PVX 25 / PVX 50 / PVX 100 / PVX 150 / PVX 200
VOICE EVACUATION INTERFACE SYSTEM
INSTALLATION INSTRUCTIONS

The PVX 25 / PVX 50 / PVX 100 is a self contained amplifier, tone generator, digital message repeater and supervisory interface. It is designed to be used in conjunction with a UL listed Fire Alarm Control Panel (FACP) to provide a Listed Voice Evacuation Alarm System.

The FACP provides all initiating circuitry and a signaling circuit to the PVX 25 / 50 / 100. The PVX 25 / 50 / 100 provides its own internal supervision as well as supervision for its speaker lines. Any fault is reported back to the FACP. In normal standby the supervisory circuit from the panel is connected to a matching EOLR. Should the PVX 25 / 50 / 100 suffer an internal failure or should there be any fault on the speaker line a contact would open and the FACP would report it as an open fault for that circuit.

The PVX 25 / 50 / 100 is designed to be powered from 120 VAC at 60 Hz. The PVX 25 will provide 25W to the speaker circuit. The PVX 50 will provide 50W. The PVX 100 will provide 100W. Speakers may be 25 or 70 Vrms (jumper selected, 25V is factory set).

MODELS: The PVC-25 / 50 / 100 are complete Voice Evacuation Modules. PVC-25E / 50E / 100E are complete modules with built-in tone generators capable of operating as a stand-alone Voice Evacuation Systems with only tone and microphone amplification. They are not equipped with power transformers or cabinets. The PVX 25 / 25EM / 50 / 50EM / 100 / 100EM / 150 / 150EM / 200 / 200EM are complete Voice Evacuation Panels. The PVC-50E / 100E are capable of operating as slave amplifiers when connected to the PVC-100 which supplies source audio to the slaves. Different Model numbers are derived from the amplifier sizes used together: These multiple amplifier configurations are factory setup and pre-wired. When using any PVC-25E / 50E / 100E refer to installation instructions P/N 1-5002 R11.13.

INSTALLATION: Installer must insure that all wiring and devices installed in system meet the following standards:
- National Electrical Code (NFPA 70)
- NFPA Standard 72
- Life Safety Code (NFPA 101)

Install equipment in a clean, dry environment, avoid installation where equipment could be subjected to vibration. Remove electronic assemblies from the enclosure prior to any drilling or punching of the enclosure. Where possible, make all cable entries from the rear or sides. Before making any modifications to the enclosure, be certain that they will not interfere with assemblies or batteries.

Install equipment adjacent to FACP or FACP Annunciator to insure proper reporting and display of system Fault conditions.

WIRING (Refer to wiring and terminal designation diagrams)

1. Connect speaker lines to TB1 - 5(+) & 6(-), observe polarity and insure all speakers are connected likewise. For Class "A" (Style "Z") the returns are TB1 - 7(-) & 8(+).

2. Insure that the microphone is attached to connector P2. If Microphone is not installed insure that switch SN2 - 8 is in the OFF position.

3. Attach the appropriate EOLR for the FACP to TB3 - 3 & 4 and TB3 - 5 & 6. The TB3 term 5 & 6 value must be placed at the end of the speaker line as well. You must use EOLR value as specified in the FACP manufactures installation instructions for the indicating appliance circuit. Note: if your system includes one or more PVC-ZM zone splitters, the FACP EOLR is relocated. See PVC-ZM install instructions P/N 1-5022. All accessory cards such as the PVC-ZM, PVC-SL8, PVC-IL8 or PVC-OL8 must be mounted within the same cabinet or if mounted in a separate cabinet, be in the same room with all wiring run in conduit.

4. Connect FACP signaling circuit to TB1 - 3(+)& 4(-), Alarm Polarity (alarm polarity is shown).

5. Connect 120 VAC, 60 Hz, power to the black and white pigtail leads from transformer primary. Secure ground lead to grounding stud in cabinet.

6. Once power is on to the unit, connect battery wiring harness, Red (+) / Black (-). Observe polarity. Minimum battery size is 24V 7Ah. Maximum battery size is 18Ah on PVX 25 / PVX 50 and 24Ah on PVX 100. (use two (2) 12V batteries connected in series, see typical installation diagram). If the unit does not have its own batteries and relies on an external power supply with battery back-up, insure that switch SN2 - 7 is in the OFF position. NOTE: Wiring for batteries is Non Power-Limited. Care must be taken to insure that all Power-Limited wiring maintain a minimum spacing of ¼" from any Non Power-Limited wiring. If batteries must be located in separate enclosure, it must be in the same room with a separate conduit run for battery wiring only.

Once all power and circuits are connected, the Green LED will remain on to indicate that the PVX 25 / PVX 50 / PVX 100 is fully operational and all circuits are nominal.

For technical assistance please call: 866-956-1211
5757 Phantom Dr. St. Louis, Missouri 63042
www.pottersignal.com
PVX 25 / PVX 50 / PVX 100
TERMINAL DESIGNATIONS

TB1:
TER 1 & 2 - Power Input 24-32V AC/DC (NOTE 1, 4)
TER 3 & 4 - FACP Signal Circuit Input - 10mA max. (Alarm Polarity shown) (NOTE 1, 4)
TER 5 & 6 - 25/70 Vrms Speaker Loop Style Y/Z (Class “A”/“B” start) (NOTE 2, 4)
TER 7 & 8 - 25/70 Vrms Speaker Loop Style Z (Class “A” return) (NOTE 2, 4)

TB3:
TER 1 & 2 (NOTE 1, 4)
Optional FACP Supervisory Circuit
(See installation instructions page 5 diagram 2 for details (32V - 0.4A max.)). Factory set for none - J1 (Installed)
Contact Ratings: 1A @30VDC
Connect to Resistive Load, Class II Power or Power Limited Sources Only. Interconnected Equipment Must be in Same Room and Mounted Within 20’.

TER 3 & 4
FACP Signal/Supervisory Circuit
EOLR
TER 5 & 6
Matching EOLR for speaker supervisory circuit
TER 7
General purpose output (pulls to circuit neg on fault condition 32V - 0.2A max). Not for Fire Protective Signaling use.
TER 8
Trouble input +24 VDC 5mA

NOTES:
1 - Intended for connection to Listed Class 2 / Class 3 (Power Limited) sources only.
2 - Power Limited
3 - Non-Supervised
4 - Supervised
5 - Terminating equipment must be installed in same room as PVX25 / PVX 50 / PVX 100.

Field wiring connections:
#6-32 wire clamp screw 14-18 AWG
#8-32 wire clamp screw 12-18 AWG
Horizontal wire entry terminal 18-26 AWG
Wire gauge determined by circuit load

FACTORY DEFAULT SWITCH / JUMPER SETTINGS:

SN1
1 = OFF Temporal Whoop Signal
2 = X Do not use
3 = X Do not use
4 = Fault Code Lock
5 = X Do not use
6 = AC Fault Delay
7 = ON Battery connected
8 = ON Mic connected

SN2
1 = OFF 8 sec. initial delay
2 = ON
3 = OFF 8 sec. repeat delay
4 = ON
5 = OFF
6 = ON Message On
7 = OFF 3 Repeats
8 = ON

J1 A/B
1 - 2 = SHORT
25 VRMS 2 - 3 = SHORT
70 VRMS 1 - 2 = SHORT
To change output voltage move shorting block.

J2
25 VRMS 2 - 3 = SHORT
70 VRMS 1 - 2 = SHORT

J3
2 - 3 = SHORT R
Shorting block must be in the R position
J4
1 - 2 SHORT = Ground Fault Enable

P3 / 4: 14 Pin Connector
Connection to Expander Modules
P5: 10 Pin Connector
HMX connection
P8: I2C
10 Pin Connector
PVC-ZM/SL8/IL8/OL8
OPTIONS:
AUX +24VDC OUTPUT - TB2-4, 8, 9 & 10
These terminals provide a max. 200 mA of regulated 24VDC power for auxiliary functions. Do not exceed 200 mA load combined on these terminals. For connection to Listed General Signal devices only (Non-Fire Protective Signaling applications). Terminal 4 activation is programmed in the system configuration. Standard configuration is programmed for TB2-4 to go active +24VDC under these conditions: Aux Signal Active, Aux Audio Enable and Bell Circuit Active. Reprogramming of these functions must be done at the factory and require updating the system configuration.

CONNECTION OF AN AUX AUDIO SOURCE - TB2-1 & 2
An aux audio source from additional paging equipment may be connected to the PVX 25 / 50 / 100 to augment an existing paging system. It is not intended for continuous signal input, but may be used for paging applications. For such an operation the Aux Audio Enable input, TB2-6, must be powered from Int V+, TB2-9. This is to insure that in the event of an alarm, the aux audio will not override the evacuation signal. See Wiring Diagram 5 for connection detail.

OPTIONAL SUPERVISORY CIRCUIT - TB3-1 & 2
In place of normal supervision via the signaling circuit, an alternate method may be employed using any supervisory circuit from the FACP. Connection would be made to Terminal Block 3, Ter. 1 and 2. This would provide a normally closed connection to the EOLR on Ter. 3 and 4. The relay contact in the circuit will open upon any trouble condition and report an open circuit trouble to the FACP.

NOTE, jumper shorting blocks A and B must be removed from J1 if a circuit is to be connected in this manner. See Optional Supervisory Circuit Application (Wiring Diagram 2) for connection detail.

OPERATION
In normal standby the Green LED will remain on.
In alarm condition the Red LED will remain on as long as the unit is in alarm. Green LED will modulate with the audio level. Default Factory Alarm Sequence settings: (Alarm Tone - 2 cycles Temporal Whoop, Message On - 3 Repeats)
Alarm Tone / Digital Message plays / Alarm Tone / Digital Message plays / Alarm Tone / Digital Message plays / unit reverts to Alarm Tone until alarm condition is cleared. If the Mic is keyed it will override both the tone and the message so a direct broadcast may be made. If this occurs during the initial sequence the digital message will be reset and will not repeat. When the Mic is keyed or when the message is played the Green LED will dim. The intensity of the Green LED will vary with the level of the broadcast audio. Under a fault condition, the Yellow LED will remain on. The Green LED will flash. The number of flashes display a code depending on the specific type of fault. When there is a fault condition the contact connecting the FACP signal circuit to the EOLR will open indicating the fault to the panel which will provide annunciation. During a ground fault condition, Yellow LED 4 will illuminate.

ELECTRICAL RATINGS:

<table>
<thead>
<tr>
<th></th>
<th>PVX 25 / 25E</th>
<th>PVX 50 / 50E</th>
<th>PVX 100 / 100E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Input Voltage</td>
<td>120 Vac @ 60 Hz</td>
<td>120 Vac @ 60 Hz</td>
<td>120 Vac @ 60 Hz</td>
</tr>
<tr>
<td>Primary Input Current</td>
<td>0.8 A @ 120 Vac</td>
<td>0.5 A @ 120 Vac</td>
<td>1.0 A @ 120 Vac</td>
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<tr>
<td>*Battery Input Current</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td>0.18 A / 1.1 A</td>
<td>0.15 A / 1.0 A</td>
<td>0.16 A / 1.1 A</td>
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<tr>
<td>Alarm</td>
<td>1.1 A / 2.5 A</td>
<td>0.8 A / 1.1 A</td>
<td>0.6 A / 2.0 A</td>
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<tr>
<td>Output power</td>
<td>25 Watt</td>
<td>50 Watt</td>
<td>100 Watt</td>
</tr>
<tr>
<td>Freq. Response</td>
<td>800 - 2800 Hz</td>
<td>400 - 4000 Hz</td>
<td>400 - 4000 Hz</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>25 / 70 Vrms Selectable</td>
<td>25 / 70 Vrms Selectable</td>
<td>25 / 70 Vrms Selectable</td>
</tr>
<tr>
<td>Battery Charging Current</td>
<td>800mA</td>
<td>800mA</td>
<td>800mA</td>
</tr>
<tr>
<td>Minimum Battery Size</td>
<td>24V 7 AH</td>
<td>24V 7 AH</td>
<td>24V 7 AH</td>
</tr>
<tr>
<td>Maximum Battery Size</td>
<td>24V 18 AH</td>
<td>24V 18 AH</td>
<td>24V 24 AH</td>
</tr>
<tr>
<td>Battery Type</td>
<td>(2) 12V Gel Cell (in Series)</td>
<td>(2) 12V Gel Cell (in Series)</td>
<td>(2) 12V Gel Cell (in Series)</td>
</tr>
</tbody>
</table>

Battery Standby Operating Time: 24 - 60 Hours standby, 15 Minutes in Alarm
Output Protection: Power Limited, Open and Short Circuit protected

TESTING
Per NFPA 72 Chapter 7, 100% system test is required, at a minimum, annually. Additional testing may be required by the Local Jurisdiction.
Standard Life Safety Speakers, Strobes connected and powered separately. Do not loop wire around speaker terminals. Ground faults are indicated at 10K impedance or less.

**Battery Wire Harness**
Supervised - Non-Power Limited

**Field wiring connections:**
- #6-32 wire clamp screw 14-18 AWG
- #8-32 wire clamp screw 12-18 AWG
- Horizontal wire entry terminal 18-26 AWG
- Wire gauge determined by circuit load

**CAUTION:**
Break wire to maintain supervision. Do not loop wire around speaker terminals.

**Battery cabling is Non-Power Limited.**
Do NOT route any Power Limited wiring within ¼" of Input cabling.

**ALL** wiring from terminal blocks is Power Limited.
Use K.O. at top or side of cabinet for wire routing.
PVX 25 / 50 / 100
OPTIONAL SUPERVISORY CIRCUIT APPLICATION

FIRE ALARM CONTROL PANEL

SIGNAL CIRCUIT
12-32VDC
ALARM POLARITY

EOL MONITOR MODULE

EOL MATCHING EOLR
(SPEAKER CIRCUIT)

SUPERVISORY ZONE

CAUTION:
Break wire to maintain supervision.
Do not loop wire under terminals.

Power and Speaker connections remain unchanged.

NOTE: Jumper shorting blocks on J1 must be removed for this application.

Field wiring connections:
#6-32 wire clamp screw 14-18 AWG
#8-32 wire clamp screw 12-18 AWG
Horizontal wire entry terminal 18-26 AWG
Wire gauge determined by circuit load

PVX 25 / 50 / 100
ADDRESSABLE SYSTEM
APPLICATION

ADDRESSABLE CONTROL MODULE

ADDRESSABLE LOOP

ADDRESSABLE MONITOR MODULE

N.O.
CLOSES FOR ALARM ACTIVATION

Addressable Modules must be located within 20' and interconnection must be in conduit.

NAC Circuit Must be steady to play Voice message

24VDC 0.01A max
Non Supervised - Power Limited

Power and Speaker connections remain unchanged.

NOTE: Jumper shorting blocks on J1 must be removed for this application.

Field wiring connections:
#6-32 wire clamp screw 14-18 AWG
#8-32 wire clamp screw 12-18 AWG
Horizontal wire entry terminal 18-26 AWG
Wire gauge determined by circuit load
NOTE: Maximum number of units to be cascaded is 15. All units are to be mounted in the same cabinet or within the same room with all connecting wires run in conduit.

**PVX 25 / 50 / 100**

**MULTIPLE UNIT CONNECTION DETAIL**

Field wiring connections:
- #6-32 wire clamp screw 14-18 AWG
- #8-32 wire clamp screw 12-18 AWG
Horizontal wire entry terminal 18-26 AWG
Wire gauge determined by circuit load

NOTE: Switch SN2-8 must be in the OFF position for all units without Mic attached.

**PVX 25 / 50 / 100**

**AUX AUDIO ENABLE CONNECTION DETAIL**

Field wiring connections:
- #6-32 wire clamp screw 14-18 AWG
- #8-32 wire clamp screw 12-18 AWG
Horizontal wire entry terminal 18-26 AWG
Wire gauge determined by circuit load
PVX 25 / 50 / 100
SWITCH SETTINGS

Switch Network Detail

ON = 1 (DOWN)
OFF = 0 (UP)

SN1 Default = 0/0/0/0/0/0/0/1

SW 1 Sets the evac tone.
2 Settings: 0 Temporal Whoop
1 Temporal Chime

SW 2 NA

SW 3 NA

SW 4 Sets the diagnostics mode.
2 Settings: 0 Diagnostics off
1 Diagnostics on

SW 5 NA

SW 6 AC power failure report delay.
2 Settings: 0 No delay
1 3 hour delay

SW 7 Batteries.
2 Settings: 0 Batteries are not connected
1 Batteries are connected

SW 8 Microphone.
2 Settings: 0 Microphone is not connected
1 Microphone is connected

SN2 Default = 0/1/0/1/0/1/0/1

SW 1/2 Sets the initial delay before the message starts to play. Tone sounds during delays.
4 Settings: 0/0 No delay
1/0 4.5 second delay (1 Temporal cycle)
0/1 9 second delay (2 Temporal cycles)
1/1 13.5 second delay (3 Temporal cycles)

SW 4/5 Sets the delay between repeats of the message.
4 Settings: 0/0 No delay
1/0 4.5 second delay (1 Temporal cycle)
0/1 9 second delay (2 Temporal cycles)
1/1 13.5 second delay (3 Temporal cycles)

SW 6 Sets the message play.
2 Settings: 0 Message off
1 Message on

SW 7/8 Sets the number of times the message plays.
4 Settings: 0/0 1 play
1/0 2 plays
0/1 3 plays
1/1 Continuous plays

Note: Default settings comply with UL 864 AND NFPA 72 operational requirements. Before changing any settings, verify compliance with Local Authority having Jurisdiction.

PVX 25 / 50 / 100
TROUBLE CODES

When a unit goes into a Trouble Condition, the Yellow LED will remain on until the trouble is cleared. The Green LED will flash a Code to indicate the type of Trouble Condition. There will be a pause between repeats of the code. When multiple Trouble Conditions occur at the same time, the codes will add together. The number of flashes and associated Trouble Condition are listed below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Trouble</th>
<th>Code</th>
<th>Trouble</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power Failure</td>
<td>8</td>
<td>Amplifier Trouble</td>
</tr>
<tr>
<td>2</td>
<td>Open Speaker Circuit</td>
<td>16</td>
<td>Microphone Trouble</td>
</tr>
<tr>
<td>4</td>
<td>Shorted Speaker Circuit</td>
<td>32</td>
<td>Battery Trouble</td>
</tr>
<tr>
<td>*6</td>
<td>External Trouble / Ground Fault</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 6 flashes typically indicates "External Trouble", such as an PVC-RM. If LED 4 is on, the 6 flash indicates a ground fault. If both a ground fault condition and an external trouble occur simultaneously, the fault codes will not combine for 12 flash.

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PVX 25 / PVX 50 / PVX 100
END OF LINE RESISTORS

NOTE 1: If the Fire Alarm Signal Circuit requires a 4.7K end-of-line resistor, then R1 must be a 4.7K. Normally, this resistor is connected to the Signal Circuit through a closed Common Trouble contact. When the PVX 25/50/100 goes into Trouble, the contact opens, producing an "Open" on that Signal Circuit and notifying the FACP.

NOTE 2: R2 and R3 must match each other. R2 "Sets" what the value of R3 needs to be. R2 tells the PVX 25/50 what to expect on the end of the Speaker Circuit. If a Speaker EOLR (R3) already exists, simply match that value for R2.

The value for R2 may vary from 1.0K to 100K Ohms depending on the value used by a connecting FACP for supervision. Speaker circuit will indicate a Fault any time the impedance of the circuit changes by 50% of the Set EOLR value.