PVE 802, VAB 802

Installation, Operation, and Programming Manual
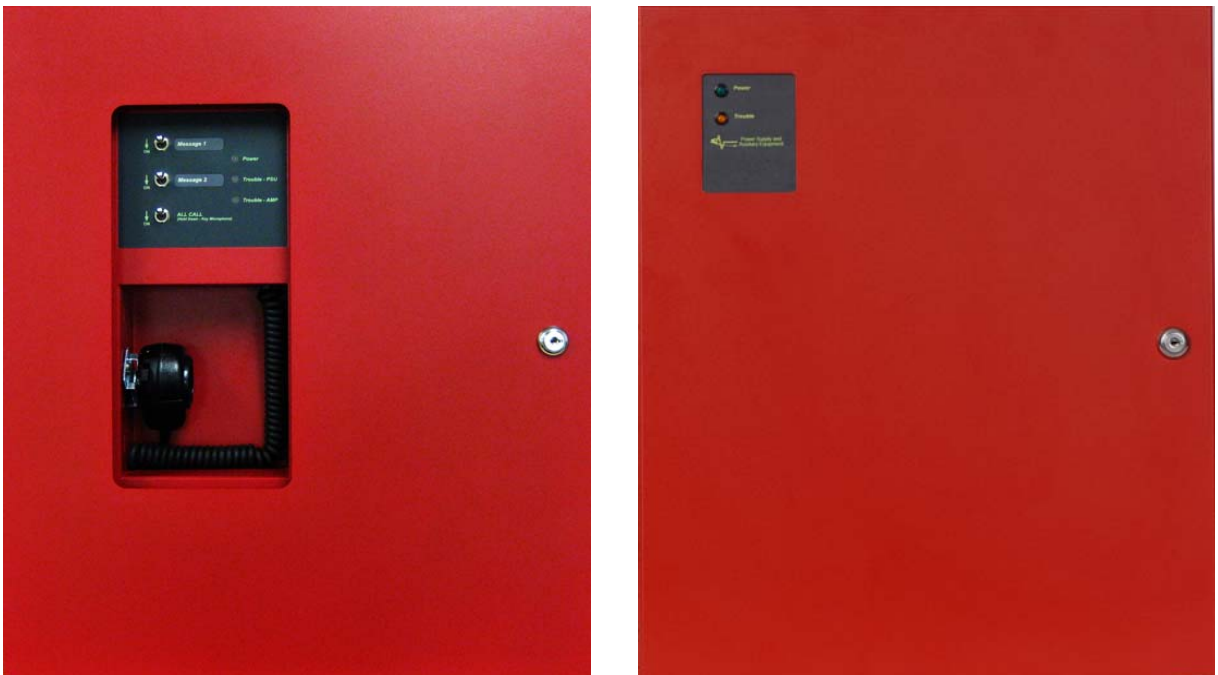
Table of Contents

1 Introduction / Overview

1.1 Product Description

This manual covers the installation and operation of the PVE 802 Audio Panel and VAB 802 Audio Booster. The PVE 802 and VAB 802 consist of an amplifier module containing; two (2) 40 watt amplifiers (controlled together, or one dedicated as a backup amplifier), a digital message/tone generator, supervision circuitry, a power supply charger and an enclosure (see figure 1). In addition, the PVE 802 includes a microphone and switch/LED module for manual control of messages and live voice communication (see figure 2).

Note: Messages played on the PVE 802 or VAB 802 two electrically independent amplifiers, are identical and are played simultaneously.

Both the PVE 802 Audio Panel and VAB 802 Audio Booster are designed to provide audio signaling during an emergency situation (alarm, alerts, warnings, mass notification, etc.). In addition, the PVE 802 can also provide live voice communication override. Both the PVE 802 and VAB 802 are designed for use in conjunction with any ANSI/UL864 Listed Fire Alarm Control Panel.

Amplifier Module   Power Supply Charger
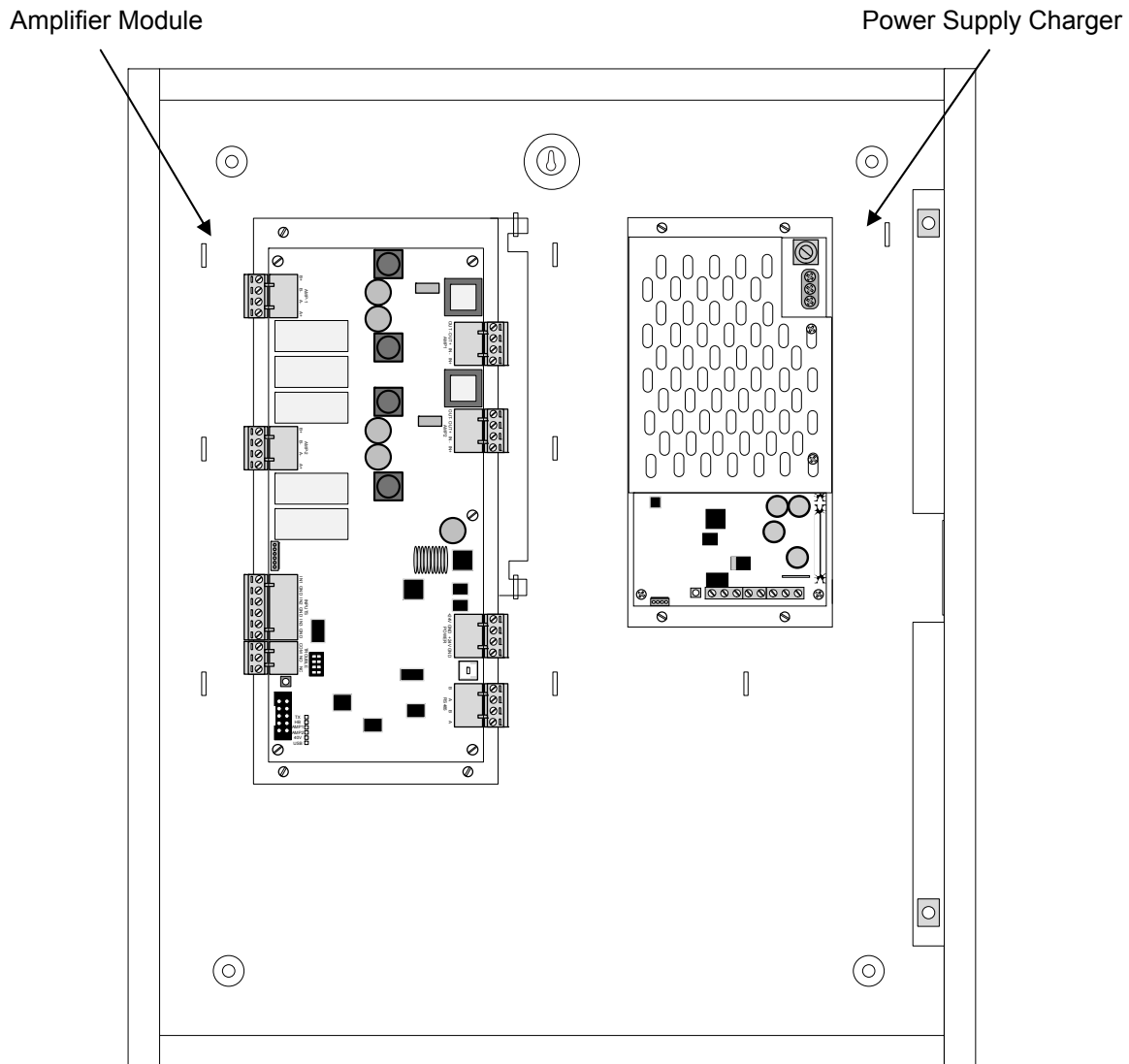
Figure 1 – PVE 802 and VAB 802 Back Box

Switch/LED Module (PV-SM)
(Includes Power LED, Trouble LEDs,
Message Switches and All-Call Switch)

Optional ZS-CM
(Zone Splitter Switch Module)

Microphone Assembly
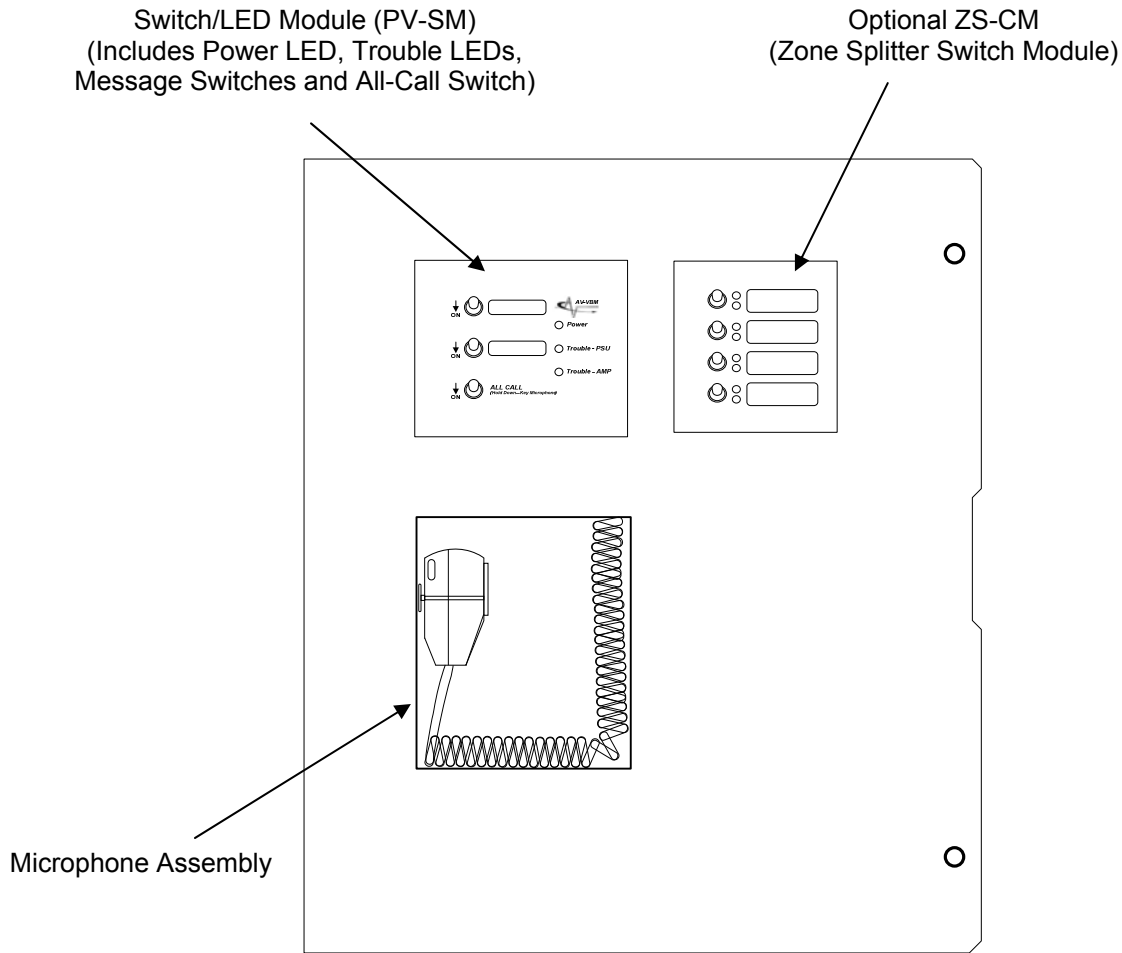
Figure 2 – PVE 802 Inner Door with Microphone and Switch/LED Module (PV-SM)
(Also Shown with PV-ZS-CM [Optional Splitter Switch Module])

The PVE 802 Audio Panel and VAB 802 Audio Booster are designed to be powered from 120 – 240VAC at 50/60 Hz and incorporate two (2) electrically independent Class A or B speaker circuits, rated 40 Watts per circuit maximum. Speaker circuit requirements are 25 VRMS.

Note: For 70 VRMS installations refer to Potter PV 70 Universal Audio Converter Installation & Operational Panel PN: 682044P.

The PVE 802 Switch/LED Module (PV-SM) of the PVE 802 Audio Panel provides a power LED, two trouble LEDs (power supply charger and audio amplifier) visible with the outer door closed and three toggle switches (play message one, play message two and push down/hold for all-call). In addition, the PV-SM Switch/LED Module provides terminals for host fire alarm control panel monitoring interface.

1.2 General Installation Notes

WARNING: Disconnect all sources of power (AC and battery) before installing/removing circuit cards or servicing the PVE 802 Audio Panel or VAB 802 Audio Booster.

USE an anti-static wrist strap whenever handling circuit cards.
STORE circuit cards in static suppressive packaging.

ENVIRONMENT: INSTALL the equipment in a clean, dry environment.

The equipment meets the requirements for operation at 32°F - 120°F (0°C - 49°C) and relative humidity of 85% RH. However, standby battery life is drastically reduced at higher temperatures. The recommended room temperature for installation is 60°F - 86°F (15°C - 27°C).

WIRING: CHECK that the installation wire sizes are adequate to deliver the required load current and maintain compatibility with the specific device operating voltages.

A secure dedicated ground connection is required. Although no system is immune to the effects of lightning strikes, a secure ground connection will reduce susceptibility. The use of overhead or outside aerial wiring is not recommended.

1.3 FCC

1.3.1 Emissions

WARNING: This equipment generates, uses, and can radiate radio frequency energy. If it is not installed in accordance with the instructions in this manual, it may cause interference to radio communications.

This equipment has been tested and found to be in compliance with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case, the user will be required to correct the interference at their expense.

2 Installation

Mount the PVE 802 and/or VAB 802 enclosure in a clean, dry, vibration-free area where extreme temperatures are not encountered. The area should be readily accessible with sufficient room to easily install, utilize and maintain the product. Determine the number of conductors required for control and supervision to be installed. Sufficient knockouts (4 double 1 ¾" or 7/8 [two top and two bottom] and 3 single 7/8" [top]) are provided for wiring convenience. Select the appropriate knockout(s) and pull the required conductors into the back box, separating power limited from non-power limited conductors – refer to the recommended cable routing diagram Section 4. All wiring should be in accordance with National Electric Code (NEC), State and Local codes.

2.1 Mounting

The PVE 802 Audio Panel and VAB 802 Audio Booster enclosures are designed for either surface or semi-flush mounting (~ ¾ inch flange around back box).

There are five (5) mounting holes located on the back wall of the PVE 802 and/or VAB 802 back box (see opposite).

The top center mounting hole is keyed for ease of mounting. Place the back box on the wall and mark the top center keyed mounting hole. Drill the marked location and partially install the mounting screw in the wall.

Hang the cabinet on the center mounting screw. Level the cabinet, and mark and drill the remaining four (4) mounting holes (two on the top, two on the bottom).

Insert all screws and firmly tighten.
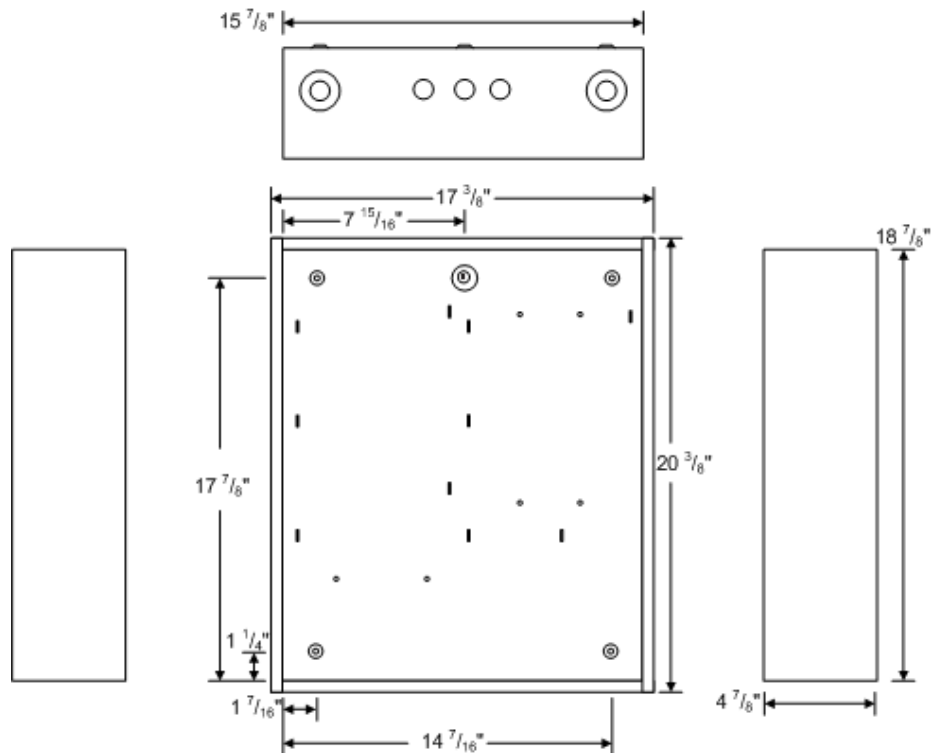
CAUTION: If drilling while mounting the PVE 802 and/or VAB 802 enclosure is going to make any metal filings or other PC board containments, remove all circuit cards from the enclosure.

To remove the circuit cards from the PVE 802 and/or VAB 802 enclosure;

1. Amplifier Module: Unplug terminal blocks containing internal wiring (PVE 802 only, unplug the 6-way ribbon cable running from the amplifier [PL2] to the microphone), remove the three (3) screws holding the amplifier mounting plate to the enclosure, slide amplifier mounting plate out from under the back box mounting tabs located on the right side of the amplifier mounting plate (see figure 3).

2. Power Supply Charger: Remove the four (4) screws holding the power supply charger to the enclosure (see figure 3).

Note: Failure to tighten screws will defeat the protection circuitry designed to protect the modules/cards from damage due to lightning and static electricity.
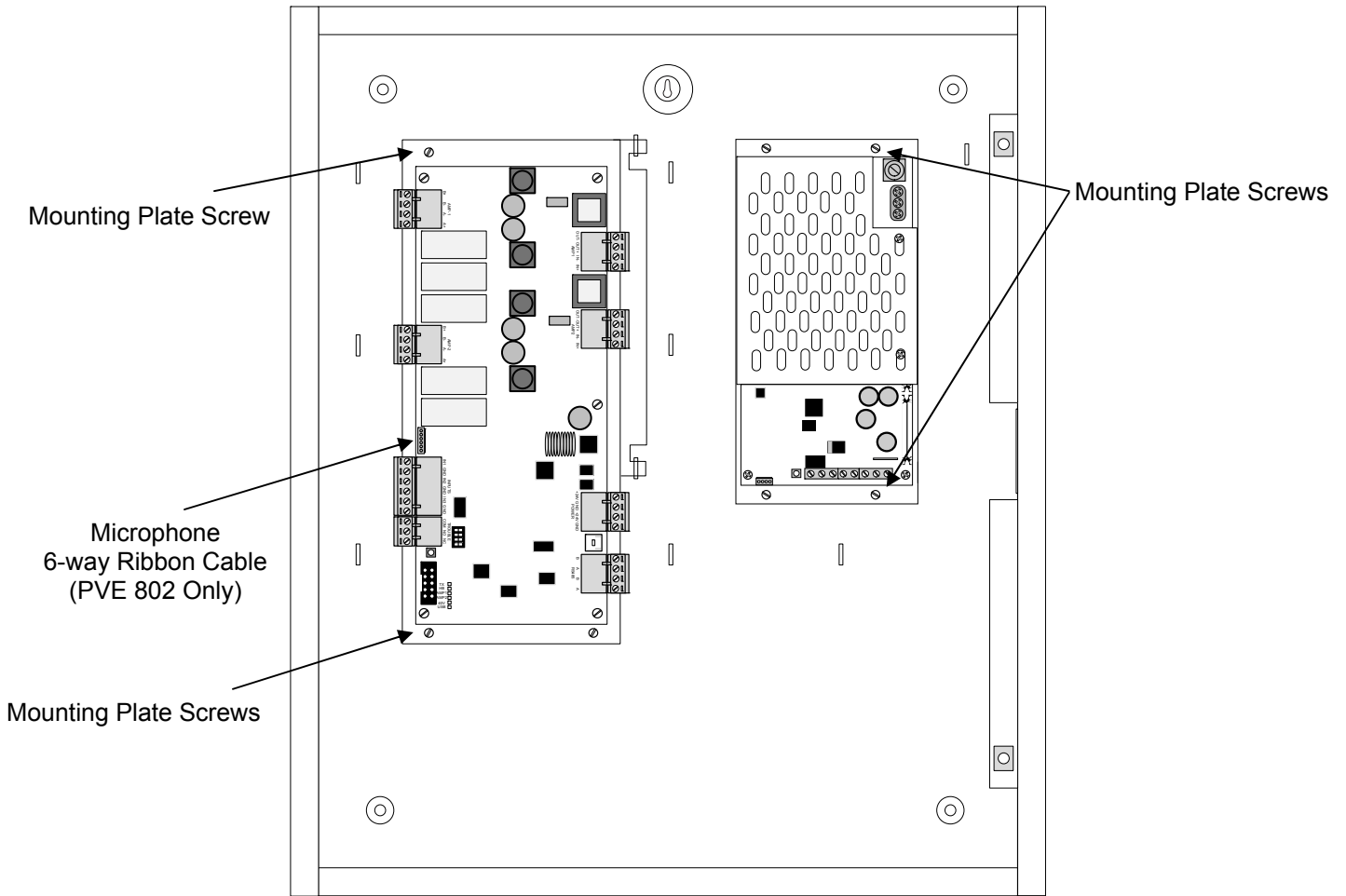
Figure 3 – PVE 802 and VAB 802, Module Removal

3   PVE 802 and VAB 802 Modules

3.1 Power Supply Charger

The power supply charger provides a maximum of 6 Amps for powering the amplifier module and charging batteries to meet installation backup requirements.

Power Supply Charger Ratings

- 120-240 VAC (3A) 50/60Hz
- 98 VAC Brown-out
- 24 VDC, 4.5 Amp (Power Limited)
- 1.5 Amp maximum charge capacity
    - o   45 Ah batteries maximum
    - o   Deducted from overall 6 Amp power
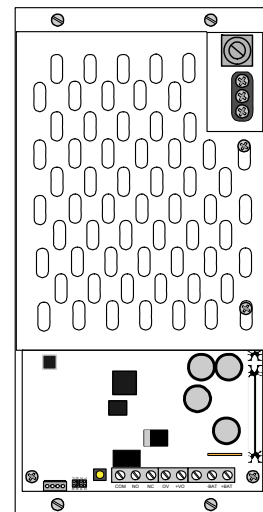
3.1.1 AC Wiring of Power Supply Charger

AC Input
- 120 VAC 15 Amp Branch Circuit
- #14 or #12 AWG (Refer to NEC)
- Non-Power Limited

Fuse
5A, 250VAC Ceramic, Time Delay (size 5x20mm)
(Bussmann S505-5-R, Littelfuse 0215005.XP)

Over-current protection for this circuit must comply with Article 760 of the National Electrical Code (NEC) and/or local codes. 15A Branch Circuit.

Must be earthed

The Power Supply Charger must be connected to a solid earth ground. Use #14 AWG (2.00 mm^2) or larger wire with 600 volt insulation rating.

AC Input
15A Branch Circuit
#14 or #12 AWG

FUSE

L (HOT/LOAD)
N (NEUTRAL)
(EARTH GROUND)
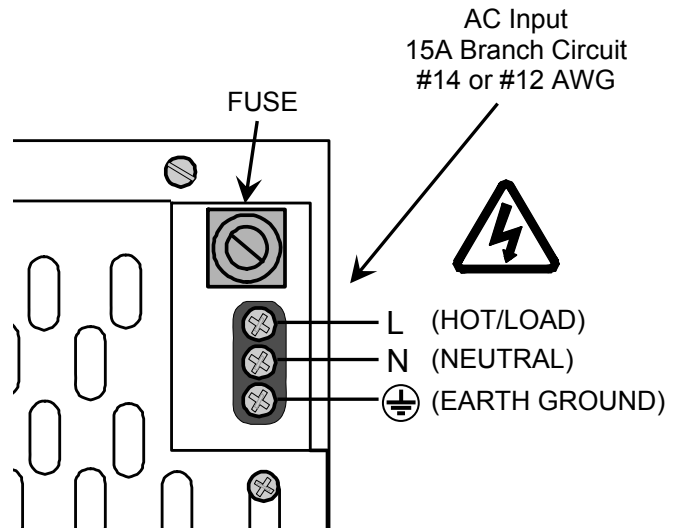
3.1.2 Battery Circuit Wiring of Power Supply Charger

Battery Charger
- Charger current 1.5A (Maximum 45Ah).
- Supervised, Non-Power Limited.
- Charging voltage 27.4 VDC typical.
- Charging temperature compensated.

Start the power supply charger on AC power first then connect the batteries.

If AC power is not available the power supply charger can be started directly from the batteries. Connect batteries and press the "START FROM BATTERY" push button.

The battery charger provides deep discharge protection. Battery power will be disconnected when voltage falls below 19V (nominal). If the batteries are disconnected, the charger output is turned off.

The internal series resistance of the batteries is continuously checked. If the internal series resistance increases above 0.8Ω then the power supply charger will indicate a trouble condition.

Start from
Battery Button

FUSE
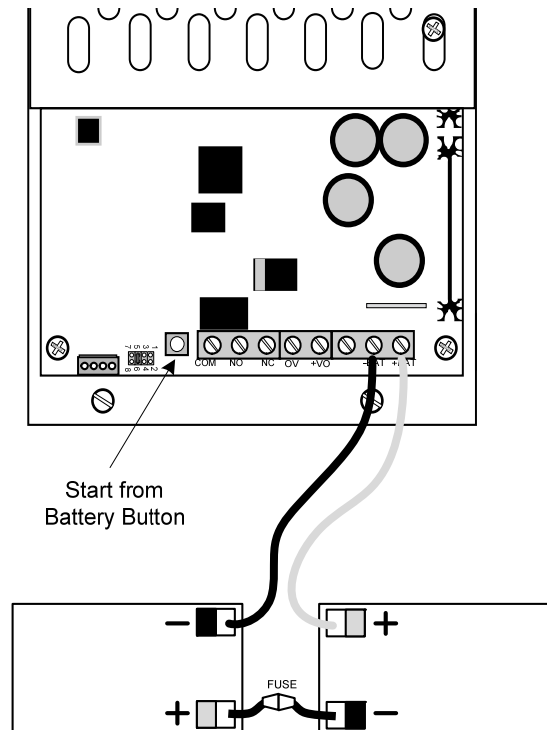
3.1.3 Additional Wiring of Power Supply Charger

The 24 VDC power output of the power supply charger is prewired to the amplifier module in both the PVE 802 and VAB 802 panels. The trouble/fault relay contact is prewired in the PVE 802 to the PV-SM Switch/LED Module. In the VAB 802 the trouble/fault relay contact must be monitored by the host fire alarm control panel.

The trouble relay contact is a fail-safe relay which transfers on loss of power or any other power supply charger trouble condition.

* Note: The power supply trouble/fault relay contact, in addition to the trouble relay contact located on the amplifier module are prewired in the PVE 802 panel to the PV-SM Switch/LED Module. These contacts, located in both the PVE 802 and VAB 802, must be monitored by the host fire alarm control panel to maintain proper supervision of the PVE 802 Audio Panel and VAB 802 Audio Booster.
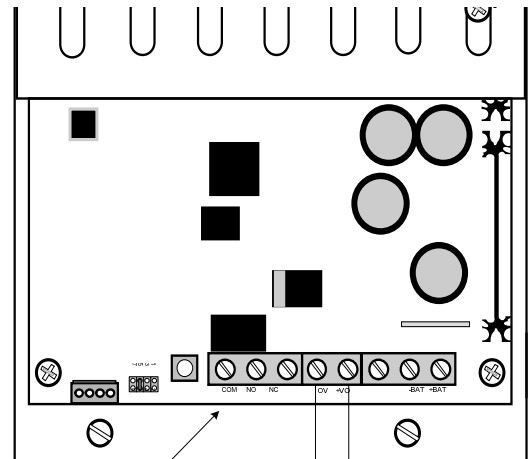
Form "C"
Power Supply Charger
Trouble/Fault
Relay Contact*

24 VDC
To
Amplifier Module
+24V and GND
Power Terminals

* See Note

3.1.4 Power Supply Charger LEDs

There are seven (7) onboard LEDs associated with the power supply charger. Refer to the opposite diagram and list below for LED descriptions and purpose.

1. Earth Fault: Illuminates on ground fault (within 10 seconds).
2. Heart Beat: Flashes to indicate proper microprocessor operation.
3. Battery Connect (BAT CON): Illuminates on AC failure when batteries are powering the supply.
4. Battery Low (BAT LOW): Illuminates when batteries have a high internal resistance [battery cell failure] (within 120 seconds).
5. Battery O/C (BAT O/C): Illuminates when batteries are disconnected (within 40 seconds).
6. Charger Fault (CHGR FLT): Illuminates on charger output failure (within 90 seconds).
7. Mains Fault (MAINS FLT): Flashes on AC supply failure (within 20 seconds).
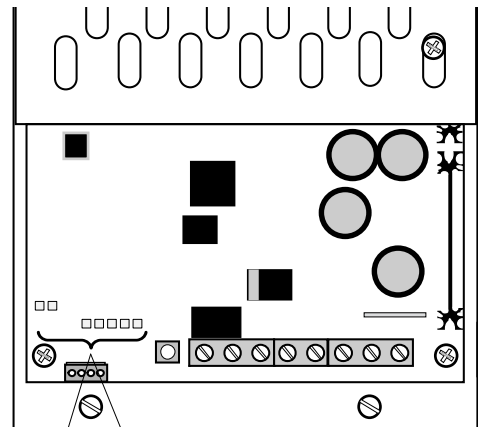
Earth Fault
Heart Beat

Battery Connect
Battery Low
Battery O-C
Charger Fault
PSU Fault

3.1.5 Power Supply Jumper

Jumper 5-6 must always be installed to allow for proper battery charging. Battery charging can support up to 45 Ah batteries maximum.

DO Not Remove Jumper
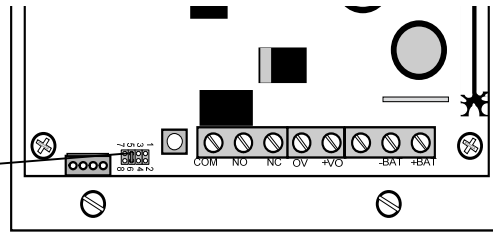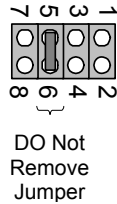
Note: On the VAB 802, jumper switches 1-2 (power supply Trouble LED drive) and 3-4 (power supply ON LED drive) are utilized as the LED status drivers for the LED indicators located on the front of the VAB 802 enclosure. The power supply LED will flash on loss of AC power.

3.2 Amplifier Module

The amplifier module provides the digital audio capabilities (live voice communications with PVE 802) of the PVE 802 Audio Panel and VAB 802 Audio Booster and requires 24 VDC nominal power from the power supply charger (see figure 4).

The amplifier module contains two (2) electrically independent Class A or B, 40 Watt @ 25 Vrms amplifiers (Audio Notification Appliance Circuits - ANACs) [controlled together, or amplifier two dedicated as a backup amplifier]. Each amplifier (audio notification appliance circuit) is activated whenever one of the amplifier trigger inputs is activated (trigger input activation on PVE 802 is via the PV-SM Switch/LED Module).

In addition to providing the two (2) electrically independent amplifiers (audio notification appliance circuits), the amplifier has two (2) programmable, flash-based, digital message/tone generators. Messages are freely programmable and can be tailored to meet specific installation requirements.

There are three (3) trigger inputs on the amplifier (two of these, trigger input 1 and trigger input 2, are prewired on the PVE 802 to the PV-SM Switch/LED Module) for activating the audio amplifiers; trigger input 1, trigger input 2 and trigger input 3.

> Trigger input 1 when activated not only turns on both amplifiers (audio notification appliance circuits) it also activates programmed message/tone #1 and plays this message over the audio notification appliance circuits. Trigger input 1 has a higher priority than trigger input 2. If both trigger inputs are active at the same time programmed message/tone #1 will be broadcasted.

> Trigger input 2 when activated plays message/tone #2 on both amplifiers (audio notification appliance circuits).

> Trigger input 3 sets the PVE 802 Audio Panel and/or VAB 802 Audio Booster to "booster mode", this allows any external audio signal (25vrms) to be broadcasted out of one or both of the amplifiers (based on wiring). This trigger input has the highest priority, if both trigger input 1 and 2 are active during a trigger input 3 activation, amplifiers will broadcast the external audio signal. This is how live voice communications are broadcasted through the VAB 802 Audio Booster amplifiers. By activating trigger input 3 on the amplifier of the VAB 802 Audio Booster, microphone communications from a PVE 802 Audio Panel or a host EVAC system can be rebroadcasted out of the VAB 802 Audio Booster amplifiers.

Designed into the amplifier module is a dedicated Form "C" trouble relay contact which transfers on any amplifier and/or audio notification appliance circuit trouble/failure. This trouble/fault relay contact is prewired in the PVE 802 to the PV-SM Switch/LED Module. In the VAB 802 the trouble/fault relay contact must be monitored by the host fire alarm control panel.

Note: The Amplifier Module trouble relay contact, in addition to the power supply charger trouble/fault relay contact are prewired in the PVE 802 panel to the PV-SM Switch/LED Module. These contacts located in both the PVE 802 and VAB 802 must be monitored by the host fire alarm control panel to maintain proper supervision of the PVE 802 Audio Panel and VAB 802 Audio Booster.

3.2.1 Amplifier Wiring
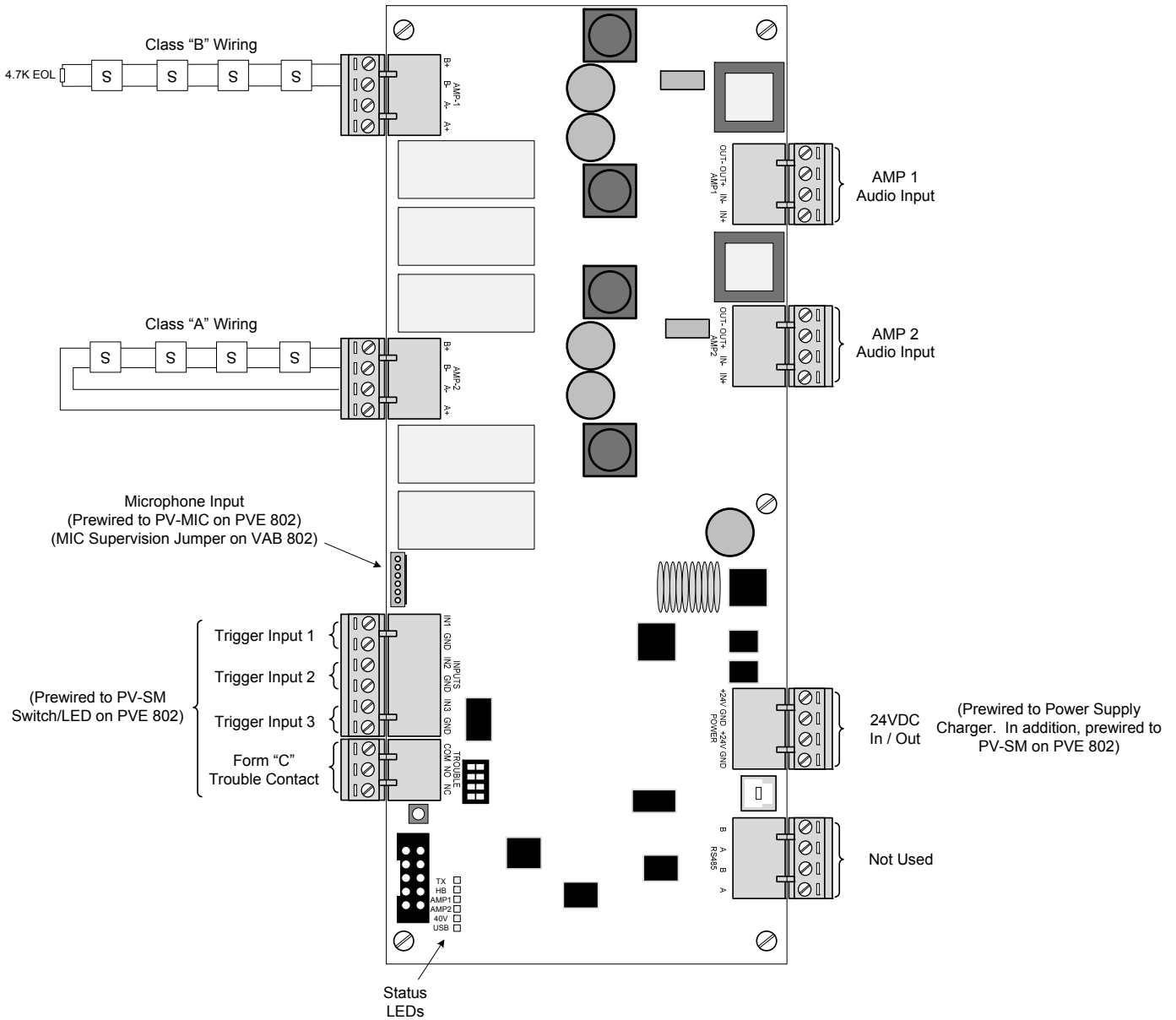
Figure 4 – Amplifier Wiring

3.2.2 Amplifier LEDs

There are six (6) onboard LEDs associated with the amplifier module (see figure 5).

1. Transmit (TX): Flashes when sending data via USB port.
2. Heart Beat (HB): Flashes to indicate proper microprocessor operation.
3. Amplifier 1 (AMP 1): On steady when amplifier 1 is active, or in supervision cycle. Flashes on amplifier 1 trouble or open/short circuit on amplifier 1 speaker circuit.
4. Amplifier 2 (AMP 2): On steady when amplifier 2 is active, or in supervision cycle. Flashes on amplifier 2 trouble or open/short circuit on amplifier 2 speaker circuit.
5. 40V: On steady when amplifiers are active, flashes during amplifier supervision cycle.
6. USB: On steady when amplifier message is being programmed, USB port connected.
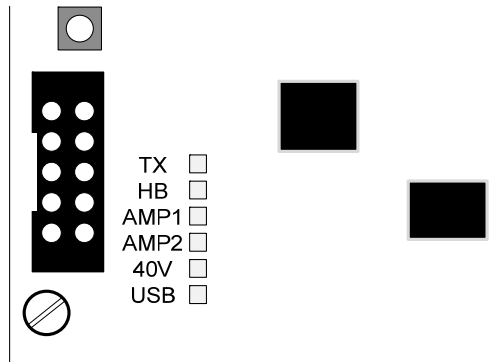
Figure 5 – Amplifier Status LED's

3.2.3 Amplifier Backup Programming

As previously discussed, both amplifiers (AMP 1 and AMP 2) of the Amplifier Module are controlled together via the on-board trigger inputs (PV-SM Switch/LED Module on the PVE 802). However, based on installation or local code requirements, amplifier 2 (AMP 2) can be configured as a backup amplifier for amplifier 1 (AMP 1). To configure amplifier 2 as a backup amplifier, simply slide dip switch #1 to the ON position, this now permits amplifier 2 to activate during an amplifier 1 failure (see figure 6).

Dip Switch 1
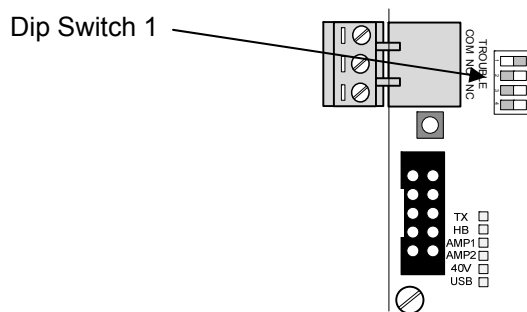
Figure 6 – Amplifier Backup Programming

3.2.4 Microphone Wiring (PVE 802 only)

To allow for live voice communications, the PVE 802 Audio Panel has a 6-way ribbon cable that is prewired from a microphone assembly located on the inner door of the PVE 802 to the amplifier module input connector PL2 (see figure 7). This connection not only allows for live voice communications, but also monitors the PVE 802 microphone for both placement and open microphone condition.
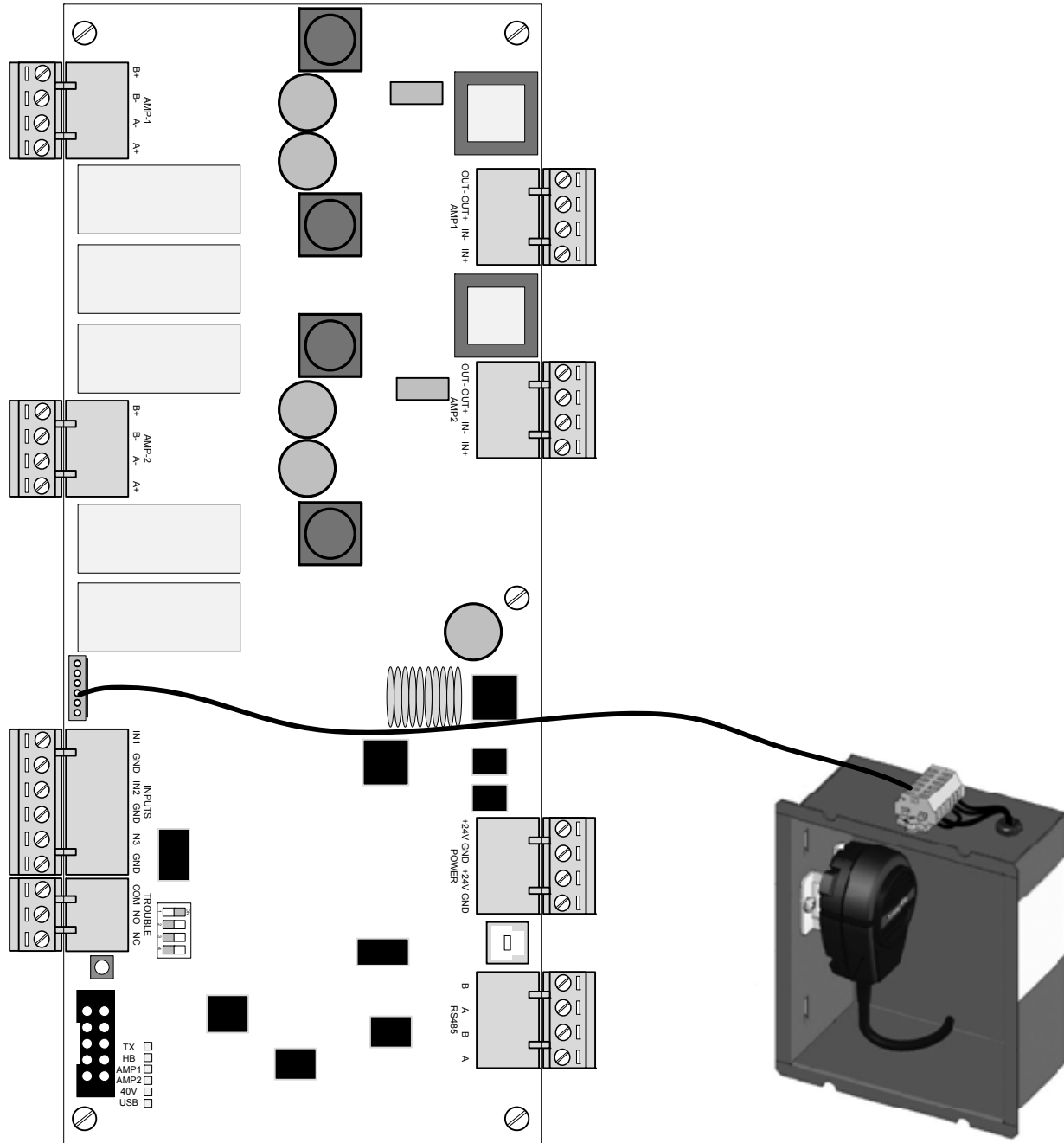
Figure 7 – Microphone Assembly Wiring

3.2.5 Optional PV-ZS Zone Splitter Module

The amplifier module is capable of accommodating an optional Potter PV-ZS zone splitter module.

The PV-ZS zone splitter module is designed to take one or both amplifiers (audio notification appliance circuits) of the amplifier module and split these into additional audio notification appliance circuits, each capable of delivering 20 Watts per circuit. If splitting both (2) amplifiers module (audio notification appliance circuits) of the amplifier module, each amplifier is split into two (2) audio notification appliance circuits. If splitting one (1) amplifier (audio notification appliance circuit) of the amplifier module, the amplifier is split into four (4) audio notification appliance circuits.

Note: The PV-ZS zone splitter module can only be installed in PVE 802 and VAB 802 enclosures manufactured after August of 2014.

3.2.5.1 PV-ZS Zone Splitter Module Mounting

The PV-ZS zone splitter module is supplied with three (3) metal hexagon spacers and one (1) nylon spacer. Remove the three (3) upper screws securing the amplifier module to its mounting plate and install the three (3) provided metal hexagon spacers. Install the provided nylon spacer into the fourth mounting hole on the PV-ZS zone splitter module (see figure 8).

Mount the PV-ZS zone splitter module above the amplifier module to the three (3) previously installed metal hexagon spacers and secure with the previously removed screws (see figure 8).

Failure to tighten screws will defeat the protection circuitry designed to protect the module from damage due to lightning and static electricity.
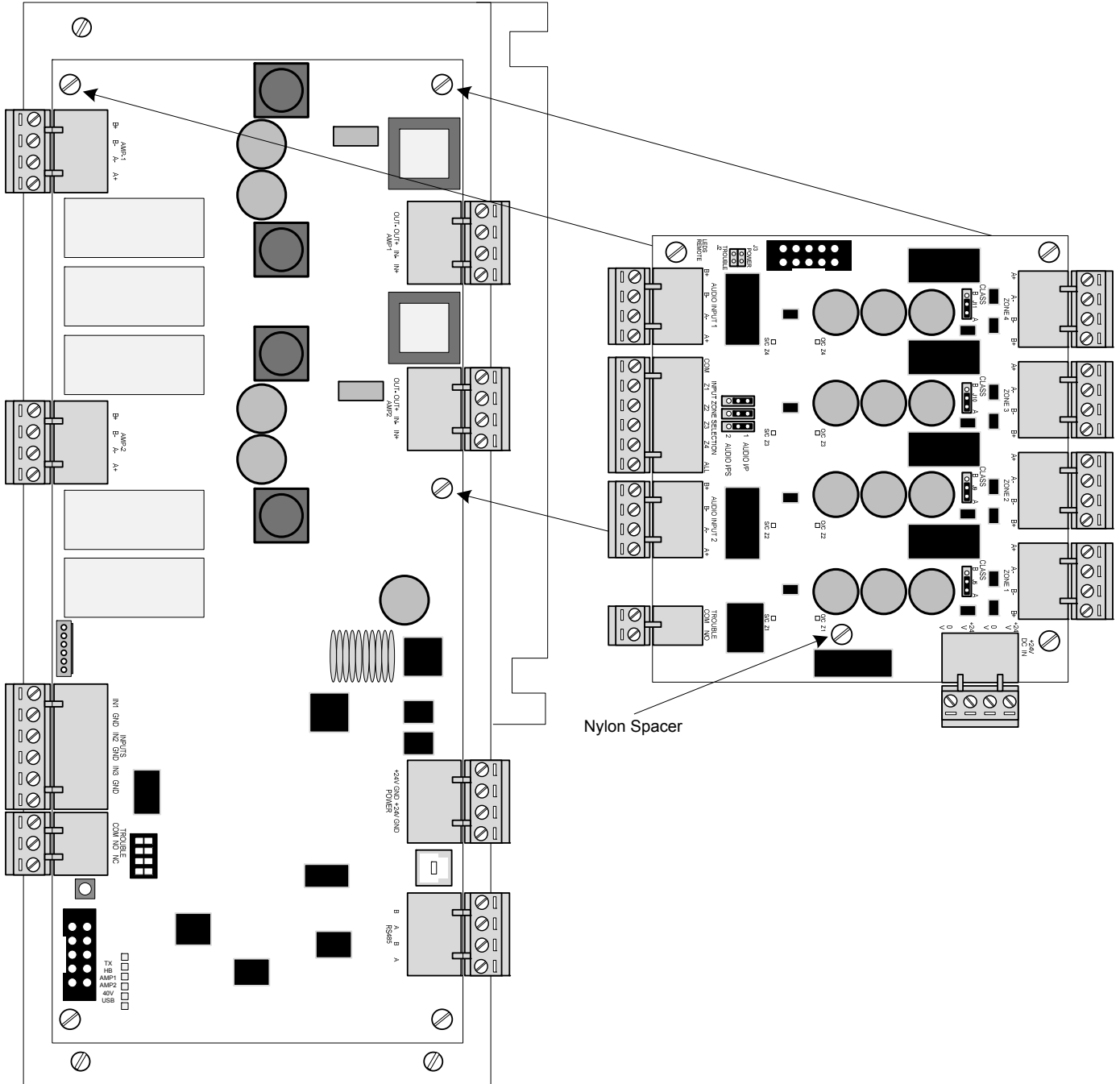
Figure 8 – PV-ZS Zone Splitter Module to Amplifier Module Mounting

3.2.5.2 PV-ZS Zone Splitter Module Wiring

Wire 24 VDC (from amplifier module power output terminals) to the power input terminals of the PV-ZS zone splitter module. Wire one or both amplifiers (audio notification appliance circuits) of the amplifier module to the Audio Input 1 and Audio Input 2 terminals of the PV-ZS zone splitter module and set jumpers J6 and J7 to their appropriate position [1 audio input or 2] (see figure 9).

Note: The PV-ZS zone splitter module includes a fail-safe trouble relay contact which opens on any split audio notification appliance circuit trouble condition or on loss of 24 VDC input power. This trouble relay contact must be monitored by the host fire alarm control panel (see figure 9).
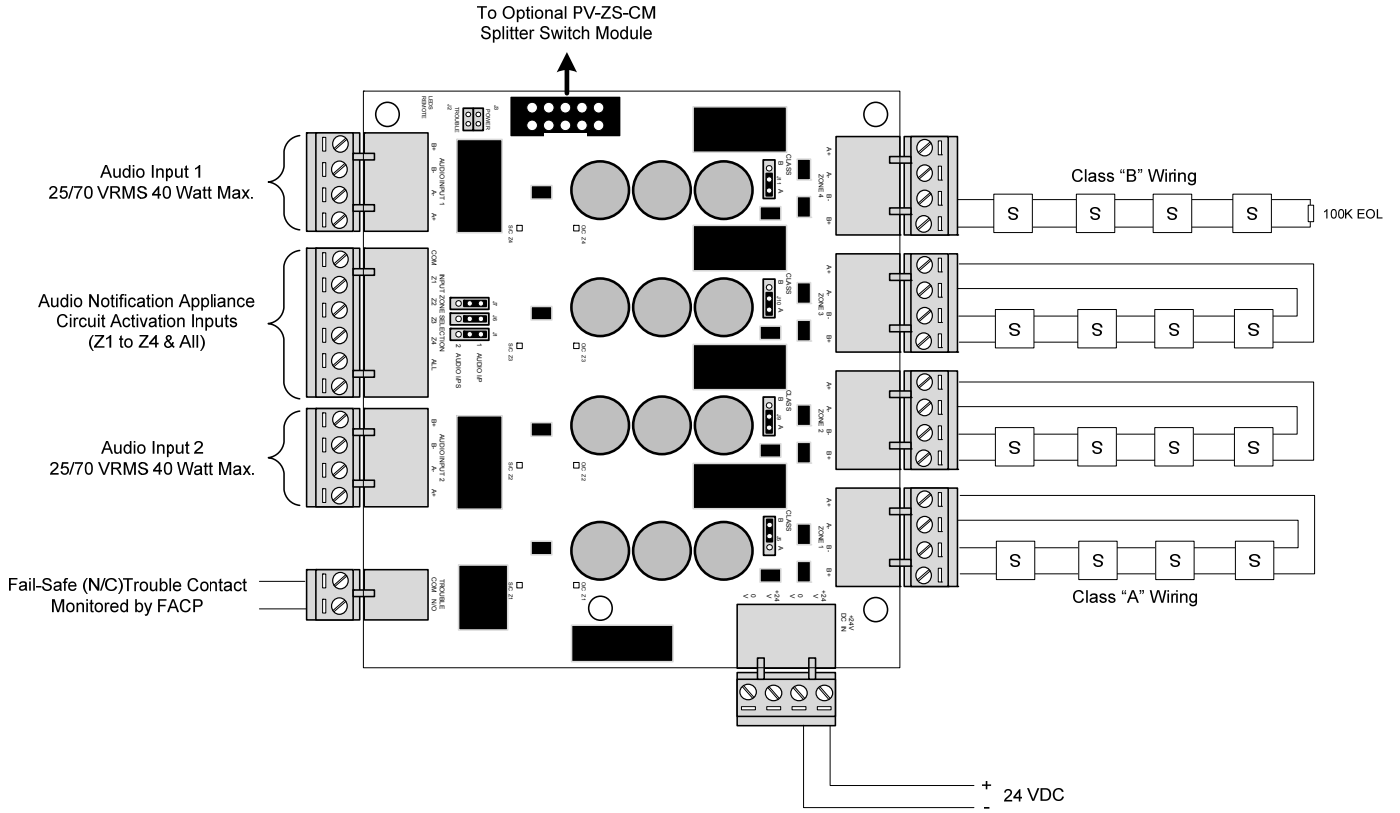
Figure 9 – PV-ZS Zone Splitter Module Wiring

3.2.5.2.1   PV-ZS Speaker Circuit Activation

The PV-ZS zone splitter module speaker circuits are activated by switching the common (COM) of the Input Zone Selection terminal block, through an activation relay contact back to the specific Input Zone Selection (Z1, Z2, Z3, Z4) terminal block for the specific speaker circuit activation. In addition, the Input Zone Selection terminal block incorporates an ALL input selecting for activating all speaker circuits (see figure 10).
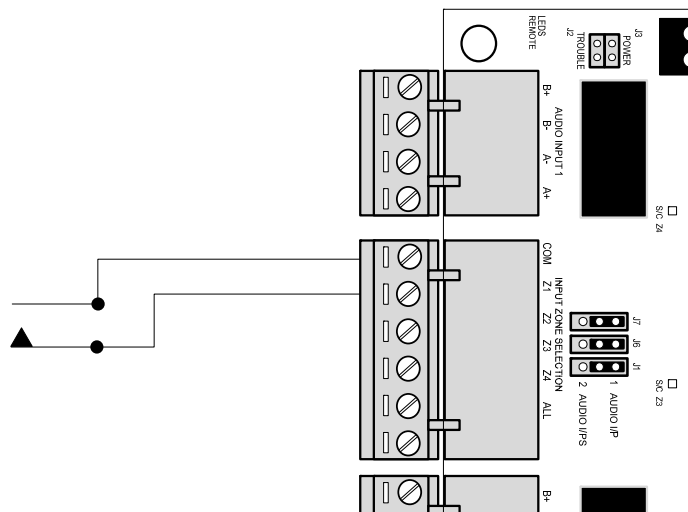
Figure 10 – PV-ZS Speaker Circuit Selection

Note: Speaker circuit activation is unsupervised; wiring must be within 20 feet of the activation relay contact. For additional information regarding the installation and operation of the PV-ZS zone splitter module refer to PV-ZS Zone Splitter Module Installation Instructions.

3.2.5.3 Optional PV-ZS-CM Splitter Switch Module

The optional PV-ZS-CM splitter switch module is a switch module that allows for the individual manual control of the PV-ZS zone splitter module's four (4) audio notification appliance circuits.

The PV-ZS-CM splitter switch module mounts to the available aperture location located on the PVE 802 Audio Panel's inner door. Two cables are provided with the PV-ZS-CM splitter switch module, one 2-pin and one 14-pin. The 2-pin cable connects the PV-ZS-CM module to the PV-SM switch/LED module, while the 14-pin cable connects the PV-ZS-CM module to the PV-ZS zone splitter module (see figure 11).
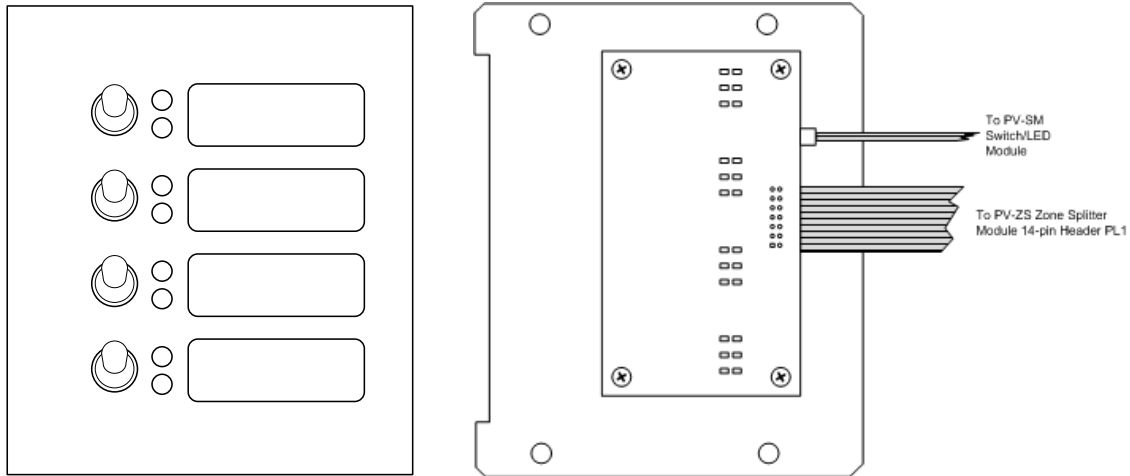
Figure 11 – PV-ZS-CM Splitter Switch Module

Note: For additional information requiring the installation and operation of the PV-ZS-CM splitter switch module, refer to PV-ZS Zone Splitter Module Installation Instructions.

3.3 PV-SM Switch/LED Module (PVE 802 only)

To allow for control and status of a PVE 802 Audio Panel, a PV-SM Switch/LED Module is provided behind a locked outer door. The PV-SM Switch/LED Module is the user interface to the PVE 802 Audio Panel.

The PV-SM Switch/LED Module provides three (3) status LEDs and three (3) control switch's (see figure 12). In addition to providing the status indicators and control switches, the PV-SM Switch/LED Module also incorporates screw terminals for host panel interface for supervision and control of the PVE 802 Audio Panel (see figure 13).
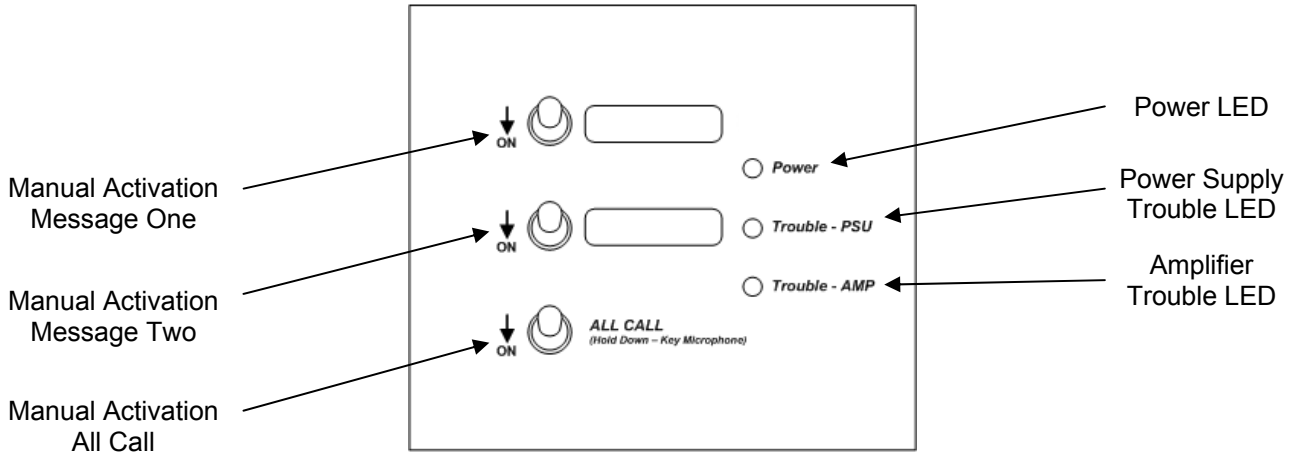
Figure 12 – PV-SM Switch/LED Module Controls and Status
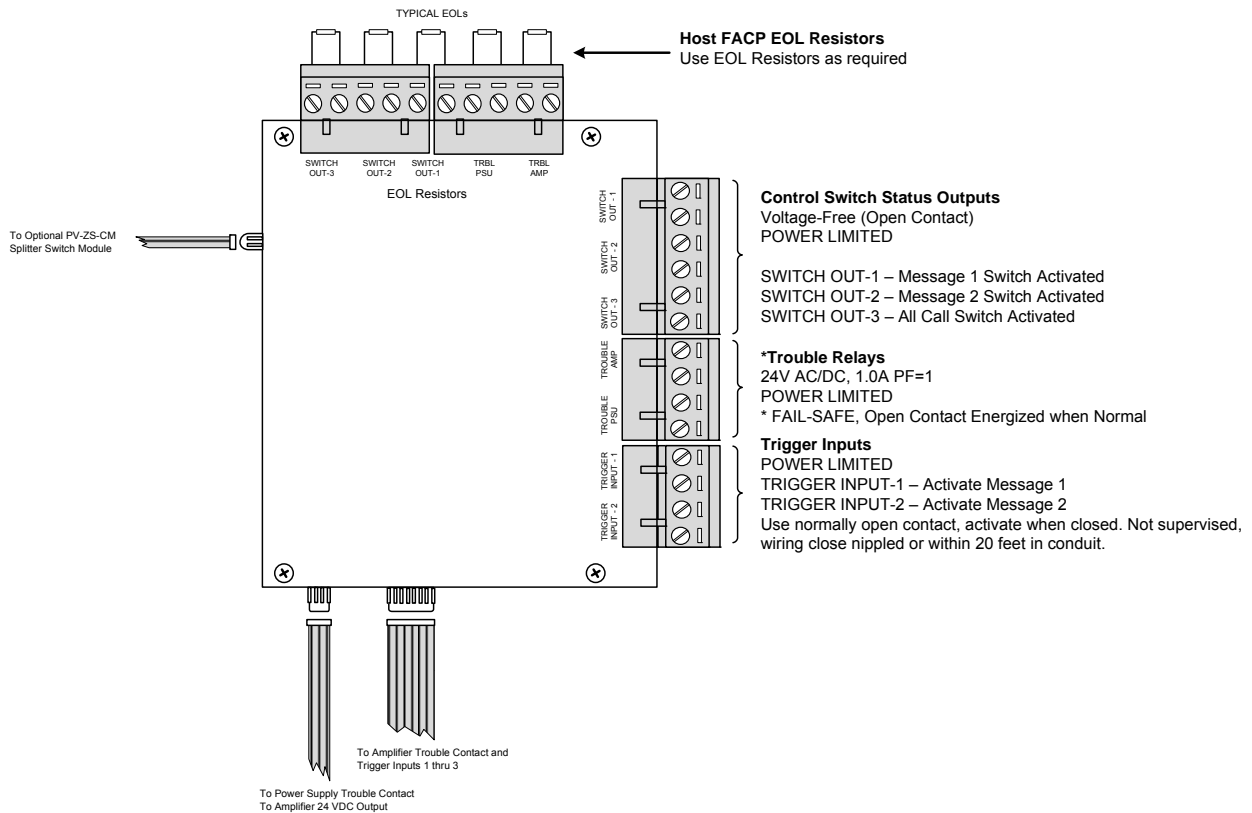
Figure 13 – PV-SM Switch/LED Module Wiring

20

3.3.1 PV-SM Switch/LED Operation

With proper key access to the PVE 802 Audio Panel inner door, there are three (3) manual user controlled functions that can be performed; Activate Message One (latching toggle switch), Activate Message Two (latching toggle switch) and perform an All-Call live voice page (non-latching toggle switch – hold down to page)[see figure 12].

1. **Activate Message One (latching toggle switch)** – By moving the message one toggle switch to the on position, message one will be broadcasted out of both 40 watt speaker circuits of the PVE 802 Audio Panel. The message that will be broadcasted is based on the user programming for message one (see Section 6). If the user has not programmed message 1 the factory default message will be broadcasted; fire alarm evacuation message (Female Evac 3.wav) "Your attention please. Your attention please. A fire has been reported in the building. Please proceed calmly to the nearest exit. Please do not use the elevator". When message 1 is activated via the PV-SM message one toggle switch, switch 1 (message one) status relay contact transfers from an open contact to a closed contact (see figure 13). This relay contact must be wired to the host fire alarm control panel to provide status that the PVE 802 Audio Panel has been manually activated.

2. **Activate Message Two (latching toggle switch)** – By moving the message two toggle switch to the on position, message 2 will be broadcasted out of both 40 watt speaker circuits of the PVE 802 Audio Panel. The message that will be broadcasted is based on the user programming for message 2 (see Section 6). If the user has not programmed message two the factory default message will be broadcasted; male all clear message (Male All Clear 1.wav) "All clear. All clear. All clear. It is now safe to return to your work area". When message 2 is activated via the PV-SM message two toggle switch, switch 2 (message two) status relay contact transfers from an open contact to a closed contact (see figure 13). This relay contact must be wired to the host fire alarm control panel to provide status that the PVE 802 Audio Panel has been manually activated.

3. **Activate All-Call Live Voice Page (non-latching toggle switch – hold down to page)** – By moving and holding down the All-Call non-latching toggle switch to the on position and keying the PVE 802 integral microphone, live voice paging can be broadcasted out of both 40 watt speaker circuits of the PVE 802 Audio Panel. When live voice paging is active via the PV-SM All-Call toggle switch, switch 3 (All-Call) status relay contact transfers from an open contact to a closed contact (see figure 13). This relay contact must be wired to the host fire alarm control panel to provide status that the PVE 802 Audio Panel has been manually activated. In addition, by wiring the PVE 802 speaker circuit to Amp 1 and Amp 2 audio inputs of a VAB 802, this contact activation can be utilized as a command signal for the host FACP to activate the trigger input 3 of a VAB 802 for rebroadcasting of the PVE 802 microphone speaker circuit to the VAB 802.

3.4 Optional PV-RMIC All-Call Remote Microphone

The optional PV-RMIC all-call remote microphone provides a means of all-call remote paging to a single PVE 802 Audio Panel or VAB 802 Audio Booster. Whenever the optional PV-RMIC all-call remote microphone is keyed, the interfaced amplifier module, located in the PVE 802 or VAB 802, is placed into boost mode for remote microphone audio broadcasting. For immediate local visual status, an integral "Power" and "Trouble" LED are located on the front of the PV-RMIC enclosure (see figure 14).

Note: For additional information requiring the installation and operation of the PV-RMIC, refer to PV-RMIC All-Call Remote Microphone Installation and Operating Manual PN: 682046P.
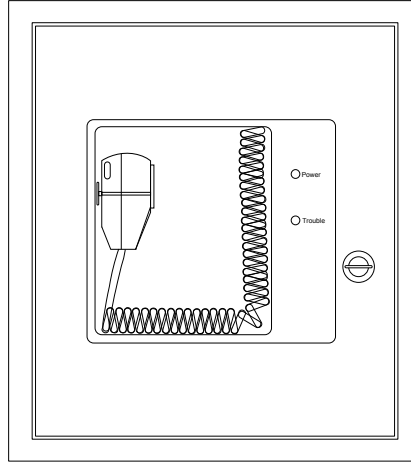
Figure 14 – PV-RMIC All Call Remote Microphone

The PV-RMIC consists of:

PV-MIC-REM: Lockable enclosure (with removable inner and outer doors) and microphone.

PV-RM-PCB: Remote microphone module, located in the PV-RMIC, which interfaces to PV-RMI and amplifier module (see figure 16). The PV-RM-PCB supervises the PV-RMIC microphone for open circuit, short circuit and disconnection conditions. The audio output of the PV-RM-PCB is supervised for open and short circuit conditions and is isolated via an onboard audio transformer.

PV-RMI: Remote microphone interface module which interfaces to the PV-RM-PCB. It mounts in a single PVE 802 or VAB 802 enclosure and connects to a single amplifier module (see figure 15 and 16).

PV-RMI Module
Mounting Location
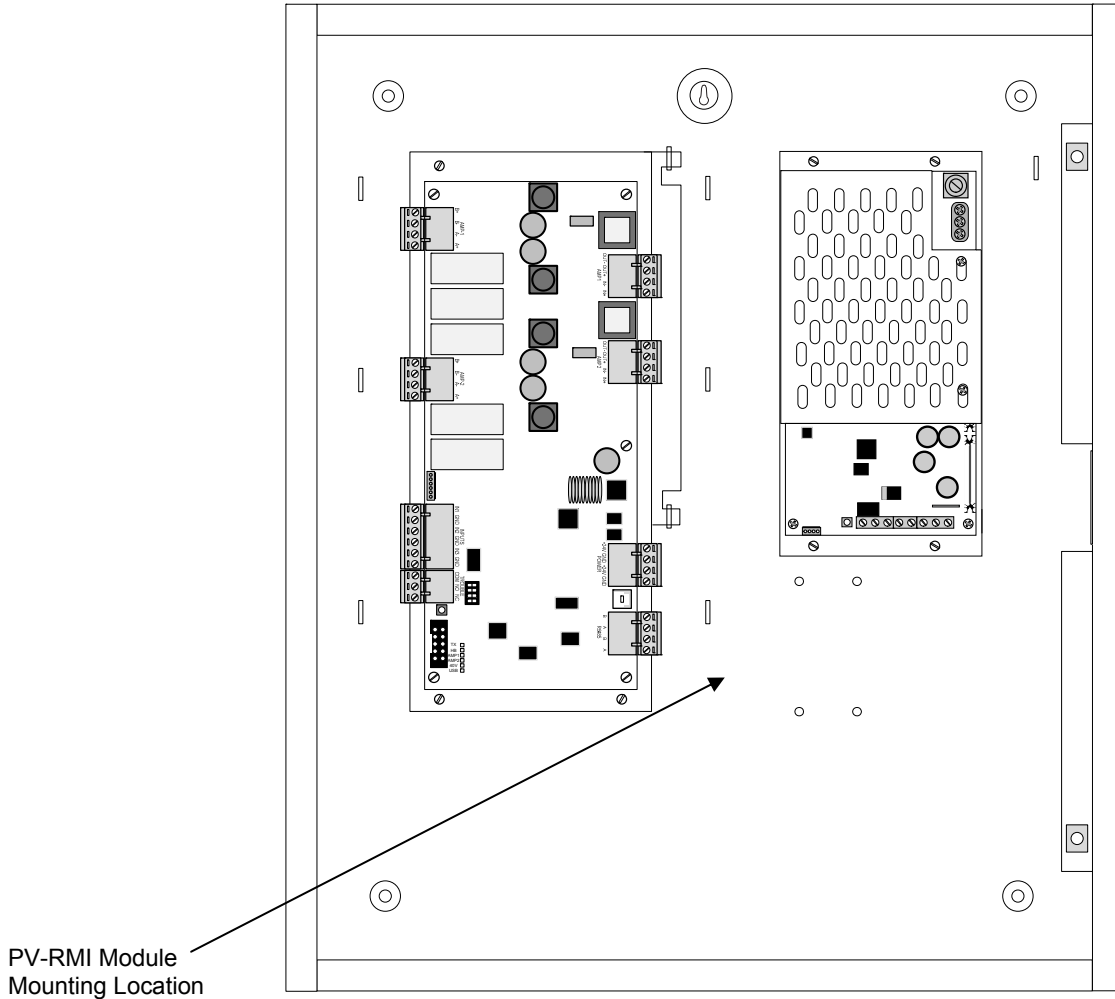
Figure 15 – PV-RMI Mounting

Note: For PVE 802 and VAB 802 enclosures manufactured prior to August 2014 a PV-RMI-RP retrofit plate will be required for mounting the PV-RMI remote microphone interface module.

100K EOL
(end-of-line
resistor)

*Trouble Relay
24V AC/DC, 1.0A PF=1
POWER LIMITED
* FAIL-SAFE, Open Contact Energized when Normal

To PV-ZS Zone Splitter
Module (if installed)
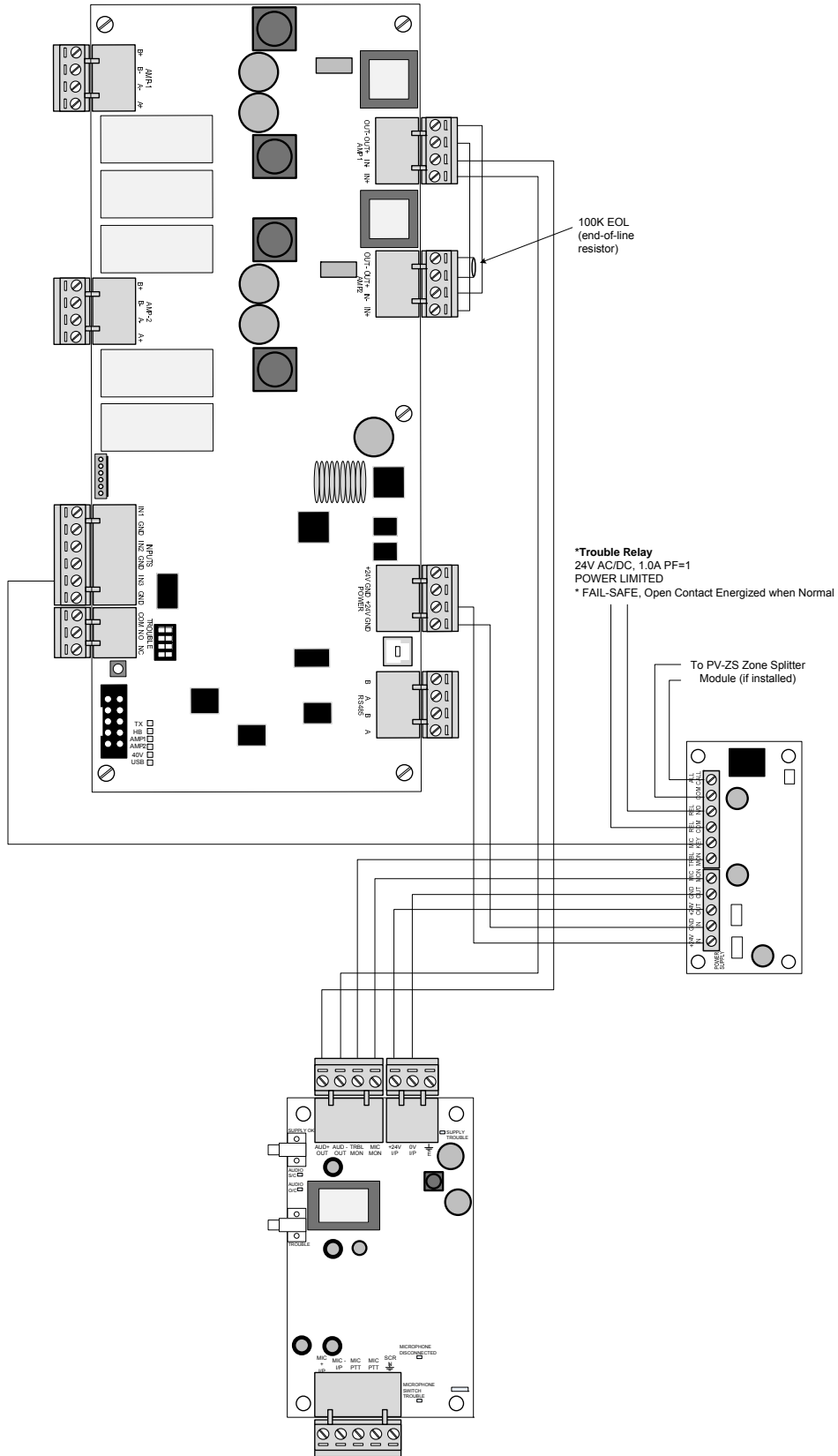
Figure 16 – PV-RMIC Wiring

4 Recommended Cable Routing

Power limited and non-power limited circuit wiring must remain separate in the cabinet. All power limited circuit wiring must remain at least 0.25" (6.35 mm) away from any non-power limited circuit wiring. Furthermore, all power limited and non-power limited circuit wiring must enter and exit the cabinet through different knockouts and/or conduits (see figure 17).

Below is a typical diagram for the PVE 802 and VAB 802 to meet power limited wiring requirements:
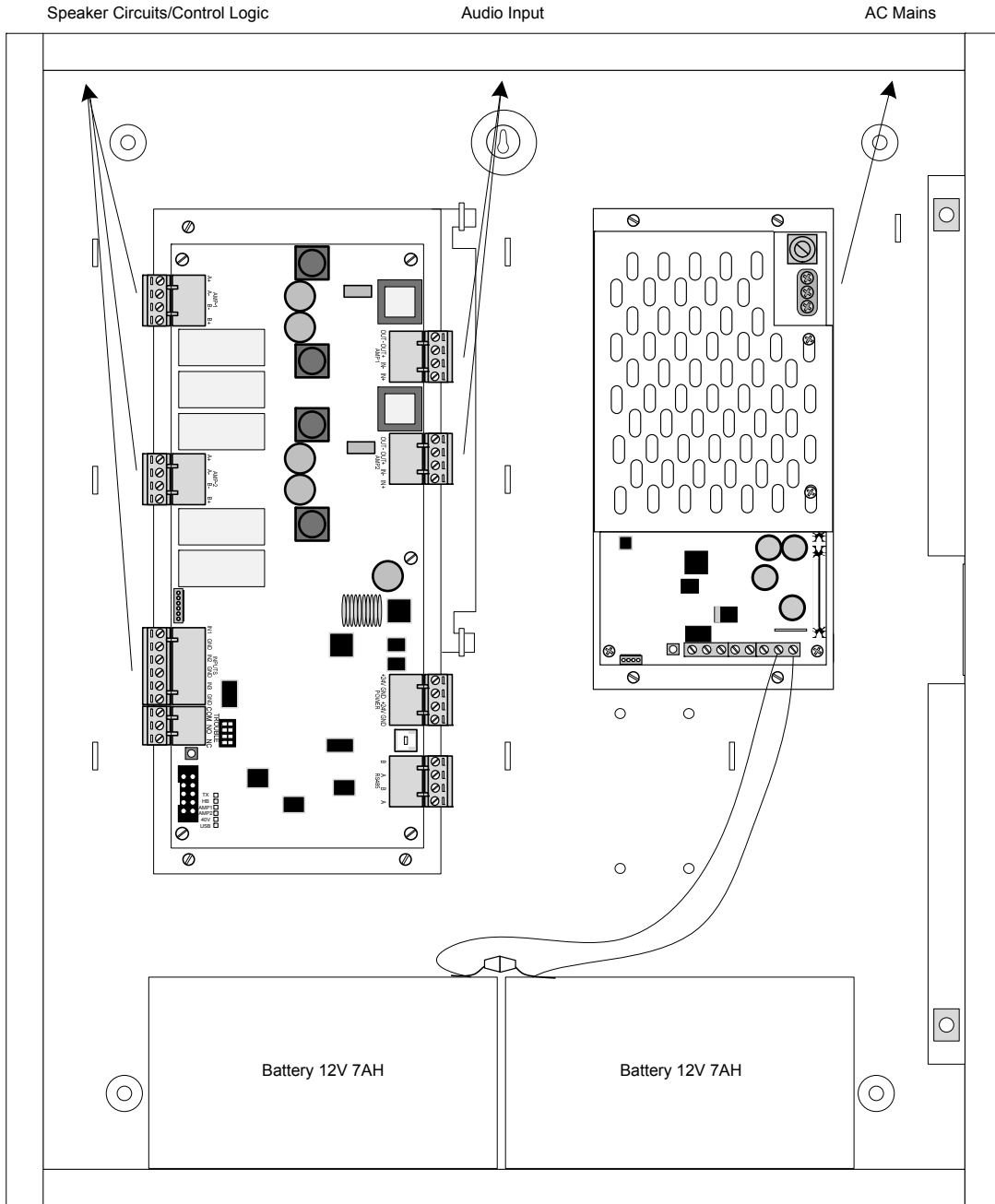
Figure 17 – PVE 802 and VAB 802 Cable Routing

5   PVE 802 and VAB 802 Battery Calculations

Equipment	Quiescent Load			Alarm Load		
	I (A)	x	Total	I (A)	x	Total
Amplifier Module	0.035	1.0	= 0.035	0.220	1.0	= 0.220
Amplifier 1[1]					1.0	=
Amplifier 2[1]					1.0	=
Total	ΣQuiescent Load		=	ΣAlarm Load		=
	x 24 hr or 60 hr		Ah	x 0.0833[2] hr		
	Total Quiescent Current		Ah	Total Alarm Current		Ah
	Total Load (Quiescent + Alarm)					Ah
	Total Load x 1.20 (battery de-rating factor)					Ah

5.1 Converting Watts to Amps

Utilizing Ohm's Law (Amps = Watts / Volts), convert amplifier wattage to amperes.

> i.e.: maximum load per amplifier 40 Watts

>> Amps = 40w / 25Vrms

>> Amps = 1.6

---

[1] Add total speaker circuit load of each amplifier, 40 watts maximum per amplifier.
[2] 5 minutes in alarm, change to .166 for 10 minutes in alarm.

6 802 Amplifier Message Programming

To program 802 Amplifier Messages you will need the Potter 802 Audio Programming Software (Windows Based PC tool).

Install the Potter 802 Audio Programming Software on your PC and run the "Setup.exe" program and follow the on screen instructions.

6.1 Launching the Potter 802 Audio Programming Software

To launch the Potter 802 Audio Programming Software navigate to the Windows Start Menu and select "Potter, 802 Audio, 802 Audio".

The following screen will appear:
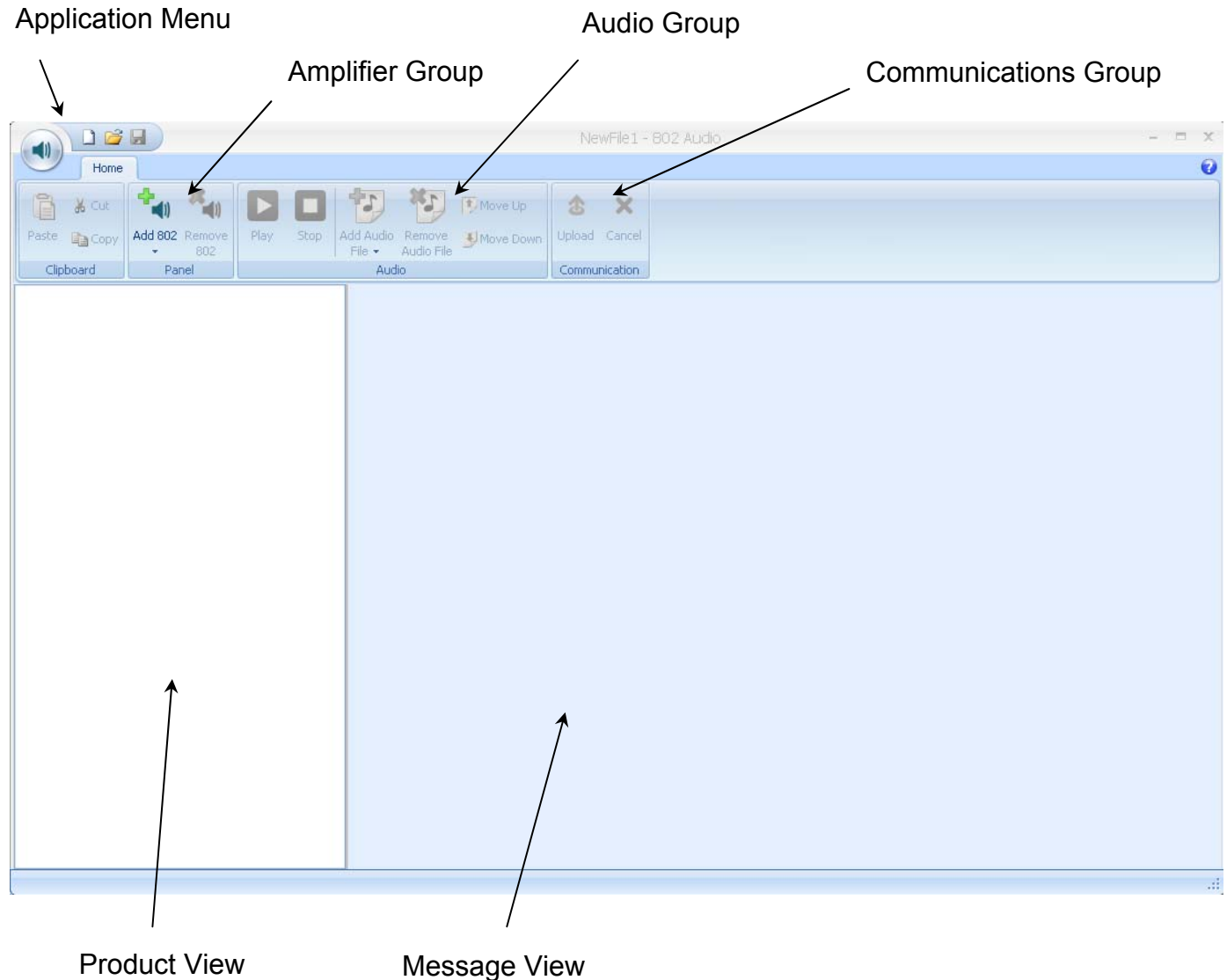
6.1.1 Application Menu

The Application Menu contains the standard Windows functions such as New, Save and Open
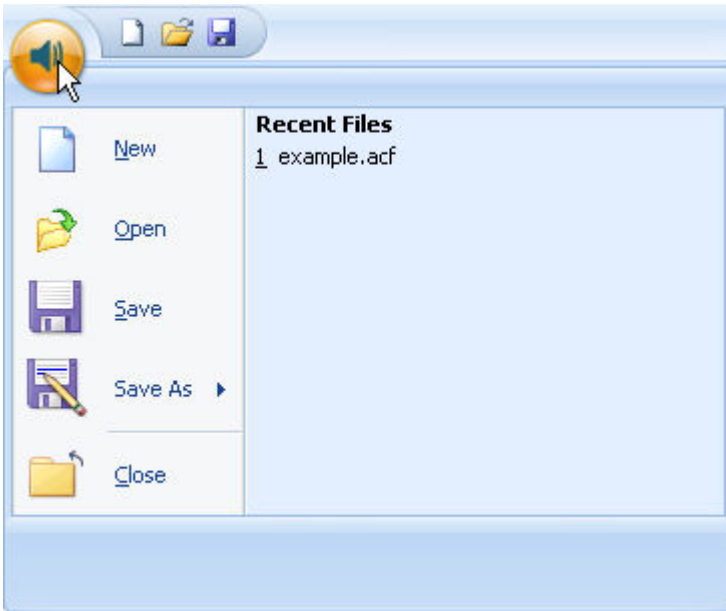
To open the Application Menu, place the mouse cursor over the "New" icon and click.

6.1.2 Amplifier Group

6.1.2.1   Adding an 802 Amplifier

To add an 802 amplifier, you must select from two (2) options within the Add 802 Amplifier Group depending on whether you are programming a VAB 802 or PVE 802 product.

1.   Add VAB802
2.   Add PVE802

To add a VAB802 or PVE802 click on the "Add VAB802" or "Add PVE802" button.

6.1.3 Product View (Description)

The selected product (VAB 802 or PVE 802) will now be added to the Product View section of the screen.
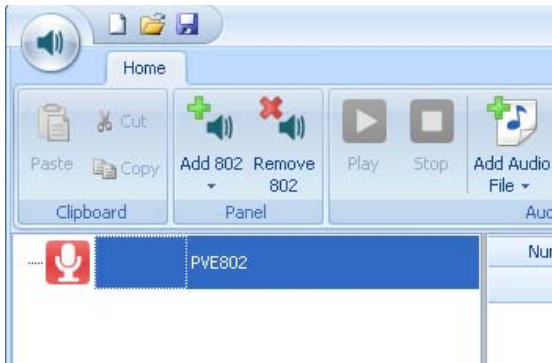
Note: The description associated with the VAB 802 or PVE 802 (i.e. PVE802) in the Product View can be edited. Simply click on the text and type the label you'd like.

A VAB 802 or PVE 802 can also be removed from the Product View by selecting the product and clicking on the "Remove 802" button.

Note: If the VAB 802 or PVE 802 is configured with messages, these too will also be removed.

6.1.4   Adding Audio Messages

To add an audio message to an amplifier, with the PVE802 highlighted, use the "Add Audio File" button to display a list of available messages.
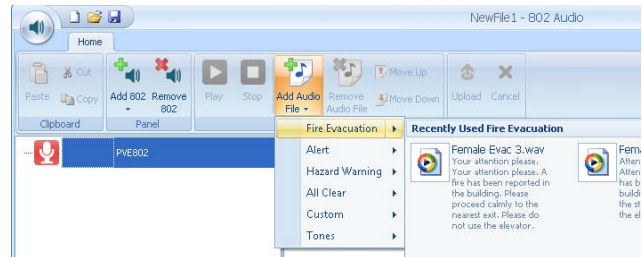
For example: If you selected the Fire Evacuation message "Female Evac 3.wav" the following will appear in the Message View:

6.1.4.1   Interpreting the Message View Screen

When a message is selected the Message View will display a grid with the following headers:

Total duration of the
message

Message
Number

The tone that
precedes the main
voice message

The main voice
message

The tone that
follows the main
voice message

Number	Total Duration	Leading Tone			Message		Trailing Tone		
		File Name	Repeats	Duration	File Name	Duration	File Name	Repeats	Duration

The .wav file
to use as the
leading tone

The number of
times to repeat
the tone

The total
duration of
the leading
tone

The .wav file
to use as the
main voice
message

The total duration
of the main voice
message

The .wav
file to use
as the
leading
tone

The number of
times to repeat
the tone

The total
duration of
the trailing
tone

6.1.4.2   Leading and Trailing Tones

Each message can be configured to have a Leading and Trailing tone.

Leading Tone		
File Name	Repeats	Duration
	0	0

Recently Used Tones
TNTemporal Chime.wav
TNSlow Whoop 2.wav

Tones

TN1khzsine.wav
TNBeep.wav
TNChime 2.wav
TNChime.wav
TNContinuous Horn.wav
TNElectric Bell.wav
TNHiLo.wav
TNRapid Beeping.wav
TNSiren 2.wav
TNSiren.wav
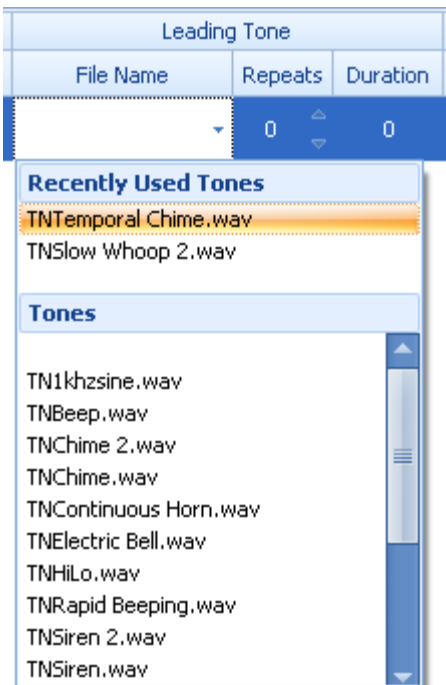
To add a leading or trailing tone, click on the
"File Name" drop down arrow for the relevant
field and select the tone you wish to add.

Leading Tone		
File Name	Repeats	Duration
TNTemporal Chi... ▾	0 △▽	0

The selected tone is then added to the current message.

Leading Tone		
File Name	Repeats	Duration
TNTemporal Chi... ▽	1 ▲▼	13

Both the leading and trailing tones can be configured to repeat a number of times. This allows the user to decide on the overall length of the leading and trailing tones.

Use the "Repeats" up/down buttons to increase or decrease the number of times to repeat either tone.

As the number of tone repeats is changed the Duration field will update to show the total duration for that tone.

Note: In order for the tone to be played it must be set for at least 1 repeat.

6.1.5   NFPA 520 Hertz Temporal 3 (Fire Alarm) and Temporal 4 (CO Alarm) Signaling

For listed 520 Hertz low frequency signaling (ANSI/UL 464 Section 24.3 compliant) use:

1. The Potter, TN_520Hz_0.85_T-3_Square.wav (fire alarm tone) and TN_520Hz_0.85_T-4_Square.wav (CO alarm tone) files.

2. With the following manufacturers Series of speakers and speaker strobe combinations:

    a. Gentex Series SSPKCLP, SSPKWLP and WSSPK (ceiling/wall)

    b. Eaton/Wheelock LSP Series Hi-Fi LSPKWC and LSPLR (ceiling/wall

    c. System Sensor SP High Fidelity SPCW and SPR (ceiling/wall)

6.1.6   Remove Audio Messages

To remove an audio message, select the required message and click on the "Remove Audio File" button.

The remaining message is consequently renumbered to 1.

6.1.7   Moving Messages Up and Down
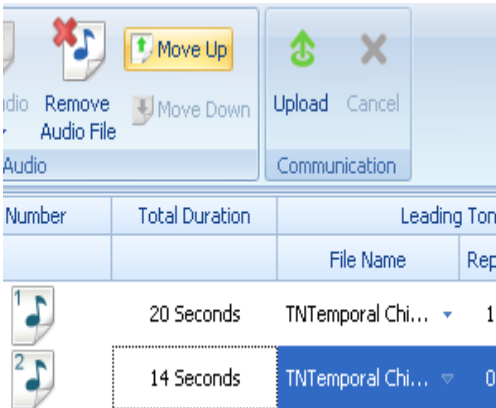
The message order can be changed using the "Move Up" and "Move Down" buttons.

To move a message up, select the message and click on the "Move Up" button. Similarly to move a message down, select the message and click on the "Move Down" button.

Note: This method of numbering the messages is how a message prioritization to Message 1 or message 2. The first message is message 1 and it will activate when input message 1 is active, the second message is message 2 and it will activate when input message 2 is activated. Input message 1 activation, has a higher priority, then input message 2.

6.1.8   Playback of a Message

Each message can be played using your PC before being uploaded to the VAB 802 or PVE 802 amplifier. In order to play an audio message the PC must be equipped with at least one audio playback device.

Select the desired audio message then click on the "Play" button.

The message will play in full, including repeated leading and trailing tones. This allows the user to hear the message as it will sound when it is played by the VAB 802 or PVE 802 amplifier.

6.1.8.1   Stop a Playing Message
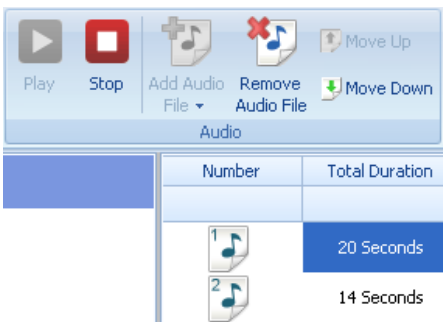
To stop a playing message before it reaches the end, click on the Stop button.

6.1.9   Adding New .Wav Files

The .wav files used to build the audio messages in this software are stored in predefined folders which correspond to the available message categories. The folders are located in the following locations:

> **Windows XP:**
> My Documents-> Potter-> 802 Audio-> Audio

> **Windows Vista:**
> **Windows 7:**
> Documents-> Potter-> 802 Audio-> Audio

To add a new .wav file simply copy the file into the relative category folder. For example in Windows XP:

> If you create a new fire evacuation.wav file called MyEvac.wav, you would copy this file to:

> > My Documents-> Potter-> 802 Audio-> Audio-> Fire Evacuation

> Now when you open the Fire Evacuation list (see Section 6.1.4), the message "MyEvac.wav" will appear in the list.

Note: If the file does not appear in the expected list it is likely that the file format is incorrect. Make sure that the file format matches what is described in Section 6.1.9.

6.1.9.1   Adding Associated Message Text

It is possible to display the text associated with a given .wav file. This allows the user to see the content of a particular voice message without playing the message.

A simple text file is all that is required to generate the associated text. Just create a text file, type in the content of the voice message and save the text file in the same folder with the same name as the .wav file you want to associate the text with.

For example:

> If you have a .wav file called "MyEvac.wav" and the message is:

> > *"Attention, Attention. There is a fire in the building. Please leave using the nearest available exit"*

> To create the associated text, create a new text file, type in the message above and save the text file as "MyEvac.txt" in the same folder as "MyEvac.wav".

6.1.9.2   Missing Audio Files

If the audio file referenced in the design cannot be found, than an error will be shown.

The red icon indicates that there are one or more missing files in this message

Missing files are surrounded by a red border

6.1.10 Audio File Format

The Potter 802 Audio programming software application will only accept audio files in the following format:

File Type	.wav
Sample Rate	8000Hz
Bits Per Sample	16
Channels	1 (Mono)

6.1.11 Uploading Audio Messages

Note: Uploading of Audio Messages can only be done after proper Potter USB Audio Drivers have been loaded on to the PC (refer to section 7 for proper USB Audio Driver Installation).

To transfer the audio data from the PC 802 Audio programming software to the amplifier, select the required 802 Audio amplifier in the Product View.

Connect the PC to the amplifier using a USB cable and click on the "Upload" button.

Note: Uploading of Audio Messages cannot be performed without the correctly installed Potter USB Audio Drivers (refer to section 7 for proper USB Audio Driver Installation).

6.1.11.1 VAB 802 and PVE 802 Amplifier Reboot
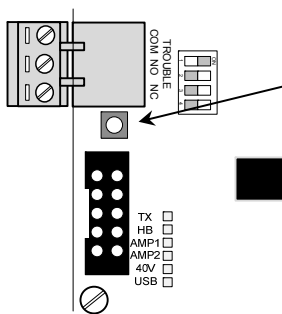
Upon completion of uploading the audio messages to a VAB 802 or PVE 802 amplifier, the amplifier reboot switch must be pressed to cycle the new messages to the amplifier's flash memory.

Note: The VAB 802 and/or PVE 802 will not function properly after uploading audio messages if the amplifier reboot switch has not been pressed to cycle the new messages to the amplifier's flash memory.

6.1.12 Canceling an Upload
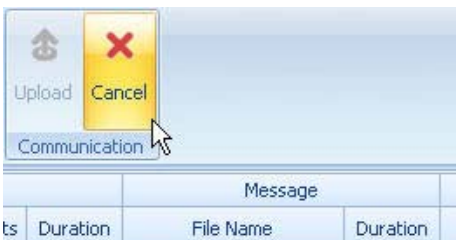
An upload can be cancelled while it is in progress by simply clicking on the "Cancel" button.

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7 Potter USB Audio Driver Installation

From the media source that included the Potter 802 Audio Programming Software, find the file labeled Potter USB Audio Drivers and copy that complete file to your PC's hard drive.

With the Potter 802 Audio Programming Software closed, connect a USB cable from your PC USB port to the USB port located on the 802 amplifier.

The PC will now find new hardware, at this point <u>do not</u> allow Windows to automatically search for the correct driver software. You must manually browse/search your computer for the correct driver software. To do this, browse/search to the location that you copied the Potter USB Audio Drivers file and select the sub file labeled Potter Audio Drivers. Once you've selected the sub file and enter the "Next" button in the driver installation program, the correct Potter Audio Driver will be installed for proper us of the USB port. If Windows warns you that the driver is not certified install the driver anyway. In addition, within your PC's Device Manager under "Universal Serial Bus controllers" you'll now see one allocated to "Control Panel". When you see this in the device manager you know you've got the correct USB driver installed.

With the correct USB drivers installed, you are now capable of opening the Potter 802 Audio Programming Software and upload your messages to the 802 amplifier. Again remember, after completion of uploading audio messages to a VAB 802 or PVE 802 amplifier the amplifier reboot switch must be pressed to cycle the new messages to the amplifier's flash memory.

8 PVE 802 and VAB 802 Applications

Below are a few application examples, utilizing the Potter Electric Signal Company PVE 802 and VAB 802 products.

8.1 PVE 802 Interfaced to a Listed (Host) Fire Alarm Control Panel

PVE 802 Audio Panel

Host FACP

PVE 802
Audio Panel

40W Speaker Circuit

40W Speaker Circuit

PVE 802 Control and Supervision
(non supervised control, wiring close nippled or within 20ft in conduit)
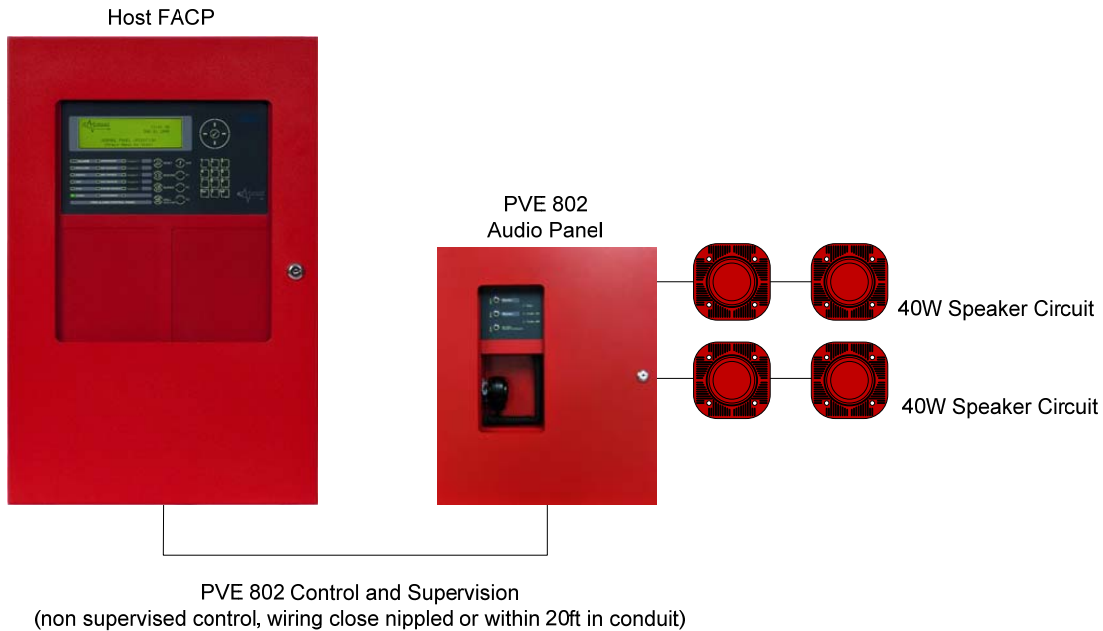
1. The host FACP activates the PVE 802 via trigger input #1 (message/tone 1) or input #2 (message/tone 2).
2. The host FACP monitors the PVE 802 power supply/charger and amplifier trouble contacts. In addition, the host FACP monitors the Message 1, Message 2 and All Call manual switch activations.
3. Push down and hold "All Call" toggle switch and key microphone to perform live voice paging.

8.2 PVE 802 Interfaced to a Listed (Host) Fire Alarm Control Panel and the VAB 802 Audio Booster (Synchronized Messages/Tones)

PVE 802 Audio Panel Interface to VAB 802 Audio Booster
(Synchronized Audio)

Host FACP

PVE 802
Audio Panel

Audio/Microphone Riser

40W Speaker Circuit

40W Speaker Circuit

VAB 802
Audio Booster

40W Speaker Circuit

40W Speaker Circuit

Signal is identical to
Audio/Microphone Riser
output from PVE 802

VAB 802
Audio Booster

40W Speaker Circuit

40W Speaker Circuit

Signal is identical to
Audio/Microphone Riser
output from PVE 802

Audio/Microphone Riser

To next
VAB 802
Audio Booster

PVE 802 and VAB 802 Control and Supervision
(non supervised control, wiring close nippled or within 20ft in conduit)

PVE 802 and VAB 802 Control and Supervision
(non supervised control, wiring close nippled or within 20ft in conduit)

1. The host FACP activates the PVE 802 via trigger input #1 or #2 (trigger #1 message/tone one, trigger #2 message/tone two).
2. The Audio/Microphone Riser connects the audio output of the PVE 802 to the audio inputs of each VAB 802.
3. The host FACP activates the VAB 802s via trigger input #3 which rebroadcasts the PVE 802 Audio/Microphone Riser audio/live voice (synchronized).
4. The host FACP monitors the PVE 802 and VAB 802 power supply/ charger and amplifier trouble contacts. In addition, the host FACP monitors the Message 1, Message 2 and All Call manual switch activations of the PVE 802.
5. Push down and hold "All Call" toggle switch and key microphone to perform live voice paging.

8.3 PVE 802 Interfaced to a Listed (Host) Fire Alarm Control Panel and the VAB 802 Audio Booster Independent Messages (Non Synchronized Messages/Tones)

PVE 802 Audio Panel Interfaced to VAB 802 Audio Booster
Independent Messages (non Synchronized)

Host FACP

PVE 802
Audio Panel

Audio/Microphone Riser

40W Speaker Circuit

40W Speaker Circuit

VAB 802
Audio Booster

40W Speaker Circuit

40W Speaker Circuit

VAB 802
Audio Booster

40W Speaker Circuit

40W Speaker Circuit

PVE 802 and VAB 802 Control and Supervision
(non supervised control, wiring close nippled or within 20ft in conduit)

Audio/Microphone Riser

To next
VAB 802
Audio Booster

PVE 802 and VAB 802 Control and Supervision
(non supervised control, wiring close nippled or within 20ft in conduit)

1. Multiple independent messages, the host FACP activates the PVE 802 and VAB 802s via trigger input #1 or #2 (trigger #1 message/tone one, trigger #2 message/tone two).
2. The Audio/Microphone Riser connects the audio output of the PVE 802 to the audio inputs of each VAB 802.
3. To perform live voice communications the host FACP activates the VAB 802s trigger input #3 to allow rebroadcasting of the PVE 802 Audio/ Microphone Riser audio/live voice (synchronized).
4. The host FACP monitors the PVE 802 and VAB 802 power supply/ charger and amplifier trouble contacts. In addition, the host FACP monitors the Message 1, Message 2 and All Call manual switch activations of the PVE 802.
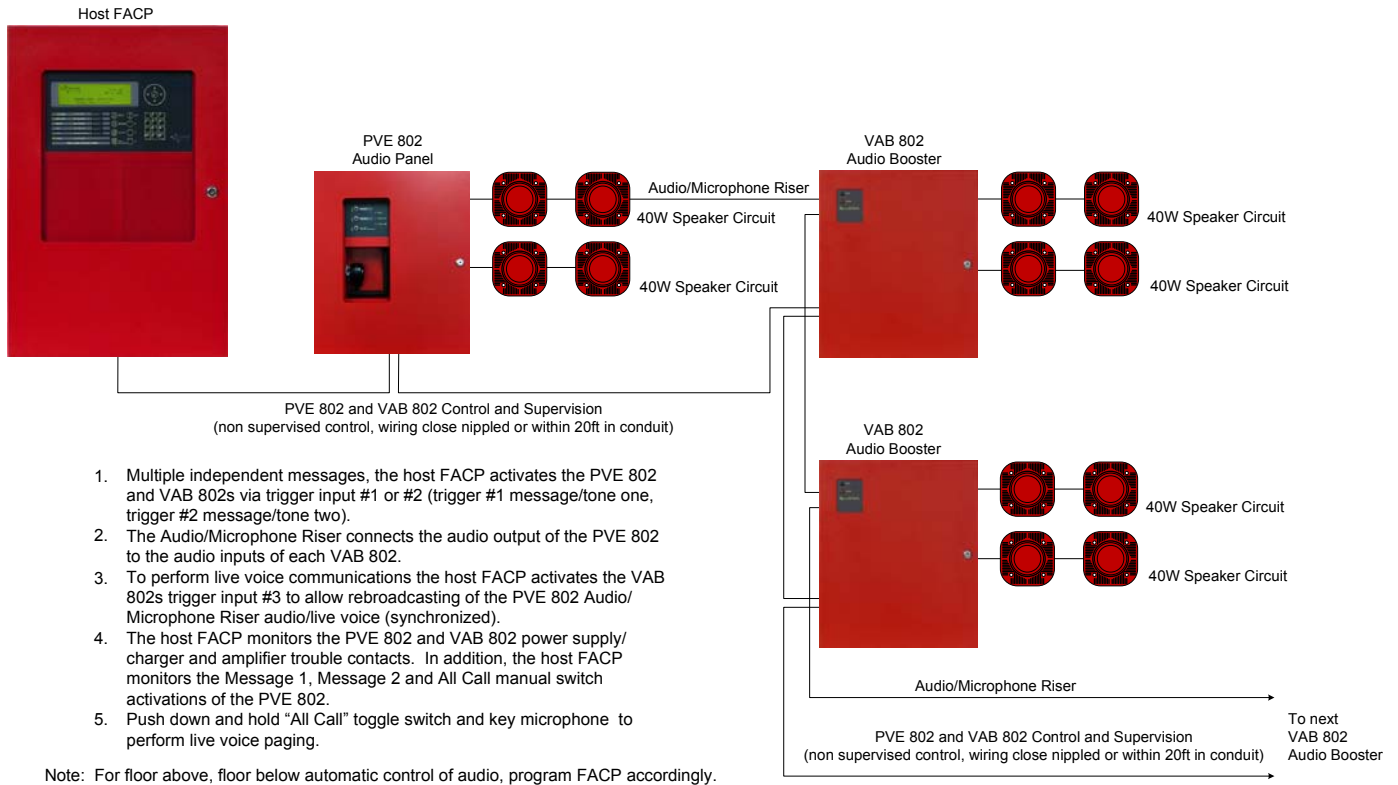5. Push down and hold "All Call" toggle switch and key microphone to perform live voice paging.

Note: For floor above, floor below automatic control of audio, program FACP accordingly.

9 Specification and Ordering Information

PVE 802 and VAB 802 Specifications	
Power Supply Charger	
Operating Voltage	120 -240 VAC
Output Voltage/Current	24 VDC nominal @ 6 Amp
Charger Current	1.5 Amp maximum (subtracted from 6 Amp supply) 45 Ah maximum batteries
PCB Status LEDs	Seven (7); Earth Fault, Heart Beat, Battery Connect, Battery Low, Battery O-C, Charger Fault and PSU Fault.
Driver Output LEDs	Two (2); AC Power and Power Supply Trouble
Form "C" Relay Contact	Fail-safe power supply/charger trouble contact
Amplifier Module	
Operating Voltage	24 VDC nominal

PVE 802 and VAB 802 Specifications Continued	
Operating Current	
Quiescent	0.04 Amp typical
Alarm	5.2 Amp (includes full speaker load)
Amplifiers	Two (2) independent 40 Watt amplifiers/speaker circuits
Wiring	Class "A" or Class "B" (Style Y or Z)
Speaker Circuit EOL	4.7K End of Line Resistor

Trigger Inputs	Three (3)
	
	   Trigger Input 1 = message/tone #1
	   Trigger Input 2 = message/tone #2
	   Trigger Input 3 = activate distributed audio booster mode

Amplifier Inputs	Two (2)
	   Amplifier 1 Audio Booster Input
	   Amplifier 2 Audio Booster Input

Form "C" Relay Contact	Fail-safe amplifier trouble contact
USB Port	For Windows® compatible program for message/tone programming
RS485 Input	Not Used
DIP Switch	4-pin DIP switch, switch 1 ON = Amplifier 2 Backup
Mic Input	6 pin microphone input header w/mic supervision (PVE 802 only)
PCB Status LEDs	Six (6); Transmit, Heart Beat, AMP 1 Fault, AMP 2 Fault, 40V Status and USB in use
Temperature	32–120^{0}F (0-48^{0}C)
Humidity	10-95% (non condensing)
Enclosure Dimensions	16"W x 19$^1/_8$"H x 5"D
Weight	19lb 5oz

Ordering Information	
PVE 802	Audio Panel
VAB 802	Audio Booster