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VECP-25
and
VECP-50

Installation Manual

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General Description

The VECP-25/50 is a 25W/50W Voice Evacuation Control Panel, which contains a state of the art, high efficiency, digital power amplifier for use in life safety applications. The VECP-25/50 includes features and options which are designed to provide outstanding performance and reliability while allowing simple installation. The VECP-25/50 can operate stand alone, with integral power supply, or in conjunction with a UL listed fire alarm control panel.

The VECP-25 has a single 25 watt amplifier while the VECP-50 includes two 25 watt amplifiers which can operate continuously to provide a 50 Watt output, or in standby mode where one channel operates as a backup. Both units provide four Class A or Class B supervised speaker circuits are included to facilitate field wiring. The speaker loop voltage is field configurable using a single jumper block for 25 or 70.7Vrms. The high efficiency design of the VECP-25/50 amplifier allows it to operate at much lower DC supply current. The intelligent circuit overload protection limits the output power to a maximum preset level.

The VECP-25/50 includes a standard 60-second digital pre-recorded message unit with 2 standard voice evacuation messages and 4 alert tones. Custom pre-recorded messages and alert tones are also available. The digital message unit allows field selection of various tone and message combinations, message repeats, and pause delays using dip switches.

Additional features in the VECP-25/50 include a supervised integral microphone, an auxiliary audio interface for telephone and other paging applications, 2 reverse polarity and 2 dry contact prioritized activation inputs, common alarm and fault relay outputs, an on-board switch for system test, and digital signal meters to display the power and voltage output on the speaker circuits.

Features

. Dual 25 Watt amplifiers with automatic backup feature
. 4 Class A or Class B speaker circuits
. Field selectable 25/70Vrms operation with single jumper block
. High efficiency power amplifier decreases current load on 24Vdc power source
. 60 seconds of pre-recorded digital voice message
. 4 alert tones and 2 standard voice messages with field programmable options
. Intelligent overload protection system
. Integral supervised microphone, and auxiliary audio paging interface
. 2 (24Vdc) reverse polarity and 2 dry contact prioritized activation input
. System test switch, and calibrated digital meters for voltage and power
. Common alarm and trouble relays

Installation Note

The VECP-25 / VECP-50 are preconfigured at the factory.
Don’t change any factory settings until the system is connected and powered, and tested.
Then modify the settings to meet the local / system requirements.

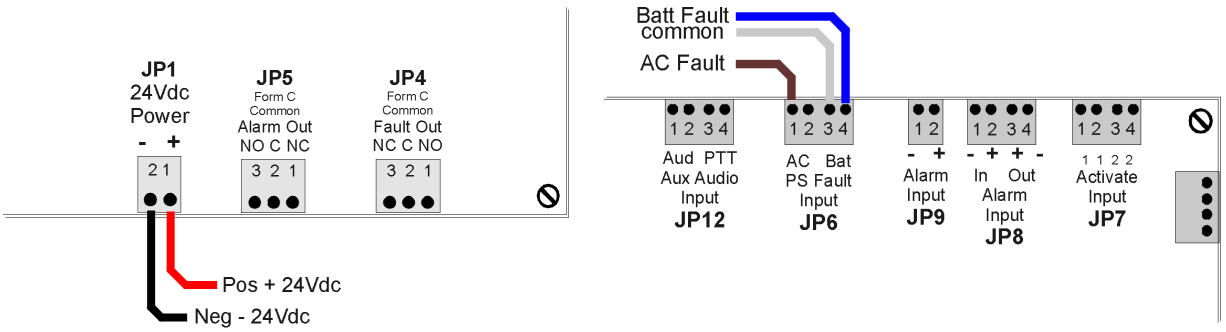
A. System Power Supply

Please refer to the diagram entitled VECP-25/50 System Components, Drawing # 985-0018.

The VECP-25/50 Voice Evacuation Control Panel is designed to interface directly to addressable or conventional fire alarm control panels. In the basic configuration, the VECP-25/50 requires a 24VDC regulated power source from the fire alarm control panel or from a separate UL listed power supply. The 24VDC-power supply must be capable of supplying the active alarm current of the VECP-25/50, which is directly dependent on the total speaker load. The 24VDC-power supply must include a backup battery source, which is capable of maintaining standby system operation for 24 hours in addition to 15 minutes of active alarm operation (verify minimum battery backup requirements with local AHJ). Please refer to the power calculation sheet at the end of this manual to determine active alarm current and battery size.

1. External Power Supply

Connect the regulated 24VDC-power supply to input **JP1** on the VECP-25/50. Observe the polarity shown on drawing # 985-0018, (positive side connects to the terminal on the right). Also, please note that the 24VDC supply must be from a power-limited source. Use adequate wire size for the power supply connection. The supply wire must be rated for a 1.5 Amp current for 25 W load and 2.75 Amp for 50 W.



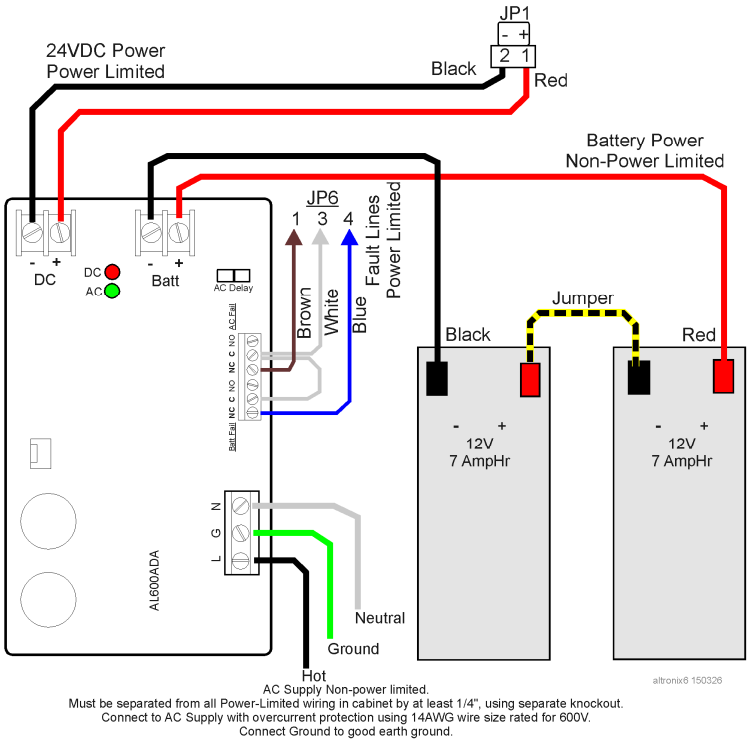
The external power supply's Fault / Trouble Normally Closed contacts should be wired to the JP6 connector on the VECP-25/50. This provides signaling to the VECP-25/50 that the AC is lost, and the system should go to its low-power battery-backup mode. This provides much more backup time during the AC fault, reducing the need for large batteries.
The low-power battery backup mode is indicated by the Power and System Fault LEDs being on, but the Signal Meter(s) are all off.

2. Internal Power Supply

The VECP-25/50 is standard with an integral 24VDC-power supply/charger. In this configuration, the power supply provides the regulated DC power to operate the system and to charge the 7AH batteries. The backup batteries are capable of powering the VECP-25/50 for a minimum of 48 hours in standby mode and for 30 minutes of active alarm mode under full 50-watt speaker load.

The power supply is provided with a 3 position terminal block for connection to the AC supply. The terminal block will accept wire size up to 12AWG.
Please note that the non-power limited AC wiring must be separated by at least 1/4" from all other wiring. The AC supply wiring must use a separate conduit entry to the enclosure.
We recommend using the bottom knockout for the AC wiring which will connect directly to the AC terminal block on the lower left of the power supply/charger module.

Connect the AC supply using minimum wire size 14AWG rated for 600 volt to the power supply/charger module as shown below.
Connect the Red and Black wires from the power supply Bat output to the positive and negative terminals of the battery. Please note that the 2 individual 12V batteries must be connected in series to form a 24V battery.
If the VECP-25P/VECP-50P is connected to a monitored FACP, then cut the AC Delay jumper on the power supply board to delay the report for 6 hours.



B. Input Circuit Connections

The VECP-25/50 includes 2 types of activation inputs, the Alarm Activation inputs and Auxiliary Message inputs.
These activation inputs are **prioritized** by the VECP-25/50
with the **JP8** / **JP9** Alarm inputs having the higher priority.

Below is a more detailed description of the activation inputs.

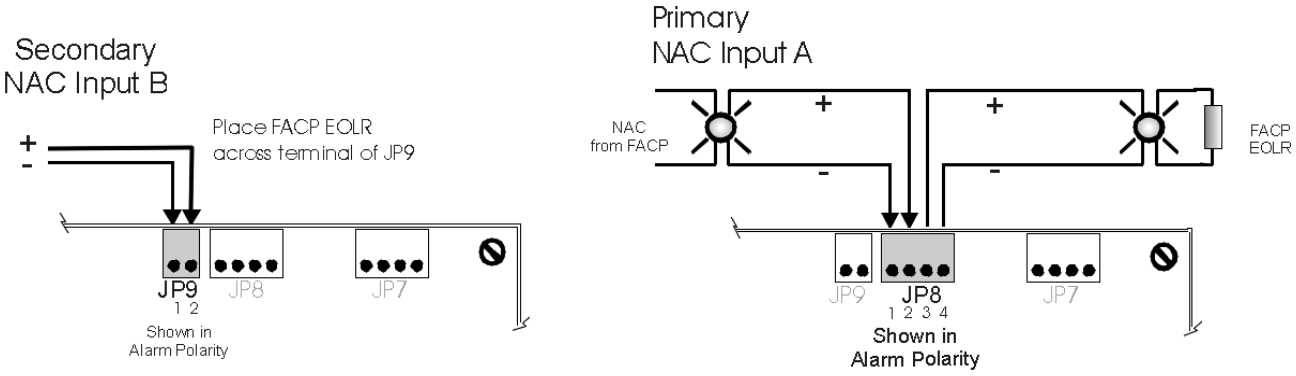
1. Alarm Activation Inputs **JP8** and **JP9**:

The VECP-25/50 is equipped with 2 reverse polarity type inputs, **JP8** and **JP9**,
for connection to Notification Appliance Circuits of addressable or conventional fire alarm control panels (FACP).

Both **JP8** and **JP9** NAC inputs activate the same **Fire Alarm message and tone**.
With **JP8** being the Primary input to Activate and Supervise the VECP-25 / VECP-50.

The **JP8** input is a 4 position NAC input which can accommodate Class A wiring back to the fire alarm control panel and can be connected anywhere in the NAC using the feed-through connection terminals provided. The VECP-25/50 provides a fault indication to the FACP by opening the feed-through connection of the NAC on **JP8** during any fault condition that may exist in the VECP-25/50 or associated speaker circuits.

The **JP9** input is an additional 2 position NAC input which can only be wired at the end of the NAC or as the last device on the circuit. The VECP-25/50 does not open this input when any fault conditions exist.



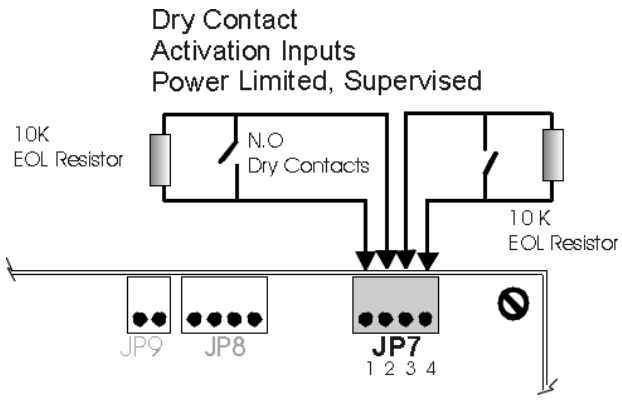
This wiring is supervised by the fire alarm control panel (FACP).
It is power limited provided the FACP Bell Circuit is power limited

2. Auxiliary Message Inputs **JP7**:

The VECP-25/50 also provides 2 normally open dry contact inputs on **JP7** which can be used to activate the **auxiliary message and tone** for weather alerts and other similar **non-Fire** emergencies.

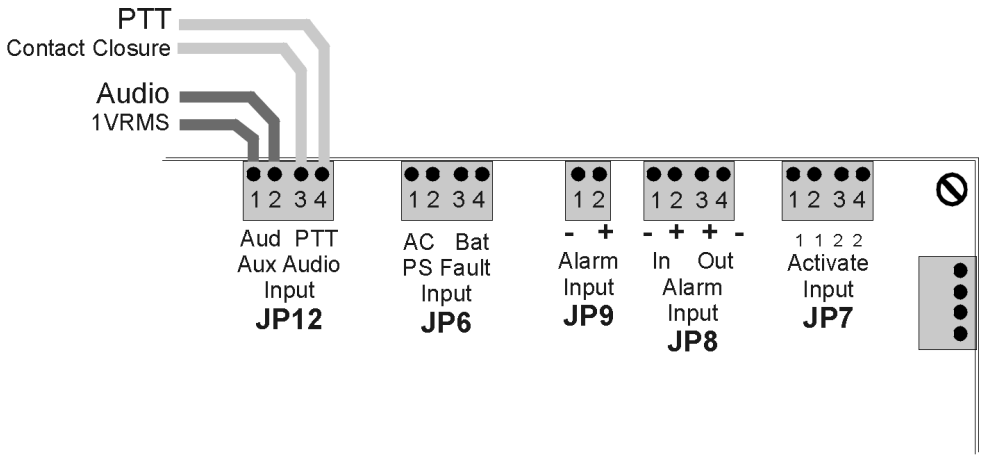
The dry contact inputs are supervised by the VECP-25/50 and require 10k end of line resistors. The tone parameters are configured using the digital message programming switches.

The 2 dry contact inputs activate the same message in the VECP-25/50 and they can be used simultaneously to provide added system redundancy.



3. Auxiliary Audio input **JP12:**

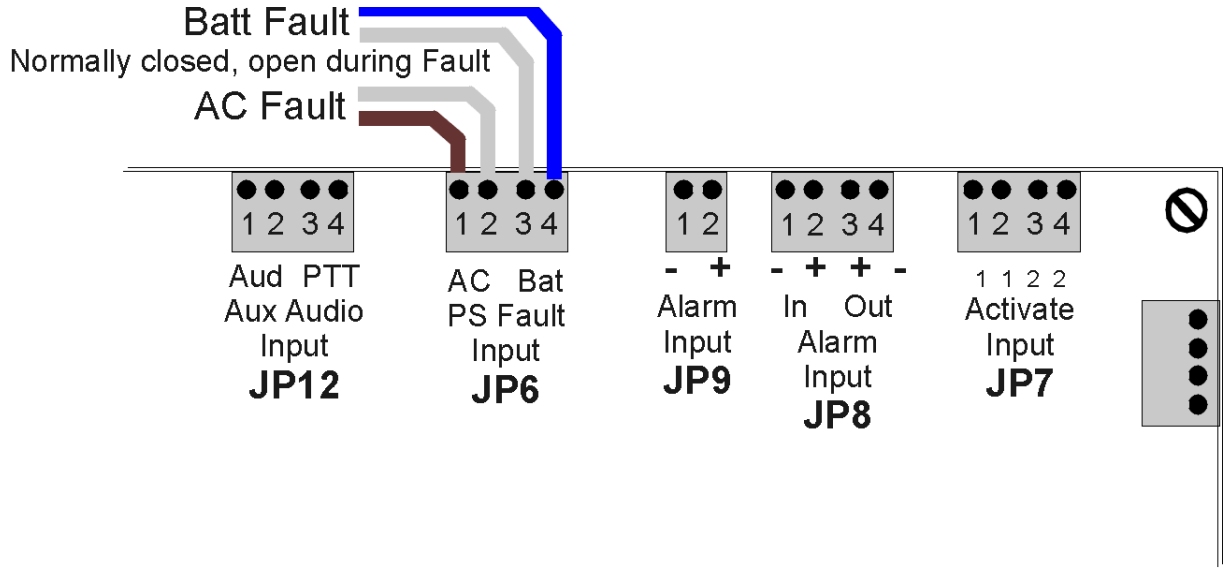
This input interfaces the VECP-25/50 to external telephone and paging systems. Paging operation through the Auxiliary Audio Input is interrupted when the system is activated by any other activation input. The audio signal present on terminals 1 and 2 of **JP12** is amplified and broadcast over the speaker circuits only when the system is activated by a dry contact closure on terminals 3 and 4. **This input is for Non-Fire use only**.



The VECP-25/50 is factory adjusted for an optimum signal level of 1Vrms on the audio input of **JP12**. The audio signal source must be adjusted to the appropriate level to ensure correct output volume and to avoid distortion. If it is not possible to provide a 1Vrms level, please consult the factory for information on how to adjust the system gain accordingly.

4. Microphone Input **JP11**:
The VECP-25/50 includes a supervised microphone, which can be used for normal paging during system standby or to override the pre-recorded voice message during alarm. When the microphone is closed, paging is activated and the microphone signal is broadcast on all speaker circuits simultaneously. The VECP-25/50 will indicate a Mic Fault condition if the microphone is disconnected.

5. AC**/** Power Supply Fault input **JP6**:
The VECP-25/50 monitors **JP6** for 2 normally closed sets of dry contacts as an indication for AC power and power supply normal condition.
If either of the contacts are open the VECP-25/50 indicates a system fault condition and enters battery saver mode.
In battery mode, all LED indicators are turned off except for the green power LED and all supervision is disabled.
This is done to decrease the current consumption and conserve battery power during AC failure.
In battery saver mode, the standby current from drops from 200mA to 85mA Max.



If the AC Supply monitoring function in not used, terminals 1 and 2 on **JP6** must be connected together using a jumper. Similarly, terminals 3 and 4 must be jumped if the power supply is not being monitored.

C. Output Circuits:

1. Speaker Circuits:

The VECP-25/50 includes 4 Class A or Class B speaker output circuits on connectors **Out1-Out4**. In the standard configuration, the **Amplifier 1** output is available on connectors **Out1 and Out4** and the **Amplifier 2** output is available on connectors **Out2 and Out3.**

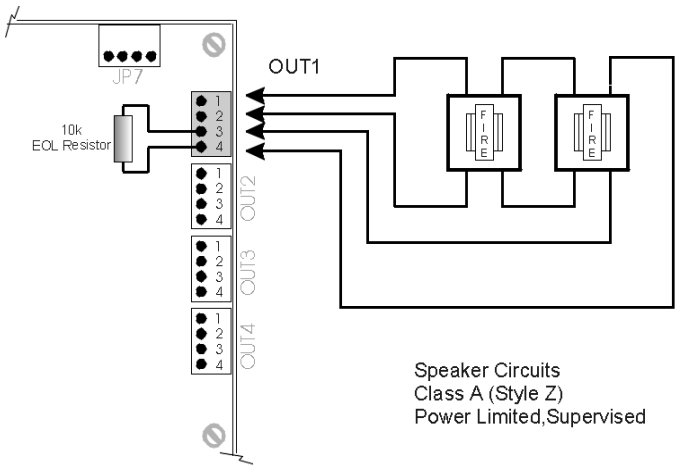
The VECP-25/50 is compatible with 25Vrms and 70.7Vrms speakers. The speaker circuit output voltage is field selectable by placing the jumper block located near the speaker circuit connectors (right side of board) in the required position. The jumper block is factory installed in the 25Vrms position and should be moved by the installer when 70.7Vrms speakers are used

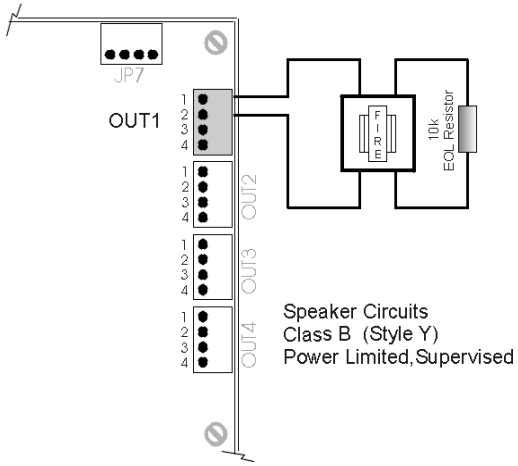
When moving the speaker voltage selection jumper block make sure that the arrow on the back points toward the top of the board, and that all of the header pins are placed properly in the corresponding socket. If the socket is not placed properly, the system will not operate correctly and the Amp fault LEDs will be lit.

For 25 VRMS, jumpers JP25 and JP26 must be placed across the top two pins,
and JP24 and JP27 are placed across the two right pins.
For 70 VRMS the jumpers are placed in the opposite position.

JP15 and JP16 Are installed for VECP-25 systems, but not for VECP-50

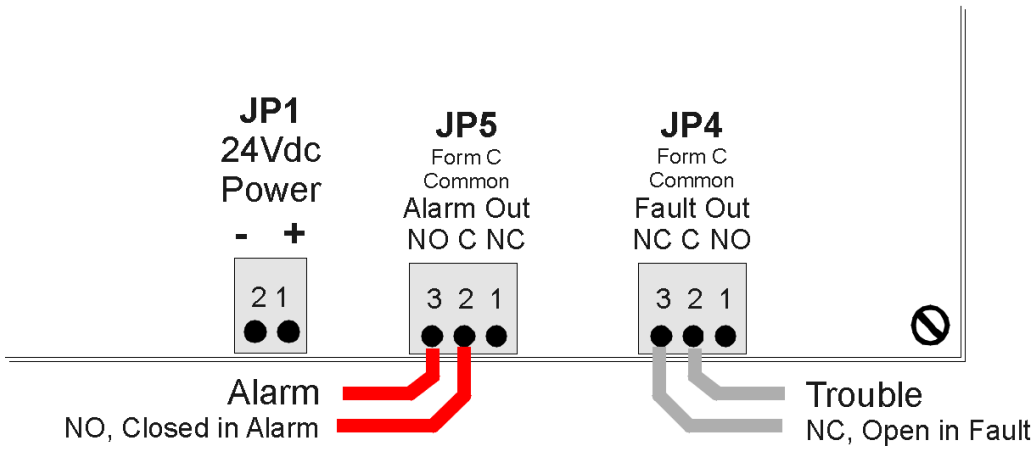
The diagram below shows Class A and Class B wiring diagrams for the speaker circuits.
Use minimum wire size of 18AWG for speaker circuit wiring. For Class B wiring, remove the 10K end of line resistor EOLR supplied on each connector and connect it at the end of the speaker circuit. For Class A wiring, move EOLR from terminals 1 and 2 and install across terminals 3 and 4 of each speaker circuit connector.





2. Common Trouble Relay **JP4**:
Form C contacts available on connector **JP4** rated 1Amp at 30 VDC or 0.6 Amp at 120 VAC. Terminals 1 and 2 are the normally open contacts, terminals 2 and 3 are closed when the relay is energized. The Common Trouble Relay is de-energized whenever a fault condition exists in the VECP-25/50 and associated speaker circuits or when the System Fault LED is on.

3. Common Alarm Relay **JP5**:
Form C contacts available on connector **JP5** rated 1 Amp at 30VDC or 0.6 Amp at 120 VAC. This relay is energized whenever the VECP-25/50 is in the alarm state or when the System Test switch is activated.



2 and 3 pin Jumpers

JP1	na		
JP3	na		
JP15	VECP-25/50 factory set	On: VECP-25	Off: VECP-50
JP16	VECP-25/50 factory set	On: VECP-25	Off: VECP-50
JP21	na		
JP22	Bar Graph Display Select	Top: Voltage	Lower: Power
JP23	Bar Graph Display Select	Top: Voltage	Lower: Power
JP24	25/70VRMS Select	Right: 25VRMS	Left: 70VRMS
JP25	25/70VRMS Select	Top: 25VRMS	Lower: 70VRMS
JP26	25/70VRMS Select	Top: 25VRMS	Lower: 70VRMS
JP27	25/70VRMS Select	Right: 25VRMS	Left: 70VRMS

D. Indicators

1. LEDs

Amber LED indicators are included on the VECP-25/50 to display fault conditions as follows:

Speaker Circuits 1-4 fault	Zone 1-Zone 4 LEDs
Amplifier 1 or 2 fault	Amp1 & Amp2 LEDs
Microphone fault	Mic LED
Any fault on VECP-25/50	System Fault LED

The red Alarm LED is on when the VECP-25/50 is activated by any of the input circuits or by the on-board test switch.

2. Signal Meters

The VECP-25/50 includes a signal meter for each amplifier channel to aid in the installation and to provide the operator with feedback regarding the operation of the system. The signal meters may be operated in one of two modes, Power or Voltage mode. Power mode is selected by placing jumpers JP22 and JP23 between the bottom 2 positions marked power. In the Power mode, the meters show the amount of speaker power being drawn from each amplifier channel. If the power meter on a channel is reaching the yellow overload LED during a steady tone output, it is an indication that the speaker load is greater than 25 Watts and should be decreased.

Please note that the yellow overload LED may momentarily light during voice or signal peaks. This is a normal condition and does not indicate that the amplifier is being overloaded.

Voltage mode is selected by placing JP22 and JP23 between the two top positions marked voltage. In the voltage mode, the meters show the amount of the instantaneous signal (voltage) output of each amplifier.

It is recommended that the power mode be used only during system installation, and that the signal meters be placed in the voltage mode after the installation is complete.

E. Digital message unit

The VECP-25/50 is supplied with a standard pre-recorded digital message unit, which typically includes 2 voice messages and 4 alert tones. The fire voice message is triggered by the reverse polarity bell circuit inputs, and the auxiliary message is triggered by either of the two dry contact inputs. Although the length of each message may vary, the total message capacity is approximately 60 seconds.

The operating parameters of the digital message units are field programmable using on-board dip switches **S3 and S4**.
The Tables on the next page show the dip switch settings for programming the various parameters of the digital message unit.

NOTE: The numbers for S3 are silk screened on the board,
do **not** use the numbers marked on the switch itself!

S3
Initial Tone:
The initial tone entry defines the length of the alert tone when the VECP-25/50 is activated and before the first voice message is played.

Intermediate Tone:
The intermediate tone entry defines the length of time the alert tone will play in between voice message playbacks.

# of Repeats:
The number of repeats defines how many times the voice message will repeat itself with the intermediate tone in between playbacks.

S4
Message 1 Tone:
This selects which of the 4 alert tones is played with voice message 1.
Voice message 1 is typically the fire alarm message.

Message 2 Tone:
This selects which of the 4 alert tones is played with voice message 2.
This is typically the auxiliary message.

These switches are factory set and tested.
Do NOT change them until the system is installed and tested.
Then change them if necessary for the local requirements.

Switch S4 Position	1	2	3	4	5	6	7	8
Primary Alert Tone								
Slow Whoop *							Closed	Closed
Fast Siren							Closed	Open
High Low							Open	Closed
Temporal							Open	Open
# of Messages								
2 *						Closed		
4						Open		
Secondary Alert Tone								
Slow Whoop				Closed	Closed			
Fast Siren				Closed	Open			
High Low *				Open	Closed			
Temporal				Open	Open			
Aux Input Priority								
Low *			Closed					
High			Open					
*** Always ***	Closed	Closed						

Switch S3 Position	Rec (1)	Rec (2)	**1** (3)	**2** (4)	**3** (5)	**4** (6)	**5** (7)	**6** (8)	**7** (9)	**8** (10)
*** Always ***	Open	Open								
# Repeats										
Infinite			Closed	Closed	Closed					
1			Closed	Closed	Open					
2			Closed	Open	Closed					
3 *			Closed	Open	Open					
4			Open	Closed	Closed					
5			Open	Closed	Open					
6			Open	Open	Closed					
7			Open	Open	Open					
Intermediate Tone										
3						Closed	Closed			
3						Closed	Open			
5 *						Open	Closed			
7						Open	Open			
Initial Tone										
None								Closed	Closed	Closed
3								Closed	Closed	Open
5								Closed	Open	Closed
7 *								Closed	Open	Open
10								Open	Closed	Closed
15								Open	Closed	Open
20								Open	Open	Closed
30								Open	Open	Open

* indicates factory setting

DO NOT Change the bottom S3 REC switches, pre-recorded messages may be over-written

F. Specifications

Power supply voltage:	Regulated 24 VDC, UL tested for 20.4 - 26.4 VDC.
Current Requirements:	2.75 Amps maximum at 24 VDC (50-Watt load). 0.21Amp standby. 80 mA in battery saver mode.
Battery:	24V, 7AmpHr. for 48hr standby and 0.5hr alarm with 50 Watt load.
AC power supply:	120VAC, 60 Hz, 2Amps. Altronix AL600ADA module only. Minimum wire size 14 AWG, 600V insulation rating.
Output Power:	25-Watt per channel, 50-Watt total (sinusoidal RMS).
Output Voltage:	25 or 70.7 VRMS field selectable.
Speaker Circuits:	4 Class A (style Z) or Class B (style Y).
End of line Resistor:	10k ohm, 1 Watt. Power limited, 18 AWG minimum wire size.
Ground Fault Impedance:	65K-ohm JP7, Dry Contact Input 240K-ohm Speaker Circuit Output
Activation inputs:	JP8 & JP9, polarity reversing (NAC), 10 - 30 VDC, 2mA max. Feed through relay contacts to other devices (JP8 only). Contacts rating 5 Amp, 30 VDC. JP7 Normally open dry contact. 5mA maximum operating current.
Alarm & Fault relays:	Common, Unsupervised, Form C contacts, 1 A, 30 VDC, resistive.
Auxiliary Audio Input:	1Vrms maximum input level. 10K ohm Input Impedance.
Dimensions:	Overall: 15.75"w x 20"h x 5"d. Cut-in size: 14-1/2”w x 18-3/4”h x 4”d.
Listings:	The VECP-25/50 complies with the following standards: NFPA 72 National Fire Alarm Code NFPA 101 Life Safety Code UL 864 Control Units for Fire Protective Systems UL 1711 Amplifiers for Fire Protective Systems

Power Supply Calculations

Active Current requirements:

The VECP-25/50 requires a maximum current of 2.75 Amps from a 24 VDC power supply when driving a total speaker load of 50 Watts. The current draw is 1.5 Amps maximum for a 25-Watt total speaker load. The 24 VDC power supply must be sized for all other speaker loads according to the following formula:

$$\mathbf{I = 0.1 + (0.054) \times P_{out}}$$

I is the active alarm current draw from the 24 VDC supply in Amps.
P_{out} is the total speaker load in Watts.

Please note that the DC current draw at 50-Watt output is lower because the amplifier is slightly more efficient at higher loads.

Battery requirements:

The VECP-25/50 requires 80mA of standby current when operating in battery saver mode. If battery saver mode is not used the standby current becomes 200mA. The required battery capacity is based on 24 hours of standby operation in addition to 15 minutes of active alarm operation. To calculate the battery capacity requirements please use the formula below:

$$\mathbf{C = (0.08) \times (24) + (I) \times (0.25)}$$

C is the required capacity of the 24 V battery.
I is the active alarm current calculated in the formula above.

Normally closed contacts must be installed across terminals 1 and 2 of JP6 to indicate that the power supply is operating properly. In addition, terminals 3 and 4 of JP6 must see a normally closed contact indicating presence of AC power. Battery saver mode is enabled when terminals 1 & 2 or 3 & 4 of connector JP6 are opened, indicating a power supply failure to the VECP-25/50. If the normally closed contacts are not available, connect terminals 1 and 2 together and 3 and 4 together with a jumper to disable battery saver mode.

If battery saver mode is disabled, substitute 0.08 in the above formula with 0.2. This is because the standby current increases when battery saver mode is not used and therefore the battery size will increase.

Please note that a 24V, 7AmpHour battery will support the operation of the VECP-25/50 for 24 hour standby in addition to 15 minutes of alarm. This is true even if battery saver mode is disabled.

For manual paging, pick up the microphone, press the switch located on the side, and speak clearly into the microphone.

If microphone is activated during alarm, the prerecorded message is interrupted and will not resume after mic is released. The alarm tone will resume and will stay on as long as the system is in alarm.

Type of service: Automatic and Manual

Type of Signaling: Tone and Voice Message

Power Limited Output Speaker Circuits

Installation environment INDOOR, Location DRY

Electrical Ratings:
Operational Power:
24 VDC, 1.5 A for 25W, 2.7 A for 50W
AC Supply (for option DVS-AL600ADA):
120 VAC, 60 Hz, 2 A Max.
Speaker Circuits:
25 Watt, 25 or 70.7 Vrms for DVS-25
50 Watt, 25 or 70.7 Vrms for DVS-50
Suitable for installation as:
Style Y (Class B wiring) or
Style Z (Class A wiring)
Battery:
24V, 7AH Typical
Refer to installation manual for battery size requirements. Battery replacement is recommended every 3 years

This unit must be installed in accordance with NFPA 72 National Fire Alarm Code

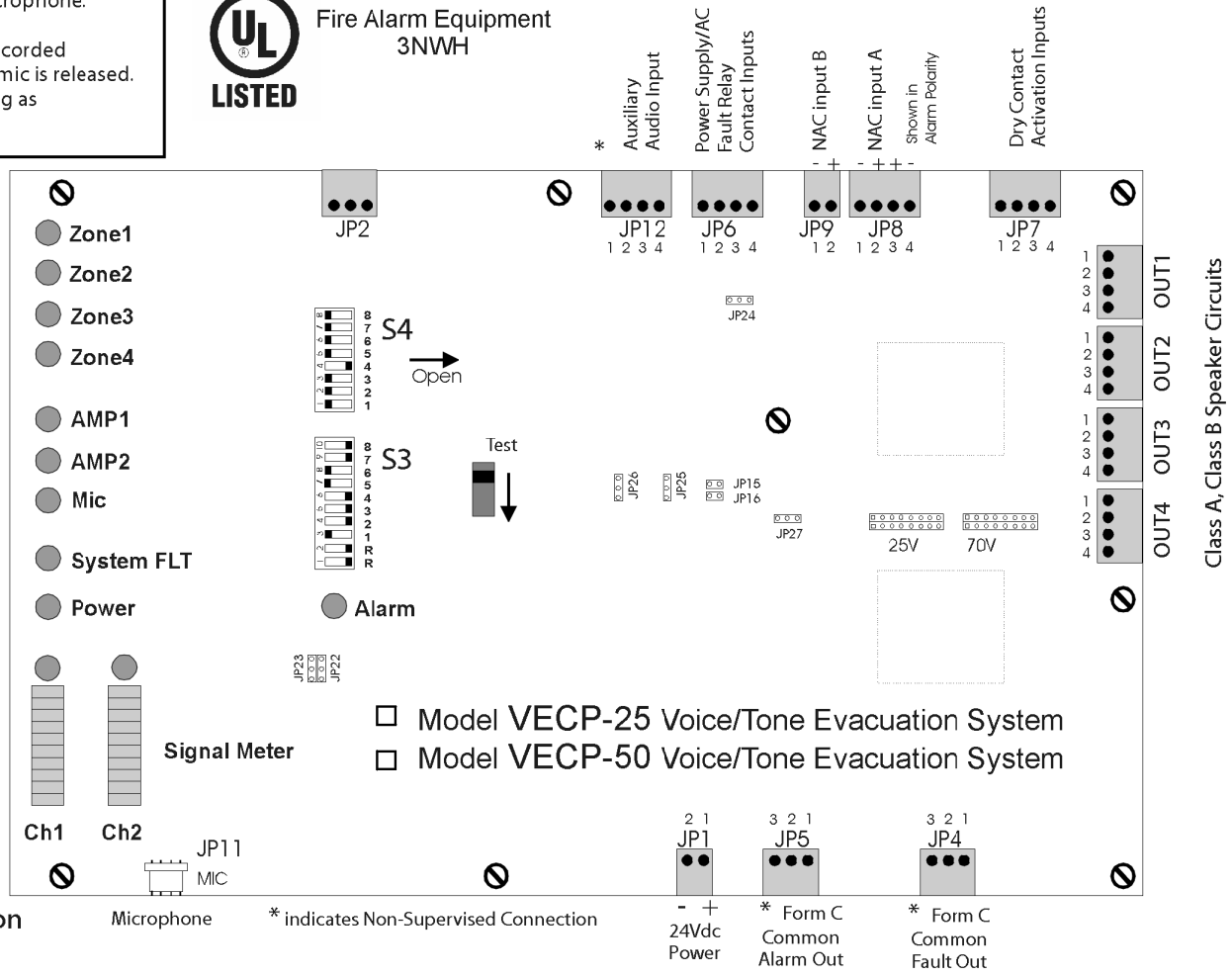
Warning:
disconnect Power prior to servicing

Refer to doc # 1000-0715
" VECP-25 -50 Installation Manual "
for wiring details

CSFM 6912-1408:108

SIGNALING

Fire Alarm Equipment
3NWH



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