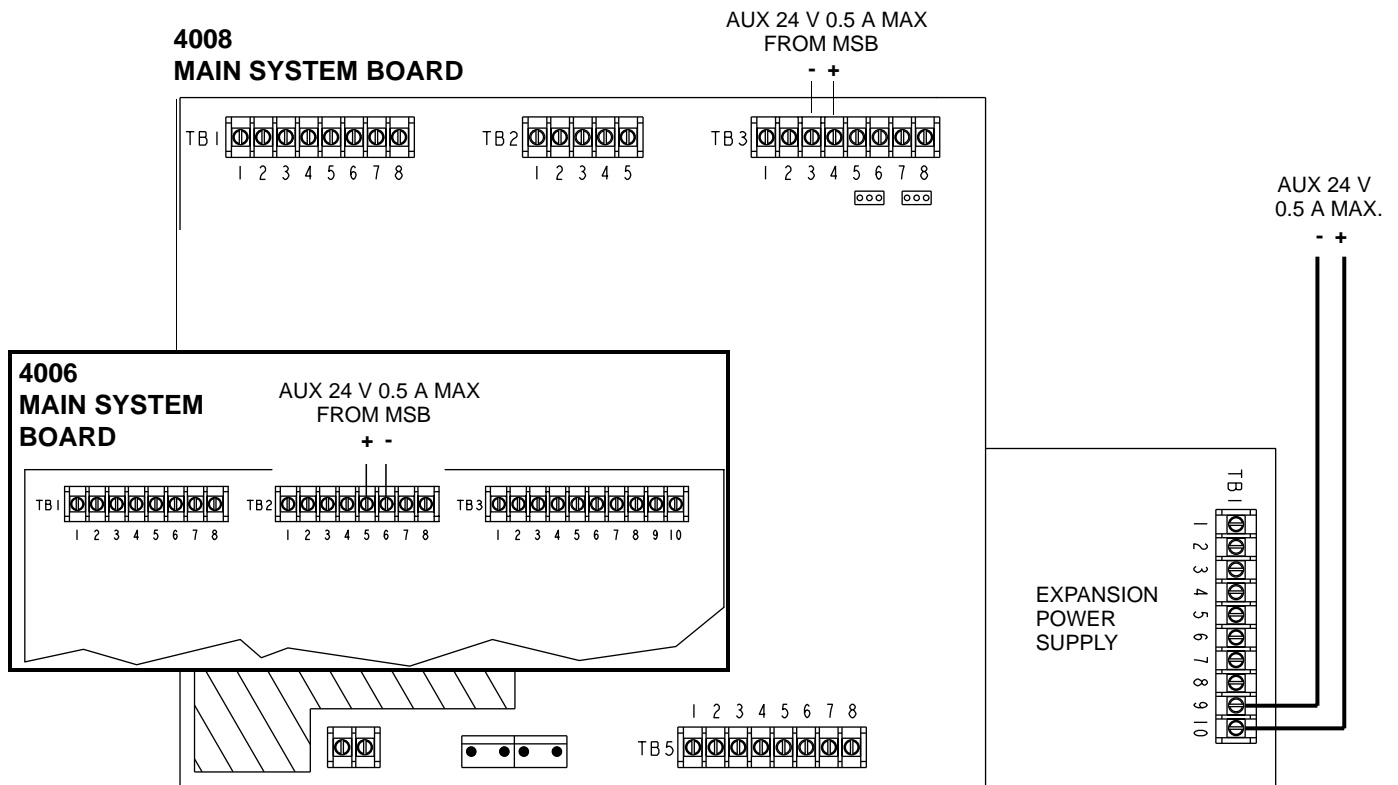
Alarm Current (Amps)	Max. Distance from Panel to Last Device (Feet)				Line Resistance (Ohms)
	18 AWG	16 AWG	14 AWG	12 AWG	
0.25	840	1335	2126	3382	12
0.50	420	667	1063	1691	6
0.75	280	445	709	1127	4
1.00	210	334	532	845	3
1.25	168	267	425	676	2.4
1.50	140	222	354	564	2
1.75	120	191	304	483	1.71
2.00	105	167	266	423	1.5

Chart allows for a drop of 3.4 V due to wire resistance. Wire resistance given is for copper wire at 50° C (122° F).

Figure 4 NAC Wiring (Class A and B)

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Auxiliary 24 V wiring



- Aux terminals accept 18 AWG to 12 AWG wire.
- Conductors must test free of all grounds and stray voltages before connection to appliances, devices, and panel.
- All wiring is supervised and Power Limited.
- Voltage rating (24 VDC special application): 1 V p-p ripple (maximum)
0.5 A maximum available aux 24 V from EPS
Additional 0.5 A maximum available from Main System Board (MSB) aux 24 V
3 A total available from MSB NACs and MSB aux 24 V.
3 A total available from EPS NACs and EPS aux 24 V.
- Compatible with Simplex 4098 Series Peripherals; 2098 Series Relay Modules; all Simplex 4090 Series IDNet Peripherals; and 4610-9111 / 4606-9101 Annunciators.
- If wiring is routed outside the building, use of a listed secondary protector is required. Use 2081-9044 or 2081-9028. A protector must be installed at each building exit/entrance. Each 2081-9044 adds 6 Ohms resistance at 200 mA. Each 2081-9028 adds 0.2 Ohms wiring resistance, and is rated for more than the 0.5 A aux 24 V capacity.
- If the circuit is used to power the Model 4098-9682 Four-Wire Base, the auxiliary 24 V power must be routed through the 2098-9735 End-Of-Line Relay, as shown in Figure 6 (below).

Figure 5 Aux 24 V Wiring

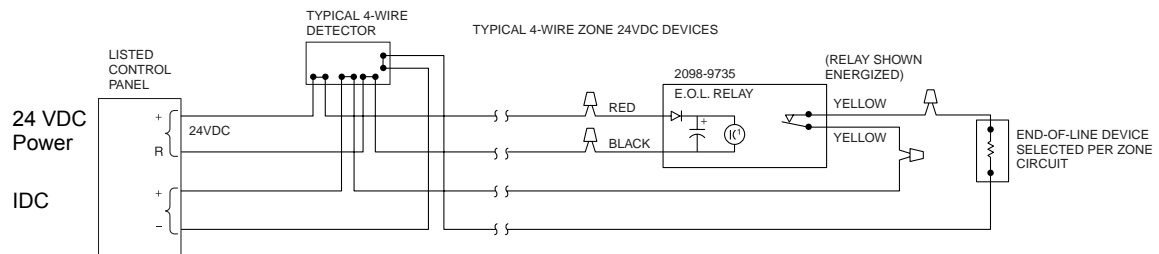


Figure 6 2098-9735 End-Of-Line Relay

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NAC ratings

The panel is rated Special Application for 2 A maximum per NAC with Simplex 4901 and 4906 TrueAlert Multi-Candela Notification Appliances.

For all other UL Listed Notification Appliances, NACs are rated Regulated 24 VDC at 1.5 A maximum each. Maximum allowed strobe load on either the main or

expansion power supply is 1.35 A. The balance of the 3 A capacity can be auxiliary loads or audible notification appliances.

Synchronization of strobes across all NACs in a system is UL Listed for the Simplex models noted in the table below. See the table below for maximum number allowed of each model appliance per NAC.

Table 1 NAC Ratings

4906-	15Cd		30Cd		75Cd		110Cd	
	Rated Current	Max. # per NAC	Rated Current	Max. # per NAC	Rated Current	Max. # per NAC	Rated Current	Max. # per NAC
9101	0.060	33	0.094	21	0.186	10	0.252	7
9102	0.075	26	0.125	16	0.233	8	0.316	6
9103	0.060	33	0.094	21	0.186	10	0.252	7
9104	0.075	26	0.125	16	0.233	8	0.316	6
9127	0.075	26	0.116	17	0.221	9	0.285	7
9128	0.086	23	0.132	15	0.250	8	0.320	6
9129	0.075	26	0.116	17	0.221	9	0.285	7
9130	0.086	23	0.132	15	0.250	8	0.320	6
9151	0.060	33	0.094	21	0.186	10	0.252	7
9154	0.075	26	0.125	16	0.233	8	0.316	6
9153	0.060	33	0.094	21	0.186	10	0.252	7

All other regulated 24 VDC synchronized notification appliances require the use of their associated Listed external synchronization module. Notification Circuit rating is 1.5 A maximum, 1.35 A maximum strobe load per power supply.

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DO NOT INSTALL ANY PRODUCT THAT APPEARS DAMAGED. Upon unpacking your product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify the manufacturer.

ELECTRICAL HAZARD - Disconnect electrical power when making any internal adjustments or repairs. Servicing should be performed by qualified personnel.

STATIC HAZARD - Static electricity can damage components. Therefore, handle as follows:

1. Ground yourself before opening or installing components.
2. Keep uninstalled components wrapped in anti-static material at all times.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.