POWERPATH
PS-12/24-8
(108114)
POWER BOOSTER
POWER SUPPLY

Installation Instructions

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P83862 M

Thank you for using our products.

Use this product according to this instruction manual. Please keep this instruction manual for future reference.

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NOTE: All **CAUTIONS** and **WARNINGS** are identified by the symbol ⚠. All **WARNINGS** are printed in bold capital letters.

⚠WARNING: READ THIS INSTRUCTION MANUAL CAREFULLY. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS, AND WARNINGS COULD RESULT IN IMPROPER APPLICATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

1.0 INTRODUCTION AND SPECIFICATIONS

1.1 INTRODUCTION

The PS-12/24-8 **POWER**PATH is an 8 AMP, 12/24VDC, filtered and regulated, supervised remote power supply/charger used for supervision and expanded power driving capability for Fire Alarm Notification Appliance Circuits. The PS-12/24-8 may be connected to any 12 or 24VDC Fire Alarm Control Panel (FACP) by using a Notification Appliance Circuit (NAC) or a "Dry Contact". Primary applications include NAC expansion (supports ADA requirements) and auxiliary power to support system accessories. This unit provides filtered and regulated 12 or 24VDC, 8 AMP supply to up to four (4) Class B, two (2) Class "A", or two (2) Class "B" and one (1) Class "A" Notification Appliance Circuits. Additionally, an auxiliary power output that can be reset is provided. The PS-12/24-8 also contains a battery charger capable of charging either 7 or 12 AMP/Hour (AH) of battery backup. The PS-12/24-8 can only provide a maximum load of 8 amperes for 5 minutes with a 7AH battery or 15 minutes with a 12AH battery.

Two FACP NAC circuits or two "Dry" contact closures can be connected to the **POWER**PATH inputs. These inputs can then be directed to control supervision and power delivery to any combination of the four (4) outputs.

Each output is rated at 2 AMPS (either Class "A" or Class "B") and can be programmed to generate a steady or Code 3 Temporal horn sound and a strobe output under alarm condition. A maximum 4 AMP output is achieved by paralleling 2 outputs (Class "B" only).

The PS-12/24-8 under non-alarmed condition provides independent loop supervision for Class "A" and Class "B" FACP NAC circuits. In the event of a loop trouble, the FACP will be notified via the **POWER**PATH steered input (IN1 or IN2). In addition there are common trouble output terminals (used to indicate a loop trouble) and common trouble input terminals (used generically by any initiating circuit).

Wheelock horns/strobes, strobes and horns with synchronizing capability can be utilized with the PS-12/24-8. Audibles can be silenced with only two wires. Additionally, the **POWER**PATH can provide a temporal coded signal for appliances that can utilize it.

1.2 SPECIFICATIONS

Approvals:

- UL Listed 864 Control for use with Fire Protective Signaling
- MEA approved – NYC Dept. of Buildings
- California State Fire Marshall (CSFM) approved
- NFPA 72 compliant

Inputs:

- 115VAC, 60Hz, 3.2 AMP Operating Power in Alarm
- 12/24VDC Battery Backup Connection
- Two (2), 12 or 24VDC NAC Initiating Circuits (9-30VDC at 5mA)
- Two (2) "Dry" Contact initiating Circuits
- Accepts two Class "A" or two Class "B" circuit inputs
- Built in battery charger for sealed lead acid or gel type batteries

Outputs:

- Switch selectable 12VDC or 24VDC power limited outputs
- 8 AMP continuous supply current at 12VDC or 24VDC for 5 minutes with 7AH battery or 15 minutes with 12AH battery.
- Capable of four (4), Class "B" circuits (2 Amps each)
- Two outputs may be paralleled for a maximum output of 4 AMPS on a circuit (Class "B" only)
- Capable of two (2) Class "A" circuits (2 Amps each).
- Capable of one (1) Class "A" circuit (2 Amps) and two (2) Class "B" circuits (2 Amps each)
- Code 3 or constant voltage output generation
- Built-in Wheelock synchronization mode that can be fed to any or all of the output circuits
- Input and output can be synchronized with "IN>OUT SYNC" mode (SM, DSM or 2nd PS-12/24-8 is required)
- Audible silence capability
- Filtered and electronically regulated output
- 50mA auxiliary output with reset capability

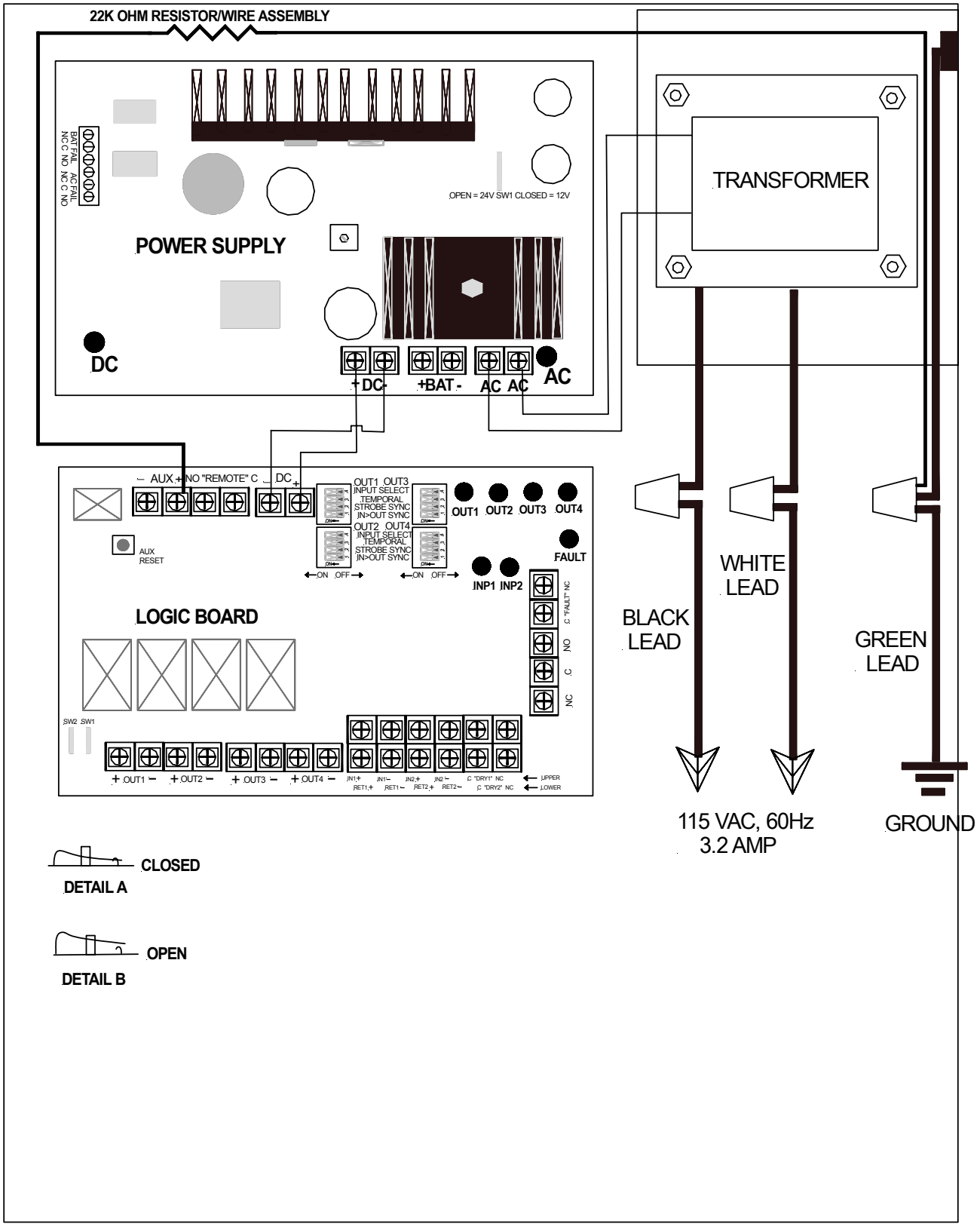
Supervision:

- Compatible with 12 or 24VDC FACP
- Signaling appliance loops are supervised and steered to either IN1 or IN2
- 22K OHM, ¼ Watt End-of-Line-Resistor (EOLR) for supervision of all outputs
- Common input and output trouble circuits
- Automatic switchover to standby battery when AC fails
- Thermal and short circuit protection with auto reset
- Input and output status LED indicators
- AC fail supervision (Form "C" contact, 1 AMP 28VDC)
- Battery presence and low battery supervision (Form "C" contact, 1 AMP 28VDC)
- Auxiliary output fail supervision (Form "C" contact, 1 AMP 28VDC)
- Ground Fault Detection (factory installed UL Listed 22K OHM resistor /wire assembly connected from positive (+) AUX to chassis ground)

1.3 TERMINOLOGY

CLASS "A" = STYLE Z
CLASS "B" = STYLE Y
FACP = Fire Alarm Control Panel
EOLR = End-of-Line Resistor
NAC = Notification Appliance Circuit
SM = Wheelock Sync Module with single output.
DSM = Wheelock Sync Module with two outputs.
C = Common
NC = Normally Closed
NO = Normally Open
AH = Ampere/Hour

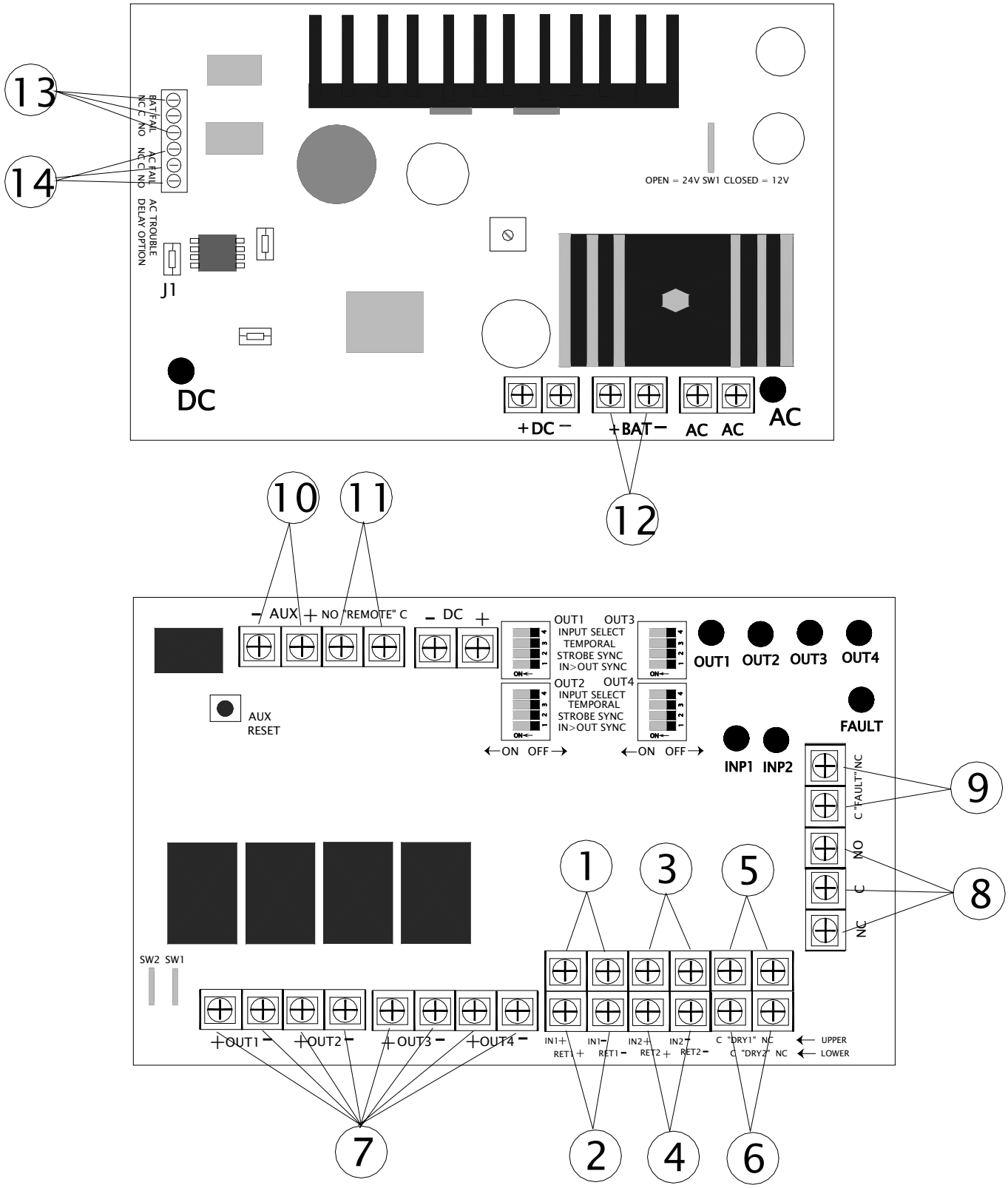
Figure 1:
POWERPATH PS-12/24-8



1.4 TERMINAL IDENTIFICATION

Table 1: Terminal Identification		
Balloon Identification Numbers (Figure 2)	**Terminal Identification**	**Function/Description**
		Logic Board
1	IN1+,IN1-	These terminals connect to the input voltage source (i.e. 12VDC or 24VDC FACP). The FACP will supply a voltage from 9-30VDC at 5mA. During the alarm condition these inputs will cause the designated outputs to drive the notification appliances (designated outputs are set by output DIP switch banks). During Stand-by on a FACP, a trouble condition on the designated loop will cause these inputs to trip the FACP by opening the FACP loop. Alarm condition always overrides trouble to drive output indicating appliances.
2	RET1+, RET1-	EOLR is connected on these terminals corresponding to IN1+ and IN1-, or the loop may be continued to other power supplies or appliances before terminating.
3	IN2+, IN2-	Same as IN1+, IN1- for corresponding terminals.
4	RET2+, RET2-	Same as RET1+, RET1- for corresponding terminals.
5	C "DRY1" NC	Dry contacts are used to actuate the designated outputs. Contacts are normally closed and actuate the power supply on contact Open. Designated outputs correspond to IN1+,IN1-. **NOTE**: FACP NAC circuit cannot energize the power supply by these contacts. **NOTE**: When these terminals are not in use, a jumper must be connected across them.
6	C "DRY2" NC	Operates the same as IN2+,IN2- for corresponding terminals. When these terminals are not in use, a jumper must be connected across them.
7	+OUT1- +OUT2- +OUT3- +OUT4-	Indicating appliances are connected to these outputs (See Examples in Operation Section). Each output can supply a maximum load of 2 AMPS and can be individually programmed for Normal Mode, Temporal Mode, IN>OUT SYNC Mode, or WHEELOCK SYNC Mode. The outputs can be configured as four Class "B" circuits, two Class "A" circuits, or two Class "B" and one Class "A" circuits. Each Class "A" or Class "B" circuit is 2 Amps. Outputs are controlled by a designated input (INPUT 1 or 2) as selected by the DIP switch for that output. **NOTE**: When the panel has been set to synchronization mode, IN1 is used for strobe activation and IN2 is used for audible silence. Individual output control is disabled.
8	"NC" "C" "NO (COMMON TROUBLE OUTPUT)	Typically used to trigger remote alerts or other reporting appliances. Form "C" contacts rated 28VDC at 1 AMP.
9	C "FAULT" NC (COMMON TROUBLE INPUT)	Typically used to report AC or BAT Fail. An open circuit across this pair of terminals will cause IN1 and IN2 to simultaneously signal a trouble condition to the FACP.
10	- AUX +	This output is capable of 50mA and can be reset by a momentary switch on the logic board or can be reset remotely by using the NO "REMOTE"C terminals.
11	NO"REMOTE"C	Dry contact closure on these terminals causes –AUX+ output to reset.
		Power Supply Board
12	+BAT-	Stand-by battery input. Use two 12VDC batteries connected in series for 24VDC operation, or a single 12VDC battery for 12VDC operation.
13	BAT FAIL NO, C, NC	Form "C" dry contacts used to signal low battery or loss of battery voltage. With battery voltage present terminals NO, C are open, terminals C, NC are closed. With no battery voltage present terminals NO, C are closed, terminals C, NC are open. Form "C" contacts rated at 28VDC at 1 AMP.
14	AC FAIL NO, C, NC	Form "C" dry contacts used to signal loss of AC voltage. With AC present terminals NO, C are open, terminals C, NC are closed. With no AC present terminals NO, C are closed, terminals C, NC are open. Form "C" contacts rated at 28VDC at 1 AMP

Figure 2:
Terminal Locations



1.5 LED STATUS

Table 2 lists status of the LED indicators. The ALARM condition occurs when the input causes the output circuits to energize. TROUBLE condition occurs when the circuit is no longer supervised correctly. **NOTE:** An alarm condition overrides a trouble condition.

Table 2: LED Status Description

LED / Logic Board	OFF	ON	Blinking
OUT1	STANDBY	ALARM	TROUBLE
OUT2	STANDBY	ALARM	TROUBLE
OUT3	STANDBY	ALARM	TROUBLE
OUT4	STANDBY	ALARM	TROUBLE
INP1	STANDBY	ALARM	TROUBLE
INP2	STANDBY	ALARM	TROUBLE
FAULT	--------	TROUBLE	--------
Power Supply Board	--------	--------	--------
AC	No AC	AC Present	--------
DC	No DC	DC Present	--------

1.6 BATTERY MAINTENANCE

Battery Replacement: Power-Sonic (or equal) 12VDC, replace with new batteries every four (4) years or as needed if battery will no longer accept full charge. Two 12V batteries are required for 24VDC setting. Use either a 7AH battery for 5 minutes of alarm or a 12AH battery for 15 minutes of alarm.

NOTE: Battery compartment measures 4-1/2" High X 11-1/2" Wide X 4-1/2" Deep.

2.0 INSTALLATION INSTRUCTIONS

NOTE: The PS-12/24-8 **POWER**PATH shall be installed in accordance with the National Electrical Code (NEC) and all applicable state and local regulations.

2.1 UNPACKING

The **POWER**PATH was carefully checked before leaving the factory. Inspect shipping container and unit carefully for indications of improper handling. If damage is detected, make an immediate claim to the carrier.

Remove the **POWER**PATH from the shipping container and check that the door lock keys, door lock, and battery connection wires are inside. Make sure the transformer, Power Board and Logic Board are securely mounted to the rear of the enclosure.

2.2 MOUNTING

⚠**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.**

⚠**CAUTION**: This product is not intended for use in hazardous locations as defined by the National Electrical Code (NEC) and by the National Fire Protection Association (NFPA).

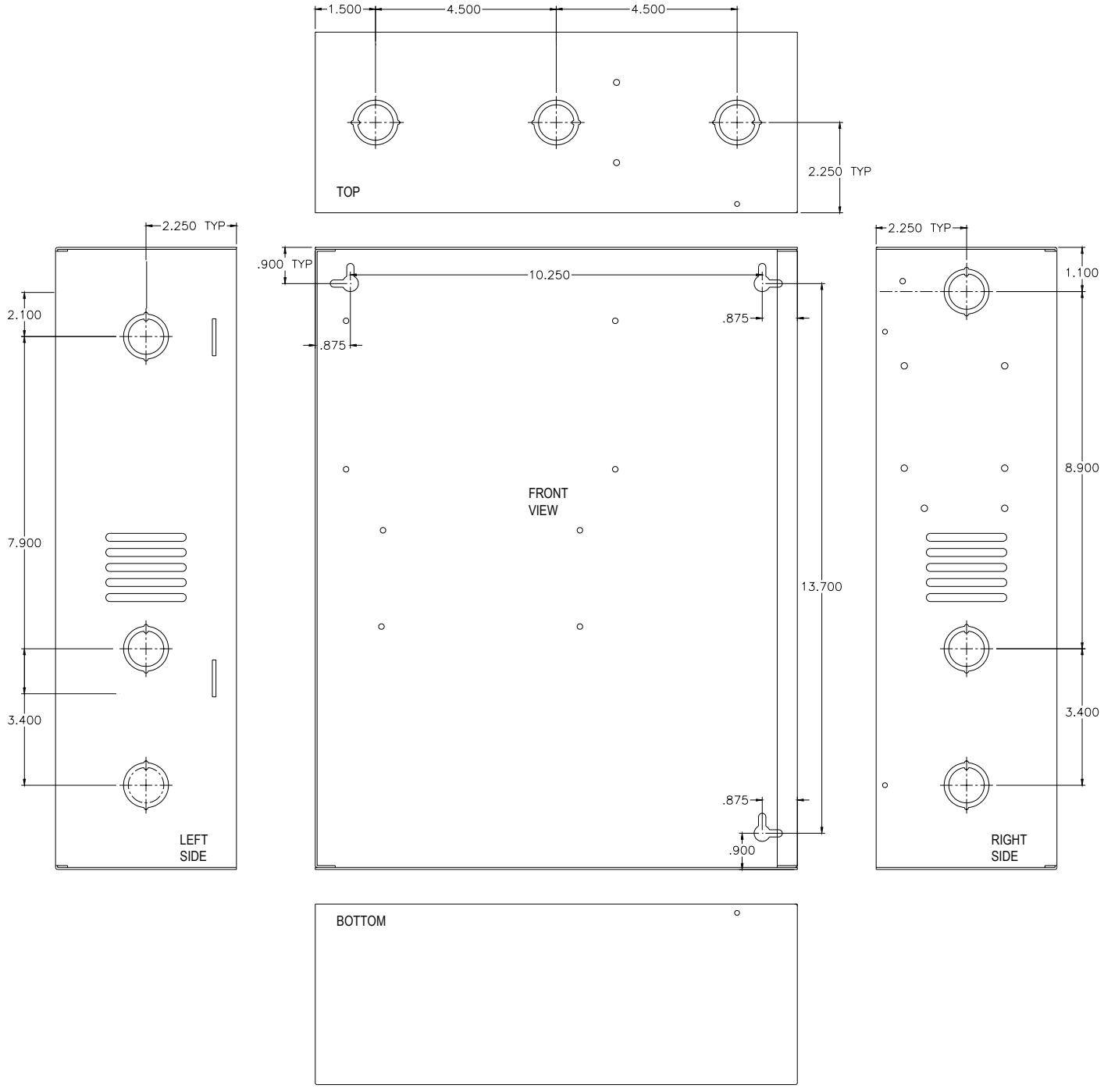
Mount the **POWER**PATH in the desired location using the mounting dimensions in Figure 3.

Mount the panel in a location that does not exceed a temperature range of 0° C to 49° C (32° F to 120° F) and a humidity equal to 10% to 85% at 30° C (86° F) non-condensing.

When mounting on interior walls, use proper screw anchors in plaster. When mounting to concrete, especially when moisture is expected, first attach a piece of ¾ inch plywood to the concrete surface. Attach the **POWER**PATH to the plywood.

⚠**CAUTION**: The **POWER**PATH panel shall be mounted in a location within the environmental limits specified in the latest UL Standard for indoor control panels.

Figure 3:
Mounting Dimensions



NOTE: All dimensions shown are measured in inches.

2.3 WIRING

Review the Operation Section (3.0) in order to select the proper hookup and use of the **POWER**PATH

Set switches and wire the **POWER**PATH as follows: Terminal locations are shown in Figure 2.

A. Set Power Supply switch (SW1) for desired output voltage (Open for 24VDC, Closed for 12VDC). See Figure 1 (Detail A and B).

B. Set output DIP Switch(s) to follow corresponding input (IN1, IN2) and desired output mode. See Table 3 DIP Switch Selection and DIP Switch Settings Section (3.2).

C. Set Logic Board switches SW1 and SW2 to select Class "A" or Class "B" operation (Open for Class B, Closed for Class A). See Figure 1 (Detail A and B).

⚠**CAUTION:** The PS-12/24-8 **POWER**PATH can provide a full 8 AMPS of current during an alarm condition for 5 minutes with a 7AH battery or 15 minutes with 12AH battery . (A 7AH or 12AH battery is required.). Exceeding these limits may result in loss of power.

D. Connect notification appliances to desired outputs OUT1 – OUT4. See Operation Section (3.0).

- The **POWER**PATH has in-out wiring terminals that accept two #18 to #12 American Wire Gauge (AWG) wires at each screw terminal. Strip leads 3/8 inches and connect to screw terminals.
- Separate all in-out wire runs on supervised circuits to insure integrity of circuit supervision. The polarity shown in the wiring diagrams and on the circuit boards is for operation of the appliances. The polarity is reversed by the FACP during supervision.
- Total load of any output circuit shall not exceed 2 AMPS.
- Terminate unused outputs with a 22K OHM EOLR.

E. Connect the indicating circuit(s) from the FACP to the desired input(s), IN1 and IN2. Connect End-of Line Resistors to RET1 and RET2. Value is determined by FACP.

F. Connect desired auxiliary equipment to the auxiliary output terminals –AUX+.

⚠**CAUTION:** For the Ground Fault Detection Circuit to operate, the 22K OHM RESISTOR/WIRE ASSEMBLY must remain connected between (+) AUX and chassis ground as shown in Figure 1. If this connection is broken or disconnected, the Ground Fault Detection Circuit will be DISABLED and ground faults will NOT result in a TROUBLE condition.

G. Select AC Trouble Delay Option. (Unit is factory set for 1 minute. Remove J1 for 6 hour delay.)

H. Connect trouble relays as desired.

I. Connect backup batteries. Observe correct polarity and voltage. For 12VDC, use a single 12V battery. For 24VDC, use two of the same connected in series. Use either a 7AH battery for 5 minutes of alarm or a 12AH battery for 15 minutes of alarm.

J. Connect AC source. The AC must first be wired into the buildings main electrical power. The conduit entry can be either from the top using knock-outs or right side in the transformer area. See Figure 3.

Table 3: DIP Switch Selection

Function	Switch Position	Description	Note
INPUT SELECT	ON OFF	Selected output to be controlled by Input 1 (IN1+, IN1-) (DRY1) Selected output to be controlled by Input 2 (IN2+, IN2-) (DRY2)	------ ------
TEMPORAL	ON	Generates Code 3 temporal signal on this output.	1
STROBE SYNC	N/A	Used only in the Wheelock sync mode.	2
IN>OUT SYNC	ON	Allows a sync signal on the input to be used by the output.	------
WHEELOCK SYNC MODE	STROBE SYNC "ON" IN>OUT SYNC "ON"	Generates Wheelock sync signal for synchronizing Wheelock horns and strobes.	3

NOTE 1: Use only with appliances that can operate using a coded horn appliance. (Example: Wheelock Series CH, and Series MT)

NOTE 2: Used to synchronize Wheelock Sync products in the Wheelock sync mode.

NOTE 3: Use only with Wheelock Series AS/AH, Series NS/NS4/NH, Series RSS, Series HS4 and products with SL/SLM strobes.

2.4 RELAY STATUS CONNECTIONS

POWER SUPPLY BOARD

⚠WARNING: BAT FAIL AND AC FAIL CONTACTS MUST BE USED TO REPORT A TROUBLE CONDITION TO THE FACP IN THE EVENT THAT AC OR BATTERY POWER FAILS. FAILURE TO DO THIS WILL CAUSE THE PS-12/24-8 TO NOT REPORT ALL TROUBLE CONDITIONS. FIGURE 4 SHOWS A CIRCUIT THAT WILL REPORT TROUBLE THROUGH THE IN1 AND/OR IN2 NAC CIRCUITS WHEN AC FAILS, BATTERY IS LOW OR BATTERY IS NOT PRESENT.

BAT FAIL – When the battery (12VDC or 24VDC) is applied to the +DC- terminals, the NC C terminals on the BAT FAIL will be shorted, and the C NO terminals will be open. If the battery is removed, is low or fails with AC power present the NC C terminal will open and the C NO will short. The low battery condition is reported at approximately 21VDC (24VDC output setting) or approximately 10.5VDC (12VDC output setting). Refer to Figure 4.

AC FAIL – When AC Power is applied the NC C terminals on the AC FAIL will be shorted, and the C NO terminals will be open. If the AC Power is removed or fails with battery power present, the NC C terminals will open and the C NO will short after 1 minute or 6 hours depending on the condition of J1. (J1 in line = 1 minute. J1 removed = 6 hours.) Refer to Figure 4.

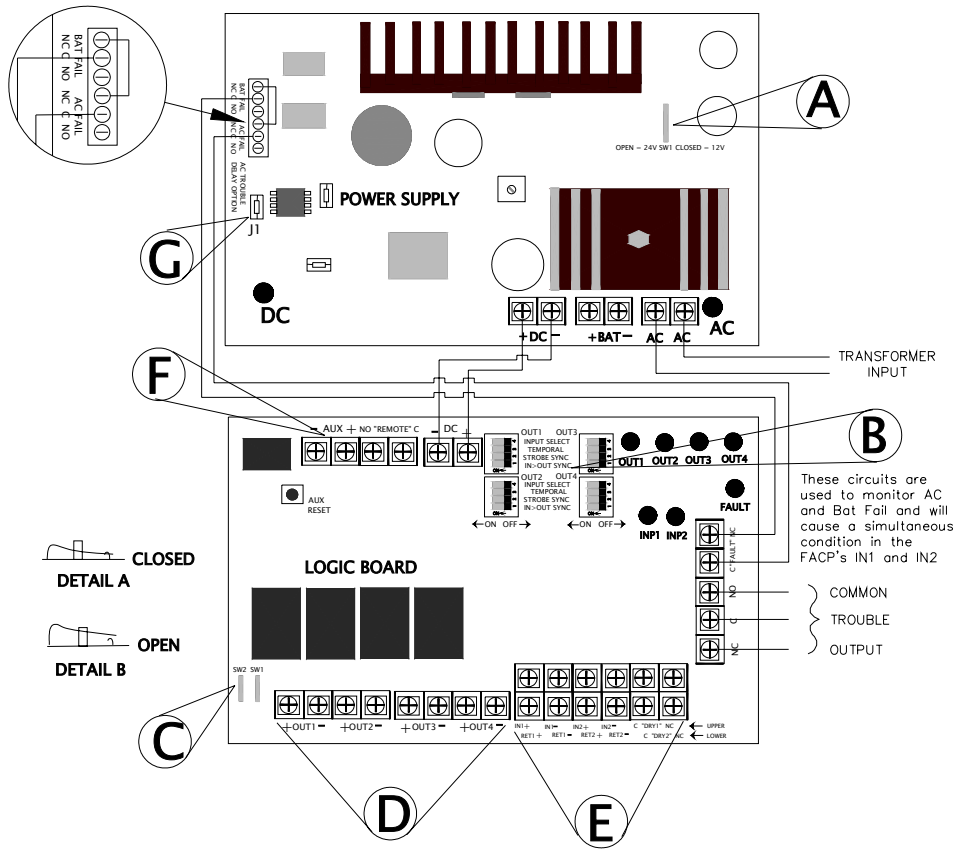
LOGIC BOARD

COMMON TROUBLE TERMINALS – The common trouble terminals are located on the right side of the Logic Board. The bottom three terminals are labeled " NC, C and NO". When the PS-12/24-8 is operating normally the NC C terminals are shorted, and the C NO terminals are open. There are two trouble conditions that will cause these terminals to change state.

- Supervision trouble on any output (+OUT1-, +OUT2-, +OUT3-, +OUT4-)
- Terminals C "FAULT" NC open

NOTE: If terminals C "FAULT" NC are not used, a jumper shall be installed across the terminals.

Figure 4.
BAT FAIL/AC FAIL



3.0 OPERATION

3.1 MODES OF OPERATION

The PS-12/24-8 **POWER**PATH can provide a 12 or 24VDC output when initiated by a 9 to 30VDC appliance (IN1 or IN2) or an open contact (DRY1 or DRY2). The output will remain on until the deactivation of the input returns it to its normal mode.

The outputs can be configured as four Class “B” circuits, two Class “A” circuits, or two Class “B” and one Class “A” circuits.

Each Class "A" or Class "B" circuit is 2 Amps.

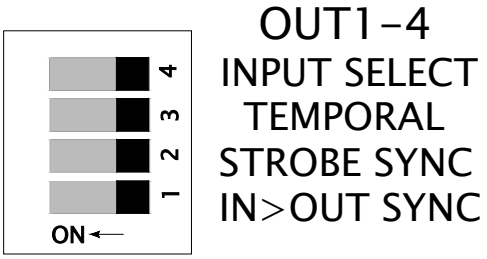
There are four output modes which can be used with either Class “A” or Class “B” circuits.

NORMAL MODE	Used for a constant 12 or 24VDC output.
TEMPORAL MODE	Provides a temporal output for appliances that can utilize a coded signal. (i.e. single stroke bells and chimes and some horns) (**NOTE**: Do not use with Wheelock AS, NS, RSS appliances.)
IN>OUT SYNC MODE	Allows a coded signal or synchronization signal input to be utilized by the **POWER**PATH. These appliances may come from a FACP, another PS-12/24-8 or a Wheelock Synchronization Module (SM-12/24 or DSM-12/24). Audibles can also be silenced.
WHEELOCK SYNC MODE	Activates the built-in Wheelock Synchronization Mode for use with patented synchronized horns and strobes. Audibles can also be silenced.

3.2 DIP SWITCH SETTINGS

The following is the DIP Switch settings for Output 1. Each of the remaining outputs is controlled similarly.

Figure 5:
Output DIP Switch(s)



MODE	DIP SWITCH	SETTING
NORMAL MODE	INPUT SELECT (4)	“ON” for “IN1” or “DRY1” “OFF” for “IN2” or “DRY2”
	TEMPORAL (3)	“OFF”
	STROBE SYNC (2)	“OFF”
	IN>OUT SYNC (1)	“OFF”
TEMPORAL	INPUT SELECT (4)	“ON” for “IN1” or “DRY1” “OFF” for “IN2” or “DRY2”
	TEMPORAL (3)	“ON”
	STROBE SYNC (2)	“OFF”
	IN>OUT SYNC (1)	“OFF”
IN>OUT SYNC	INPUT SELECT (4)	“ON” for “IN1” or “DRY1” “OFF” for “IN2” or “DRY2”
	TEMPORAL (3)	“OFF”
	STROBE SYNC (2)	“OFF”
	IN>OUT SYNC (1)	“ON”
WHEELOCK SYNC	INPUT SELECT (4)	“ON” for “IN1” or “DRY1” “OFF” for “IN2” or “DRY2”
	TEMPORAL (3)	“OFF”
	STROBE SYNC (2)	“ON”
	IN>OUT SYNC (1)	“ON”

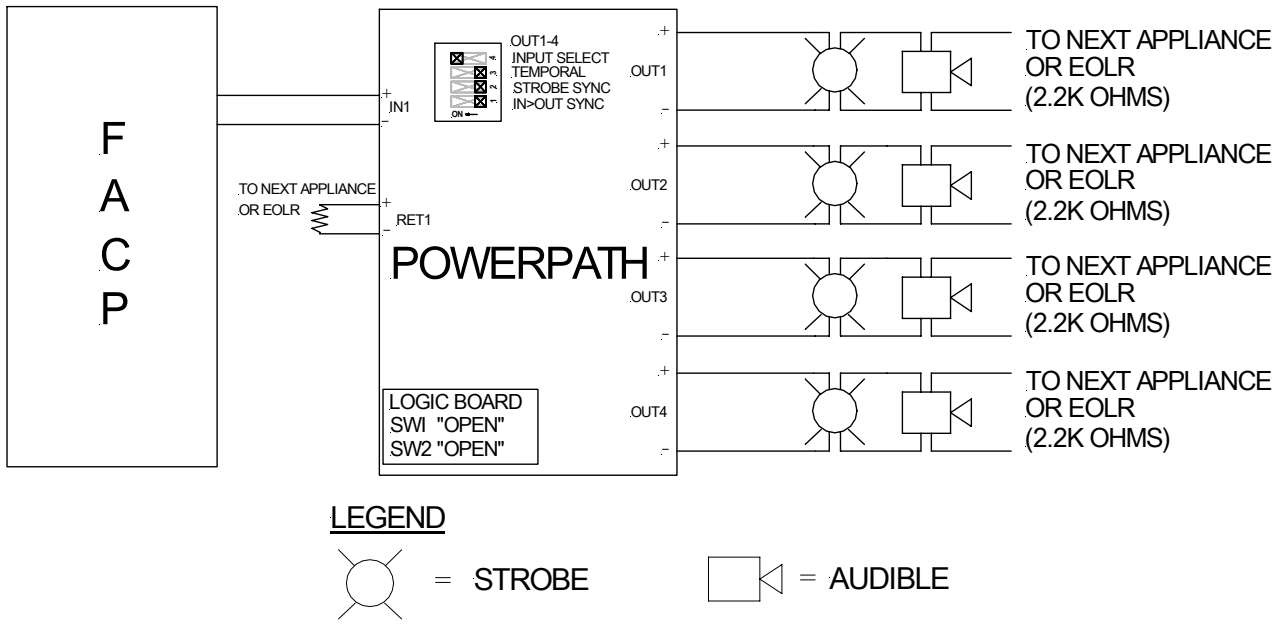
3.3 CLASS "B" OPERATION

Class "B" outputs can be controlled from either IN1 or IN2. Switches SW1 and SW2 on the Logic Board are in the "OPEN" position.

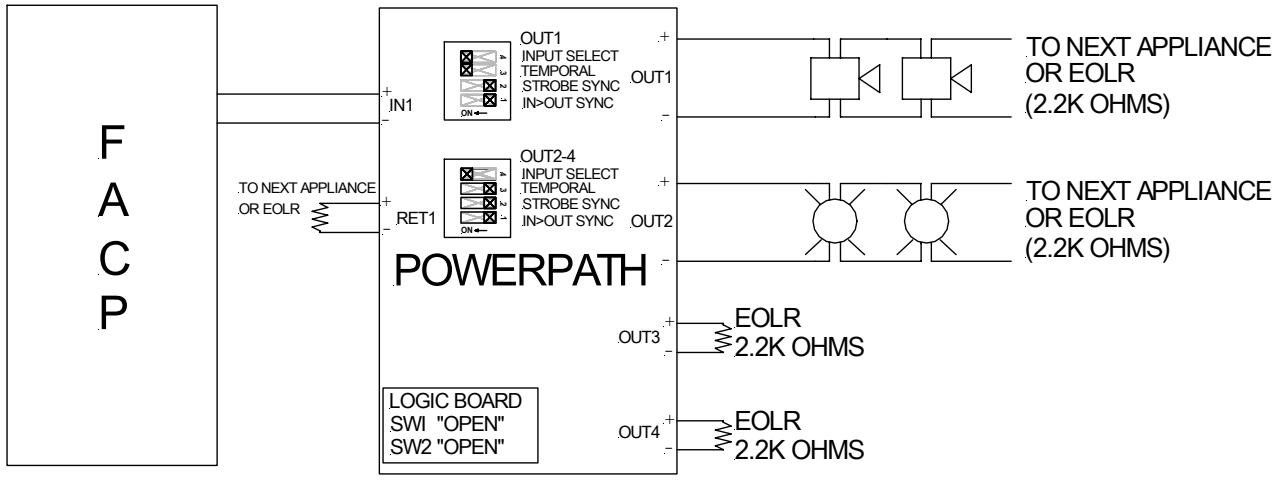
The following are examples of Class "B" connections. A FACP is used as a representative input.

- IN1 and/or IN2 can be used for connection to the FACP. The INPUT SELECT Switch (4) selects which input is to be used to activate the output.
- Logic Board switches SW1 and SW2 control Class "A" or Class "B" configuration. SW1 controls Outputs 1 and 3. SW2 controls Outputs 2 and 4.
- The PS-12/24-8 requires a 22K OHM EOLR on each output for proper supervision. Use two 22K OHM EOLR's when two Class "B" outputs are paralleled.

Example 1: NORMAL MODE (CLASS B)



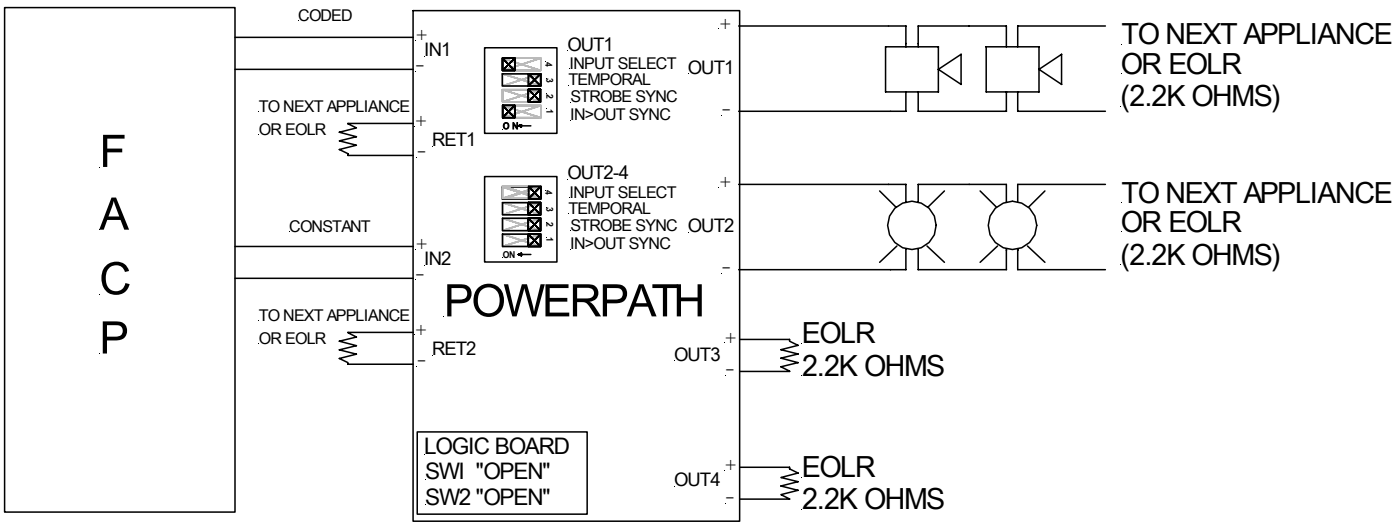
Example 2: TEMPORAL MODE (CLASS B)



⚠**CAUTION:** Strobes require constant voltage and will not operate properly in the TEMPORAL MODE. A second output set in the NORMAL MODE will provide the constant voltage.

⚠**CAUTION:** Only use audible appliances that can use a coded signal. Do not use with Wheelock Series AS/AH or NS/NS4/NH appliances.

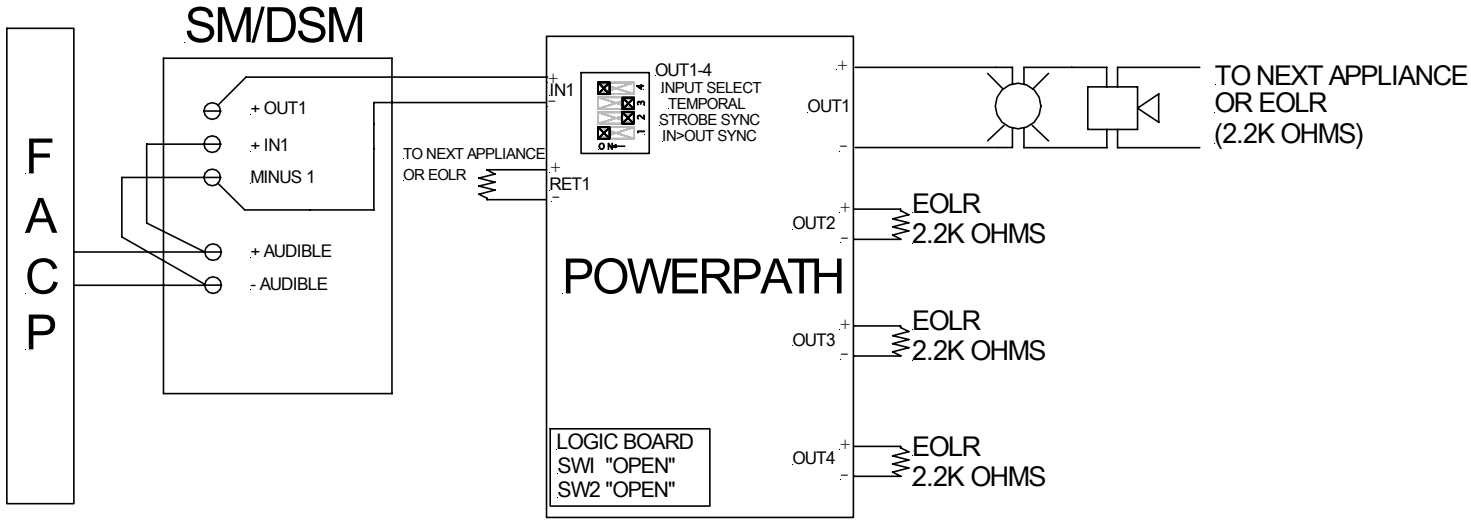
Example 3: IN>OUT SYNC MODE from CODED INPUT SOURCE (CLASS B)



⚠**CAUTION:** Strobes require constant voltage and will not operate properly in the IN>OUT SYNC MODE with a coded input source. A second constant input with a second output set in the NORMAL MODE will provide the constant voltage.

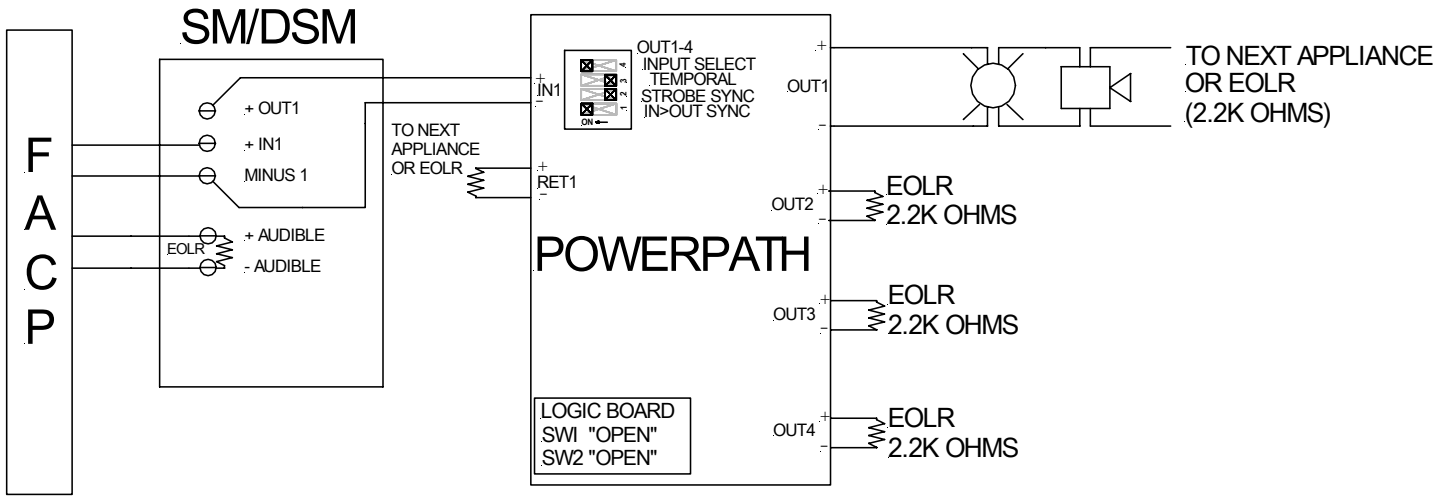
⚠**CAUTION:** Only use audible appliances that can use a coded signal. Do not use with Wheelock Series AS/AH or NS/NS4/NH appliances.

Example 4: IN>OUT SYNC MODE with External Sync Module without Audible Silence (CLASS B)



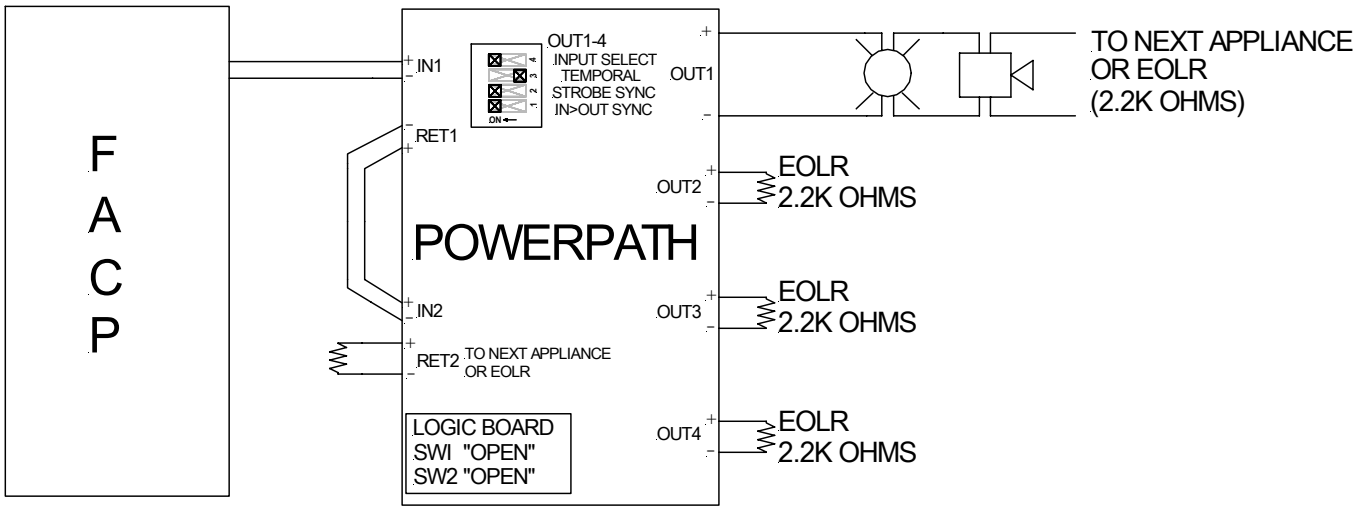
NOTE: When using the Wheelock external Sync Module (SM or DSM), synchronization ***will only occur*** with Wheelock sync appliances.

Example 5: IN>OUT SYNC MODE with External Sync Module with Audible Silence (CLASS B)



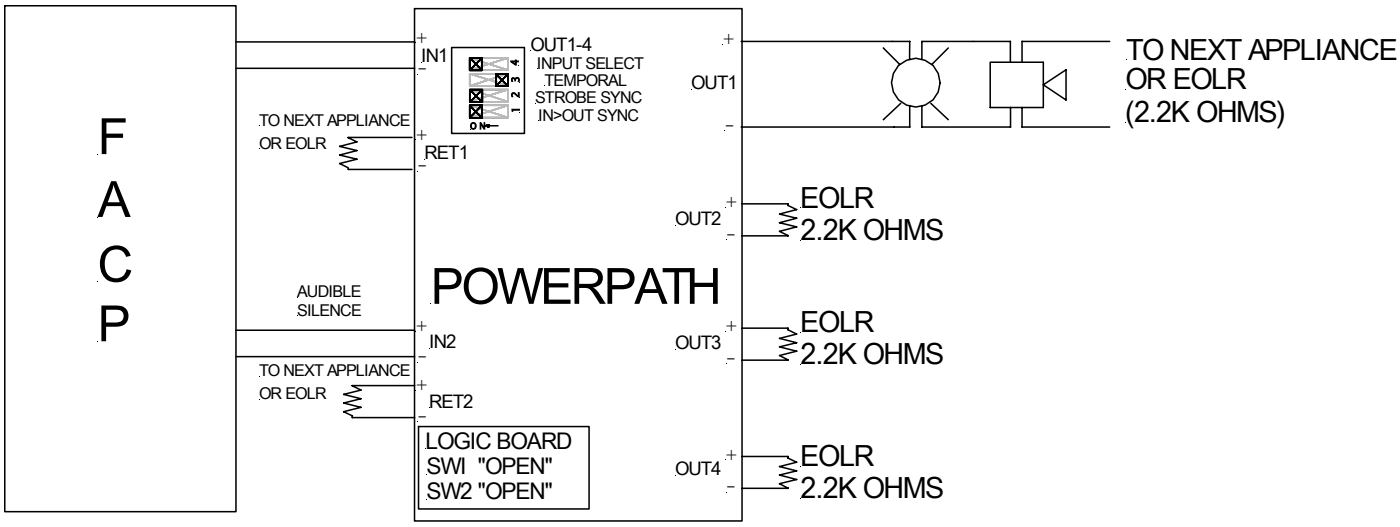
NOTE: When using the Wheelock external Sync Module (SM or DSM), synchronization ***will only occur*** with Wheelock sync appliances.

Example 6: WHEELOCK SYNC MODE without Audible Silence (CLASS B)



- This mode will only synchronize Wheelock horns, horn strobes, and strobes with the synchronization capability.
- If only strobes are connected to the **POWER**PATH outputs, the initiating input to IN2 is not required.
- When synchronized horns are used on the two wire output of the **POWER**PATH, IN2 must be connected as shown or the horns will not operate.

Example 7: WHEELOCK SYNC MODE with Audible Silence (CLASS B)



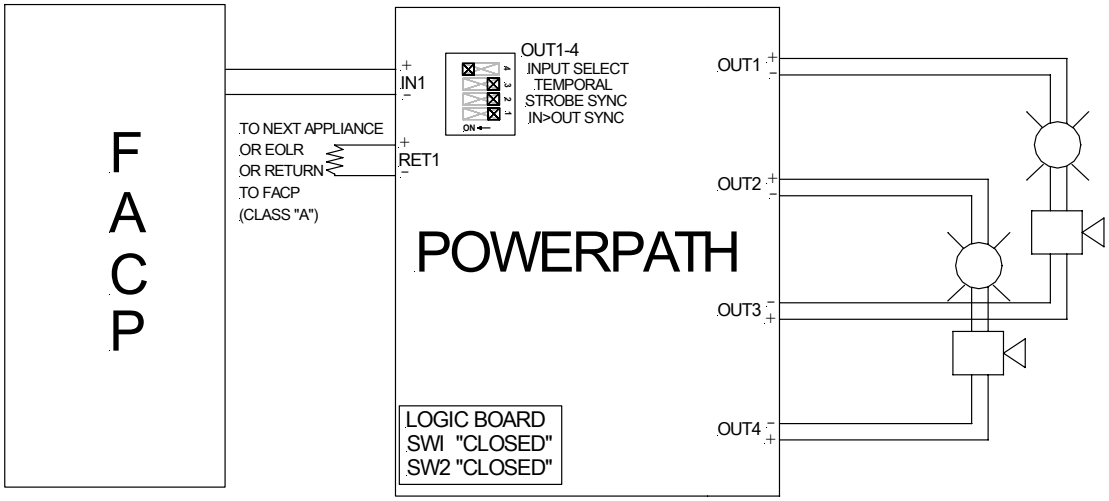
- This mode will only synchronize Wheelock horns, horn strobes, and strobes with the synchronization capability.

3.4 CLASS "A" OPERATION

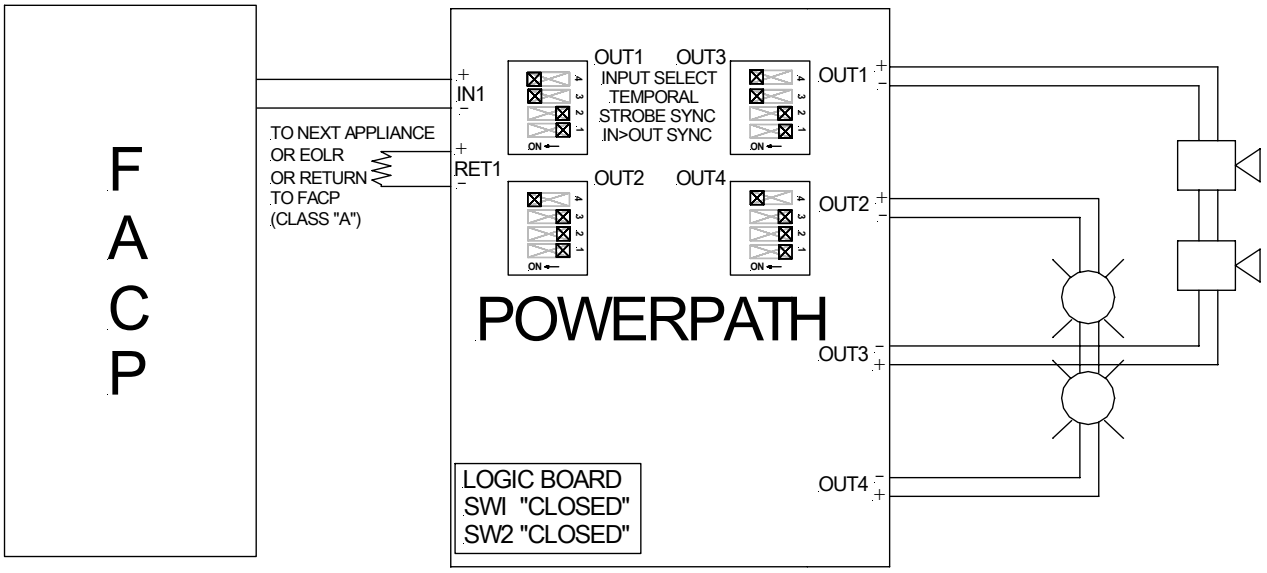
Class "A" circuit 1 uses "OUT1" and "OUT3". Class "A" circuit 2 uses "OUT2" and "OUT4". When operating in Class "A" the two circuits must have the same switch settings for the operational mode selected. Switches SW1 and SW2 on the logic board are in the "CLOSED" position.

- IN1 and/or IN2 can be used for connection to the FACP. The INPUT SELECT Switch (4) selects which input is to be used to activate the output.
- Logic Board switches SW1 and SW2 control Class "A" or Class "B" configuration. SW1 controls Outputs 1 and 3. SW2 controls Outputs 2 and 4.
- DIP Switch settings for each circuit in the Class "A" output must be set identically.

Example 8: NORMAL MODE (CLASS A)

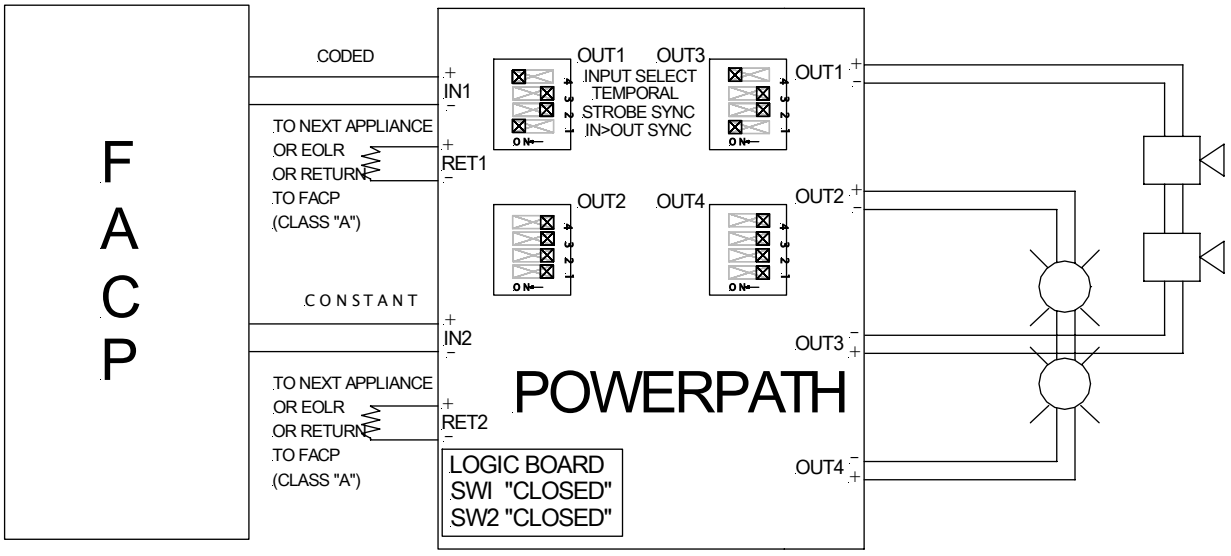


Example 9: TEMPORAL MODE (CLASS A)



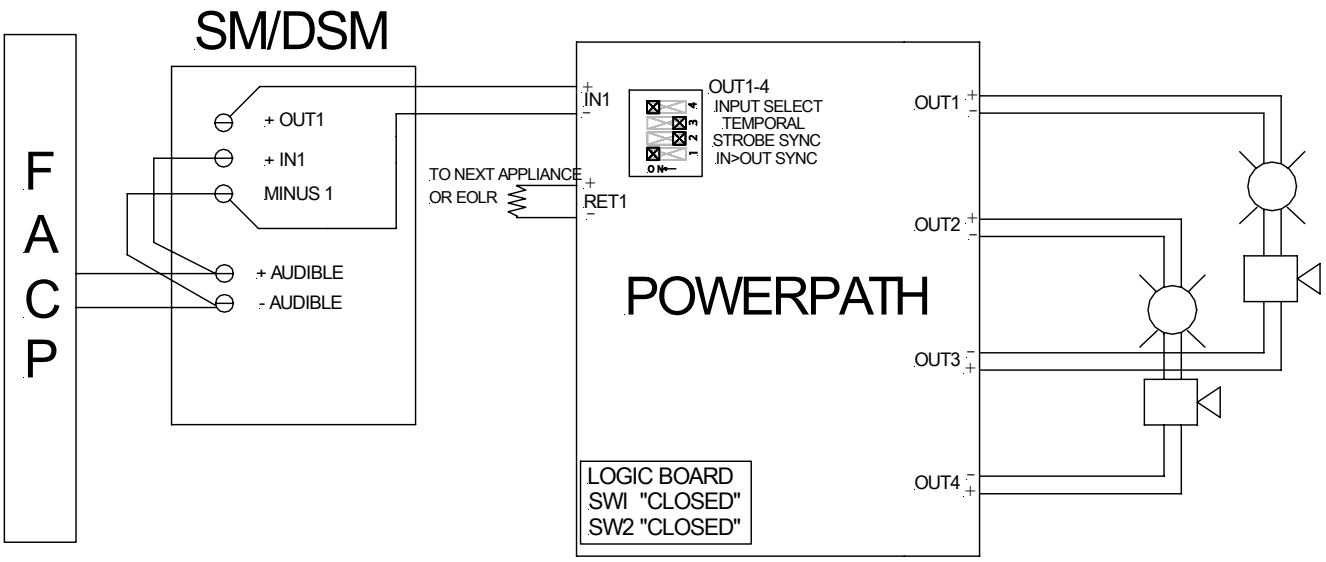
⚠**CAUTION:** Strobes require constant voltage and will not operate properly in the TEMPORAL MODE. A second Class "A" output set in the NORMAL MODE will provide the constant voltage for the strobe circuit. Only use sounding appliances that can use a coded signal. Do not use Wheelock AS/AH or NS/NS4/NH appliances with TEMPORAL MODE.

Example 10: IN>OUT SYNC MODE from CODED INPUT SOURCE (CLASS A)



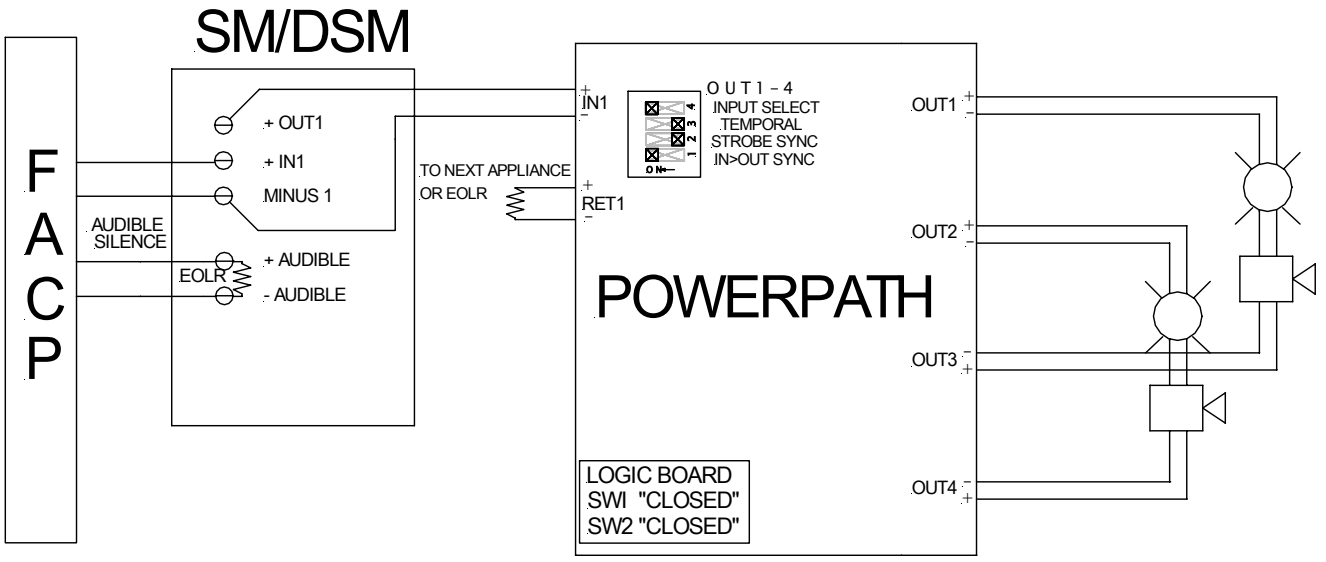
⚠**CAUTION:** Strobes require constant voltage and will not operate properly in the IN>OUT SYNC MODE with a coded input. A second Class "A" output set in the NORMAL MODE will provide the constant voltage for the strobe circuit. Only use audible appliances that can use a coded signal. Do not use Wheelock AS/AH or NS/NS4/NH appliances with a coded input.

Example 11: IN>OUT SYNC MODE with External Sync Module without Audible Silence (CLASS A)



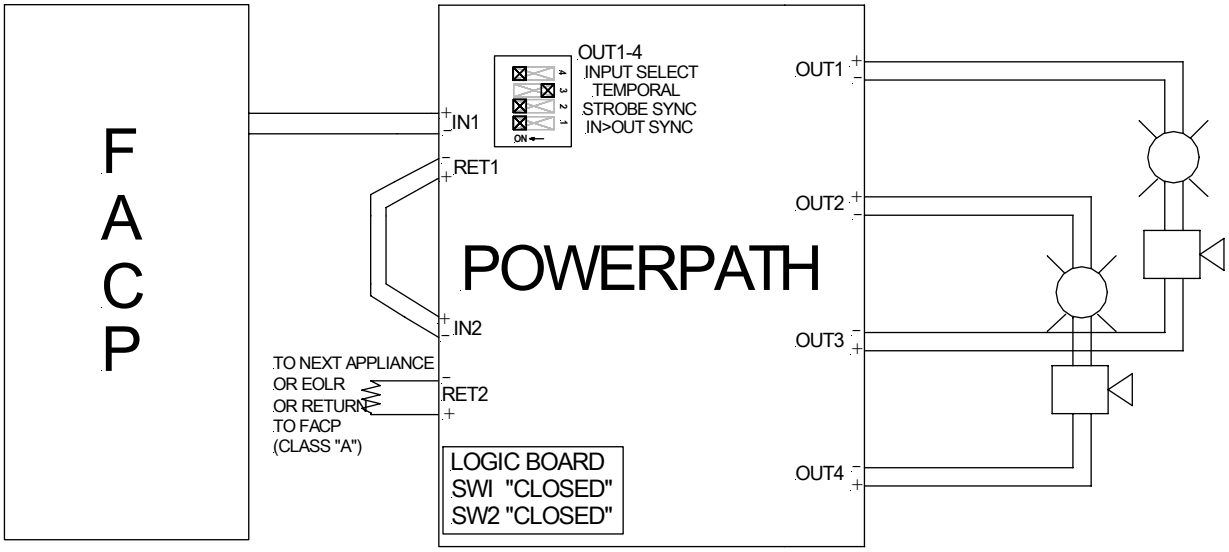
NOTE: When using the Wheelock external Sync Module (SM or DSM), synchronization ***will only occur*** with Wheelock sync appliances.

Example 12: IN>OUT SYNC MODE with External Sync Module with Audible Silence (CLASS A)



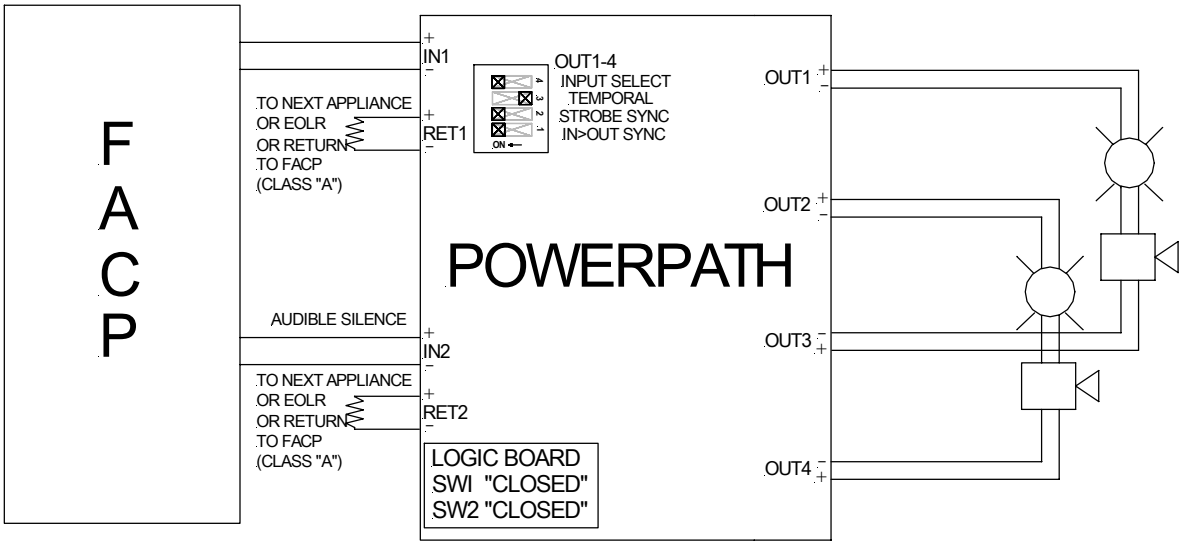
NOTE: When using the Wheelock external Sync Module (SM or DSM), synchronization ***will only occur*** with Wheelock sync appliances.

Example 13: WHEELOCK SYNC MODE without Audible Silence (CLASS A)



- This mode will only synchronize Wheelock horns, horn strobes, and strobes with the synchronization capability.
- If only strobes are connected to the **POWER**PATH outputs, the initiating input to IN2 is not required.
- When synchronized horns are used on the two wire output of the **POWER**PATH, IN2 must be connected as shown or the horns will not operate.

Example 14: WHEELOCK SYNC MODE with Audible Silence (CLASS A)



- This mode will only synchronize Wheelock horns, horn strobes, and strobes with the synchronization capability.

COMBINATION CLASS "A" AND CLASS "B" HOOKUP

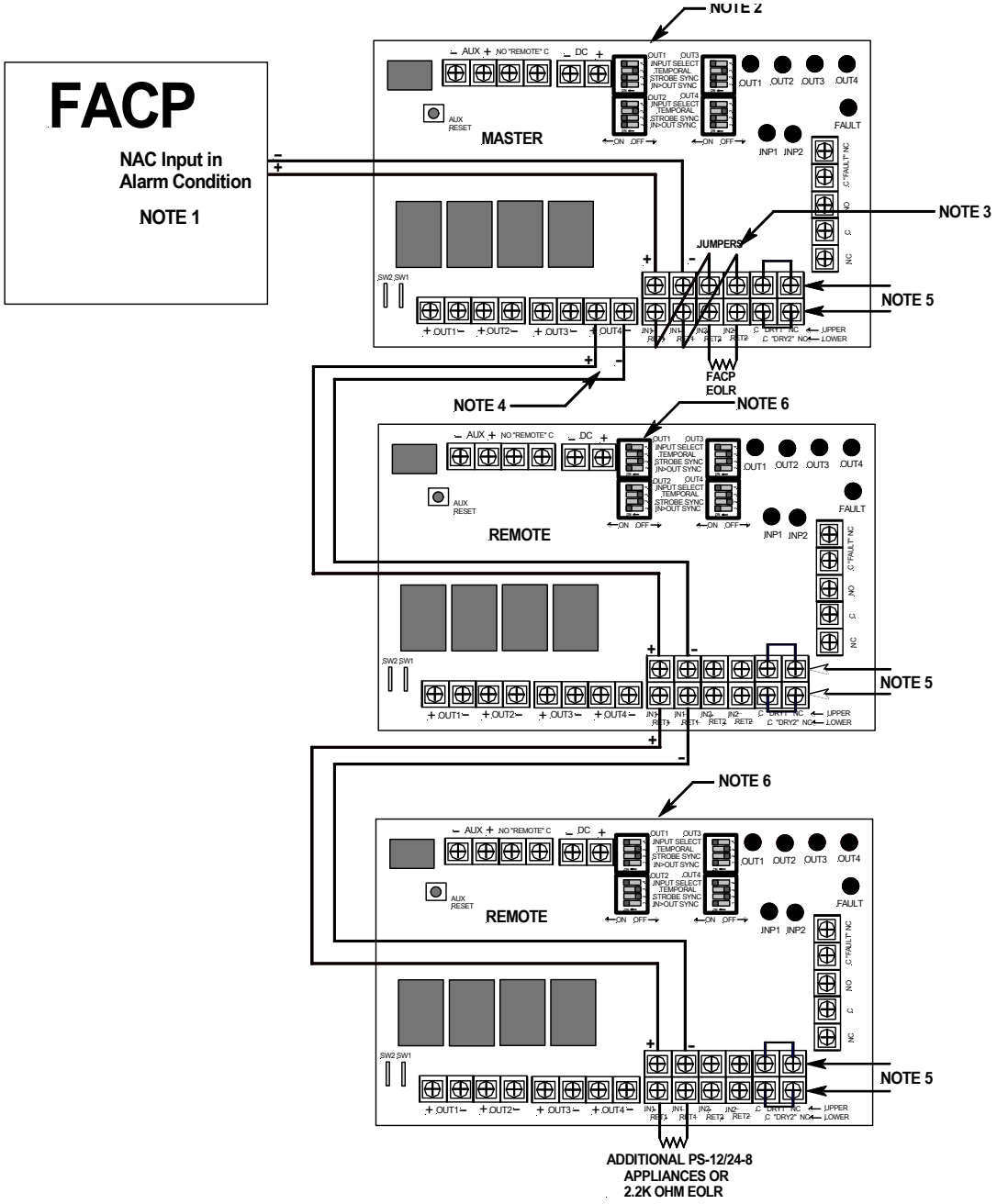
The PS-12/24-8 **POWER**PATH can be configured to have one Class "A" (2 Amps) and two Class "B" (2 Amps each circuit) Outputs at the same time. This is done by opening or closing switches SW1 and SW2 on the logic board. **NOTE:** When SW1 is "Closed", OUTPUTS 1 and 3 are the Class "A" circuit. When SW2 is "Closed", OUTPUTS 2 and 4 are the Class "A" circuit.

COMBINATION OF MODES

- In Class "B" configuration, each output can be set to an independent mode as desired.
- In Class "B", IN1 or IN2 can be selected to activate any of the outputs desired.
- In Class "A", OUTPUT DIP Switches must be set identically for each Class "A" output.

3.5 MASTER REMOTE OPERATION:

Example 15: Synchronized Multiple PS-12/24-8 Using a Master PS-12/24-8 (in the WHEELOCK SYNC MODE) Without Audible Silence, and Using Input #1.



NOTE 1: NAC Input Voltage 9.0 to 30.0VDC Constant.

NOTE 2: **OBSERVE DIP SWITCH SETTINGS**
Input Selection Switch (Position 1) on OUT1 to OUT4 DIP Switches are shown in the "ON" Position allowing Input #1 to activate Outputs 1-4, Positions 2-4 are set for "WHEELOCK SYNC MODE"

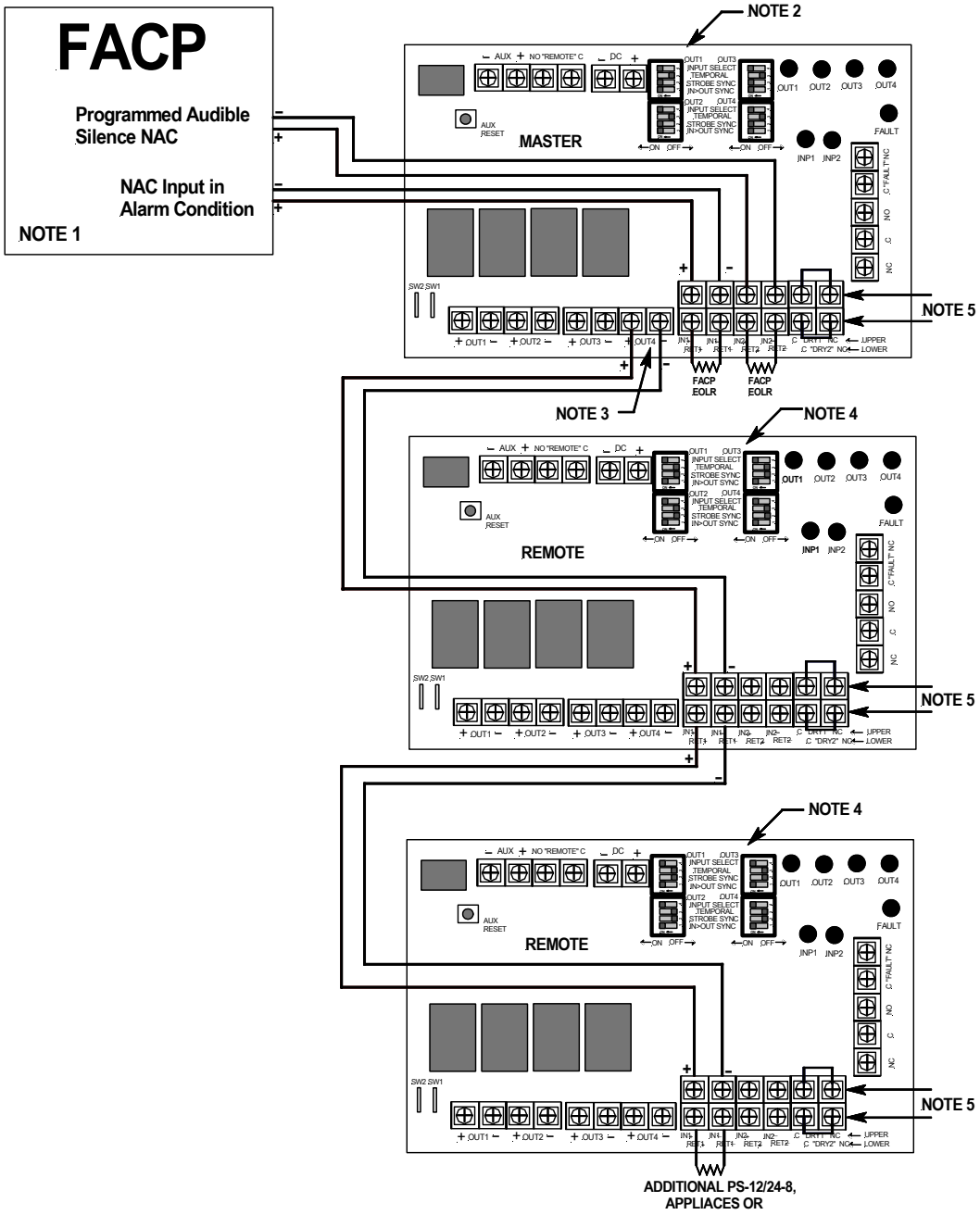
NOTE 3: Jumper "RET 1-" to "IN 2-" and "RET 1+" to "IN 2+ " only on the Master PS-12/24-8.

NOTE 4: Diagram shown with an output circuit (OUT4) on Master PowerPath used to synchronized the Remote PowerPaths. In this configuration the Master PowerPath can only have three NAC circuits.

NOTE 5: Jumpers must be placed across "DRY 1" and "DRY 2" terminals when operating Power Supply using "IN 1" or "IN 2".

NOTE 6: **OBSERVE DIP SWITCH SETTINGS**
Input Selection Switch (Position 1) on OUT 1 to OUT 4 DIP Switches are shown in the "ON" Position allowing Input #1 to activate Outputs 1-4. Positions 2-4 are set for "IN>OUT SYNC MODE".

Example 16: Synchronized Multiple PS-12/24-8 Using a Master PS-12/24-8 (in the WHEELOCK SYNC MODE) With Audible Silence, and Using Input #1.
absolutely



NOTE 1: NAC Input Voltage 9.0 to 30.0VDC Constant.
NOTE 2: **OBSERVE DIP SWITCH SETTINGS**
Input Selection Switch (Position 1) on OUT1 to OUT4 DIP Switches are shown in the "ON"
Position allowing Input #1 to activate Outputs 1-4, Positions 2-4 are set for "WHEELOCK SYNC MODE"
NOTE 3: Diagram shown with an output circuit (OUT4) on Master PowerPath used to synchronize the Remote PowerPaths. In this configuration the Master PowerPath can only have three NAC circuits.
NOTE 4: **OBSERVE DIP SWITCH SETTINGS**
Input Selection Switch (Position 1) on OUT 1 to OUT 4 DIP Switches are shown in the "ON" Position allowing Input #1 to activate Outputs 1-4. Positions 2-4 are set for "IN>OUT SYNC MODE".
NOTE 5: Jumpers must be placed across "DRY1" and "DRY2" terminals when operating Power Supply using "IN1" or "IN2".

4.0 TROUBLESHOOTING

⚠**WARNING: THE PS-12/24-8 POWER**PATH **CONTAINS VOLTAGES THAT CAN CAUSE DEATH OR SERIOUS INJURY. ALWAYS OBSERVE PROPER ELECTRICAL SAFETY PRECAUTIONS AND WARNINGS.**

Always follow good troubleshooting procedures:

- When trouble occurs, observe all visual indications and note them.
- If the problem is obvious or it can be located on the Troubleshooting Table, note it.
- Always de-energize the **POWER**PATH completely (Remove both AC and DC power) before making changes to switch settings or repairs.

NOTE: Changes in switch settings will not take affect until all power is removed and then restored to the **POWER**PATH.

- While the **POWER**PATH is de-energized, perform a visual and hands on check of all terminals and wires to ensure proper termination.

Table 4: Troubleshooting

Trouble	Cause	Action
INP1, INP2 LED's do not light in ALARM	No input signal on terminals IN1+IN1-, IN2+IN2-	Check input and input wiring.
INP1, INP2 LED's Flashing	Trouble on input	Check input supervision Voltage. Check input EOLR.
OUT1,OUT2,OUT3,OUT4 LED's do not light in ALARM	No output	Check INPUT SELECT DIP Switch on corresponding OUTPUT DIP Switch.
FAULT LED Flashing	INP1 INP2 trouble OUT1,OUT2,OUT3,OUT4 Trouble C "FAULT" NC terminals OPEN	Check inputs. (If LED's INP1 or INP2 flashing.) Check outputs (if LED's OUT1, OUT2, OUT3, OUT4 flashing). Check circuit connected to C "FAULT" NC terminals.
AC LED OFF	No AC power input	Check AC Power Source.
DC LED OFF	No DC output	Check wiring to the battery. Check wiring to AC power source.
AC FAIL relay energizes (indication in remote location)	No AC power	Check AC power source.
No audible output in WHEELOCK SYNC MODE	No input to IN2+,IN2-	See Example 13 and 14 for proper input connections.
Horn, horn strobes, or strobes do not synchronize	Improper MODE selection Improper appliances	Check MODE selection. Check appliances to ensure proper type for synchronization. For IN>OUT MODE check input appliance (DSM, SM or PS-12/24-8).
CLASS "A" circuit is not functioning properly	Improper MODE selection or SW1/SW2 setting	Check to be certain MODE selection is identical for each CLASS "A" output circuit. CLASS "A" OUT1 uses outputs 1 and 3. Class "A" OUT2 uses outputs 2 and 4. Check SW1 and SW2 on Logic Board for "CLOSED" position.
CLASS "B" circuit is not functioning properly	Improper MODE selection or SW1/SW2 setting	Check for proper MODE selection. Check SW1 and SW2 on Logic Board for "OPEN" position.
BAT FAIL relay does not change state within 5 minutes.	Power Supply voltage improperly set.	Set Potentiometer on Power Supply Board to 28.0VDC for 24VDC applications and 14.0VDC for 12VDC applications.

5.0 WHEELOCK INC. COMPATIBLE APPLIANCES

The Following is a list of appliances produced by Wheelock that are compatible with the PS-12/24-8 **POWER**PATH.

SYNCHRONIZING HORNS	
AH-12	AH-24
AH-12WP	AH-24WP
NH-12/24	----------
SYNCHRONIZING HORN STROBES	
AS-1215W	AS-121575W
AS-2415W	AS-241575W
AS-2430W	AS-2475W
AS-24110W	AS-2415C
AS-2430C	AS-2475C
AS-24100C	AS-24MCW
ASWP-2475W	----------
NS-1215W	NS-121575W
NS-2415W	NS-241575W
NS-2430W	NS-2475W
NS-24110W	NS-24MCW
----------	NS4-241575W
----------	NS4-24MCW
SYNCHRONIZING STROBES	
RSS-1215W	RSS-121575W
RSS-2415W	RSS-241575W
RSS-2430W	RSS-2475W
RSS-24110W	RSS-2415C
RSS-2430C	RSS-2475C
RSS-24100C	RSS-24MCW
APPLIANCES WITH SYNCHRONIZING STROBES	
MT-24-SLM	CH70-24MCW
CH70-2415W	CH70-241575W
CH70-2430W	CH70-2475W
CH70-24110W	CH70-24MCW
CH90-24100C	CH90-2475C
E70-2415W	E70-24MCW
E70-2430W	E70-241575W
E70-24110W	E70-2475W
E90-2430C	E90-2415C
E90-24100C	E90-2475C
ET70-2415W	ET70-24MCW
ET70-2430W	ET70-241575W
ET70-24110W	ET70-2475W
ET90-2430C	ET70-24MCW
ET90-24100C	ET90-2415C
SA-70-24-SL	ET90-2475C
SA-90-24-SL	SA-70-SLM
CODED AUDIBLE APPLIANCES	
MIZ-12	MIZ-24
MT-12-LS	MT-12/24
MT-24-LS	MT-12-LSM
MT-24-MS	MT-24-LSM
MT-12-SLM	MT-24-IS
CH70	MT-24-SLM
CH70-2415W	CH90
CH70-2430W	CH70-241575W
CH70-24110W	CH70-2475W
CH90-24100C	CH90-2475C
CSX10-24-DC	CSXG10-24-DC
NON-SYNCHRONIZING APPLIANCES	
MIZ-TC12	MIZ-TC24

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6.0 WARRANTY STATEMENT

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