

# V-9937

## ONE ZONE PAGE PORT ADAPTER

### INTRODUCTION

These instructions provide identification, installation, connection, operation and maintenance information for the V-9937, One Zone Page Port Adapter.

### SPECIFICATIONS

#### Purpose

- Provides loudspeaker paging access for one zone of paging
- Offers override and background music capabilities, as well as automatic gain control and pop suppression
- Connects to page ports of most electronic key and PABX Telephone Systems

#### Applications

- Electronic Key System C. O. Line Ports
  - Electronic Key System Page Ports
  - PABX Page Ports
  - PABX Loop Start Trunk Ports
- Refer to Figure 1 for a simplified block diagram of a typical installation.

#### Features

- One zone
- Automatic gain control
- Pop suppression
- Override capability (using C. O. line position or PABX loop trunk port)
- Low level input for background music (typically -17dBm)
- Automatic background music cutoff (when the page port has control leads)
- Electronic Key System page port access
- PABX page port access
- Built-in connection block
- Directly drives Valcom amplified speaker assemblies
- Page plus music output (music stops during page)



- Page only output
- C. O. audible ring and tone signaling option (requires V-9942 Tone Module)

#### Dimensions/Weight

Dimensions: 7.10"H x 4.70"W x 2.10"D  
(18.03cm H x 11.94cm W x 5.33cm D)

Weight: 0.9 lbs. (0.41 kg)

#### Capacity

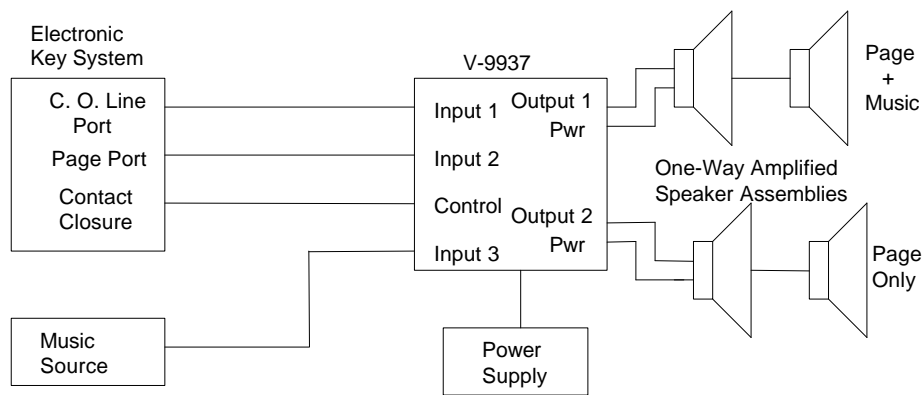
- The V-9937 is a one zone, single talkpath unit
- Access requires a page port
- Override requires a C. O. line position or a PABX loop trunk port
- Music input provided

#### Power Requirements

-21.5 to -26.0VDC "B" Battery, 200mA maximum

#### Environment

Temperature: 0 to +50°C  
Humidity: 0 to 85% (non-precipitating)



**FIGURE 1 - SIMPLIFIED BLOCK DIAGRAM OF A TYPICAL INSTALLATION (Arrangement 1)**

## SYSTEM DESIGN

### Telephone System Requirements

The V-9937 is designed to work with telephone system page ports, which provide an audio pair (8 to 600 Ohms) and a dry contact closure for control. This will be referred to as **Arrangement 1**.

The V-9937 may also be used with page ports (8 to 600 Ohms) that do not have control leads, with two feature limitations:

- 1) If background music is desired, the telephone system must be capable of providing the switching instead of the V-9937;
- 2) The AGC and pop suppression circuitry will not be enabled on a standard page (they will still work on page override). This will be referred to as **Arrangement 2**.

**NOTE: Refer to the Installation section for Arrangement 1 and 2 connecting information.**

### Equipment

A complete one zone one-way page system using the V-9937 will be made up of the following:

- Telephone system page card (if page ports are not standard)
- V-9937 page port adapter
- Valcom one-way amplified speaker assemblies (or existing high power amplifier and speakers)
- -24VDC power supply

Optional (depending on individual job requirements):

- Music source
- V-9942 Tone Module

## INSTALLATION

### Instructions

The following sections contain step by step instructions for wiring the V-9937. Each instruction is preceded by a line. Place a check on the appropriate line as the instruction is completed. The instructions also include tests along the way to verify connections have been made correctly. If these steps are followed exactly, installation of your Valcom system will go smoothly and quickly. If the results of a test do not correspond with what is shown, **do not proceed until the problem has been corrected**.

**NOTE: The telephone system referred to in this manual is the customer premise equipment such as an electronic key system, a PABX or a dedicated single line telephone (s). The V-9937 is not intended for direct or indirect connection to the public telephone network or to PABX analog station ports. When used with a customer premise telephone system such as a key system or PABX system, these units are interfaced to the system via a fully protected page port or system central office port, which is a fully protected interface device. Also, the host system must be configured to disallow central office trunk conferencing in order to prevent indirect connection to the public network.**

### Mounting

**WARNING: Do not locate the V-9937 or its wiring within 18 inches of a power supply, electrical panel or any equipment that generates electrical noise.**

- \_\_\_ 1. Using two #6 3/4 inch wood screws, mount the V-9937 in a vacant space on the backboard with the telephone system common equipment.

## Connecting Arrangements

There are two possible ways this equipment may be used as described in the following paragraphs. Place a check by the arrangement being used in this installation.

\_\_\_ 1. **Arrangement 1:**

**Access Method:** Electronic Key or PABX page port with "page enable" dry relay contact.

**Override Access:** Electronic Key C. O. button or PABX loop start trunk.

**Music:** Input background music to V-9937.

**Additional Features:** Pop suppression and AGC on page and override. Two outputs, one with music and one without. Tone signaling option.

\_\_\_ 2. **Arrangement 2:**

**Access Method:** Electronic Key or PABX page port (no control leads required).

**Override Access:** Electronic Key C. O. button or PABX loop start trunk.

**Music:** Background music may be provided if the telephone system provides the needed inputs and switching.

**Additional Features:** Pop suppression and AGC on override only. Tone signaling option.

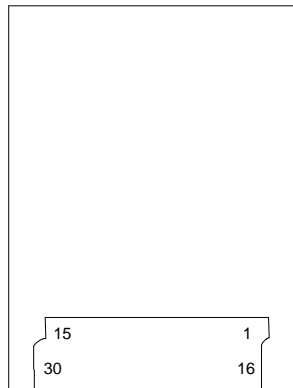


Figure 2  
Location and Numbering of Connection Block

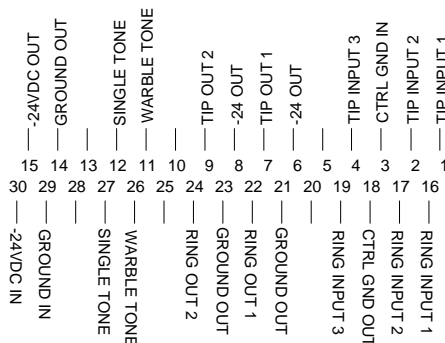


Figure 3 - Connecting Block Pinouts

## Wiring (Arrangements 1 and 2)

Refer to Figure 2 for location and numbering of connection block and Figure 3 for connecting block pin outs.

- \_\_\_ 1. Unplug power supply.
- \_\_\_ 2. Connect -24VDC "B" battery (may be referred to as "-" or "signal battery") from power supply to pin 30 on V-9937.
- \_\_\_ 3. Connect 24VDC Ground ("B" ground, "+" or "signal ground") from power supply to pin 29.
- \_\_\_ 4. Connect 24VDC Ground from power supply to telephone system Ground.
- \_\_\_ 5. Power test:
  - (a) Plug in power supply.
  - (b) If power reversal LED is lit:
    - (1) Unplug power supply;
    - (2) Reverse connections on pins 29 and 30;
    - (3) Go to step 6.
- \_\_\_ 6. Unplug power supply.

**NOTE: Power supply pins 6, 21, 8 and 23 for external speaker power are provided as a convenience. When using large numbers of speakers with the V-9937, the speakers should be connected directly to their respective power source.**

## Wiring Arrangement 1

### Page Access:

- \_\_\_ a. Connect V-9937 pin 2 to page port Tip.
- \_\_\_ b. Connect pin 17 to page port Ring.

### Override Access:

- \_\_\_ a. Connect V-9937 pin 1 to override trunk (or override line key) Tip.
- \_\_\_ b. Connect pin 16 to override Ring.

### Control Leads:

- \_\_\_ a. Connect V-9937 pin 3 to one side of page port dry contact closure.
- \_\_\_ b. Connect pin 18 to the other side of the dry contact closure.

### Music Input:

- \_\_\_ a. Connect pin 4 of the V-9937 to one side of the music source output.
- \_\_\_ b. Connect pin 19 to the other side of the music output.

**NOTE: Use a low level music source such as a tuner. DO NOT connect the output of a high power amplifier to the Valcom unit.**

### Speaker Connections:

#### Speakers receiving background music:

- \_\_\_ a. Connect pin 7 of V-9937 to Tip of the amplified speaker assembly.
- \_\_\_ b. Connect pin 22 to Ring of the Speaker.
- \_\_\_ c. Connect pin 6 to -24VDC terminal of speaker (white lead if using horns).
- \_\_\_ d. Connect pin 21 to GND terminal of speaker (black lead of horns).

#### Speakers not receiving background music:

- \_\_\_ a. Connect pin 9 of the V-9937 to Tip of the amplified speaker assembly.
- \_\_\_ b. Connect pin 24 to Ring of the speaker.
- \_\_\_ c. Connect pin 8 to -24VDC terminal of speaker (white lead if using horns).
- \_\_\_ d. Connect pin 23 to GND terminal of speaker (black lead of horns).

Go to the Volume Adjustment section.

## Wiring Arrangement 2

### Page Access:

- \_\_\_ a. Connect V-9937 pin 4 to page port Tip.
- \_\_\_ b. Connect pin 19 to page port Ring.

### Override Access:

- \_\_\_ a. Connect V-9937 pin 1 to override trunk (or override line key) Tip.
- \_\_\_ b. Connect pin 16 to override Ring.

### Music Input:

**NOTE: Background music may only be connected if the telephone system provides the appropriate inputs.**

- \_\_\_ a. Connect music source to telephone system following phone system installation instructions.

### Speaker Connections:

- \_\_\_ a. Connect pin 7 of V-9937 to Tip of the amplified speaker assembly.
- \_\_\_ b. Connect pin 22 to Ring of the speaker.
- \_\_\_ c. Connect pin 6 to -24VDC terminal of speaker (white lead if using horns).
- \_\_\_ d. Connect pin 21 to GND terminal of speaker (black lead of horns).

**NOTE: Set speaker volume controls at approximately 1/2 volume during installation.**

## Volume Adjustment and Test

Refer to Figure 4 for location of volume controls. Test the system and adjust the controls as follows:

**NOTE: For proper operation, the controls must be adjusted in the order specified.**

- \_\_\_ 1. Set the "Output 1" and the "Output 2" controls to approximately 1/2 volume. Set the "Input 3" control fully counterclockwise.
- \_\_\_ 2. Connect a lineman's test set to the V-9937 pins 1 and 16.
  - \_\_\_ a. Go "off hook" and speak. Paging should be heard through the speakers.
  - \_\_\_ b. If paging is not heard, recheck connections. Refer to the Troubleshooting Chart.
  - \_\_\_ c. While speaking, adjust the individual speaker volume controls to the desired level.
- \_\_\_ 3. If using wiring Arrangement 1 with background music, the "Input 3" control may be adjusted to set the desired level of background music.
- \_\_\_ 4. If using wiring Arrangement 2, access the page port through the Telephone System and use the "Input 3" control to set the proper system page level.

**NOTE: The "Output 1" and the "Output 2" controls may be used as master controls to change the system volume.**

## Tone Module Option

The V-9942, Tone Module Card, may be added to provide two types of electronic tone signaling over the paging. An installation may use one or both types of signaling. Check the type of signaling being used:

- \_\_\_ 1. Interrupted warble tone (one second tone every four seconds).
- \_\_\_ 2. A single frequency non-interrupted tone.

The tones are activated by connecting the appropriate pins together (typically through a dry contact closure).

The single tone will override the warble tone if both are accessed at the same time. If a page is in progress, the tone will be mixed with the page.

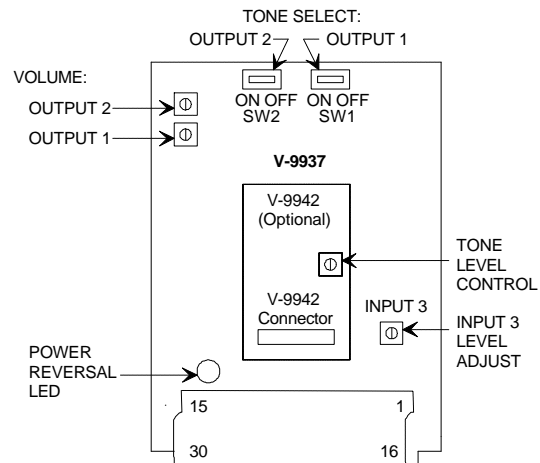


FIGURE 4 - LOCATION OF SWITCHES AND CONTROLS

## Installation:

- \_\_\_ 1. Disconnect power from V-9937.
- \_\_\_ 2. Plug V-9942, Tone Module, into jack provided in V-9937.
- \_\_\_ 3. Warble Tone
- \_\_\_ a. Connect pin 11 of V-9937 to one side of dry contact closure being used to control the warble tone.
- \_\_\_ b. Connect pin 26 to the other side of the closure.
- \_\_\_ 4. Single Tone
- \_\_\_ a. Connect pin 12 of the V-9937 to one side of dry contact closure being used to control the single tone.
- \_\_\_ b. Connect pin 27 to the other side of the closure.
- \_\_\_ 5. Referring to Figure 4, set the volume control on the V-9942 to approximately 1/2.
- \_\_\_ 6. Set the tone select switches (Figure 4) to determine which outputs will receive tones (OFF: No tones; ON: Tones).
- \_\_\_ 7. Reapply power to the unit.
- \_\_\_ 8. Testing the Tones
- \_\_\_ a. **IMPORTANT: Verify volume controls have been adjusted.**
- \_\_\_ b. Momentarily connect between pins 11 and 26 of the V-9937. A warble tone should be heard from any speakers connected to outputs that have the tone select switch set ON.
- \_\_\_ c. Momentarily connect between pins 12 and 27. A single frequency tone should be heard from any speakers connected to outputs that have the tone select switch on.
- \_\_\_ d. If proper results are not obtained in (b) and (c), then remove power from the V-9937; return to the beginning of this Section and verify all connections.
- \_\_\_ 9. While shorting pins 12 and 27, adjust the V-9942 volume control to the desired level.

## OPERATION

### Circuit Description

The V-9937, One Zone Page Port Adapter, will interface to most E-KEY or PABX page ports to provide a single zone of one-way paging with automatic gain control, pop suppression and background music cut off. The V-9937 has 3 inputs:

**Input 1:** provides talk battery and contains loop detection circuitry. It is to be accessed from a C. O. line button on E-Key Systems or a loop trunk port on PABX's. Signals on this input will go through the AGC and pop suppression circuits. Accessing this port will override inputs 2 and 3.

**Input 2:** is transformer coupled to the V-9937. Ground must be applied to pin 3 for this input to

operate (provided from pin 18 through the telephone system contact closure). When ground is applied to pin 3, input 3 will be overridden. Audio on this input will go through the AGC and pop suppression circuits. Typically this input will connect to an 8 or 600 Ohm page port.

**Input 3:** is transformer coupled to the V-9937 and is active any time inputs 1 and 2 are not in use. This input is not affected by AGC or pop suppression and is typically used as a music input.

The output of the V-9937 is designed to drive Valcom One-Way Amplified Speaker Assemblies. Two outputs are provided. Output 1 provides paging and background music with automatic music cutoff during a page. Output 2 provides paging without music for areas where music is not desired.

## TECHNICAL ASSISTANCE

When trouble is reported, verify that power is being supplied to the unit and there are no broken connections. Check voltages for proper polarity on the cross connect block.

Table 1 identifies symptoms of some possible problems with solutions. If your problem is listed, perform the actions indicated. A lineman's test set, several clip leads, and a VOM may be necessary to effectively troubleshoot the unit.

If the trouble can not be located, continue to troubleshoot by substituting a spare unit for the suspected unit.

Assistance in troubleshooting is available from the factory. When calling, you should have a VOM and a test set available and call from the job site. Call (540) 563-2000 for Technical Support or call (540) 767-1555 for Valcom 24-hour Faxback System or visit our website at <http://www.valcom.com>.

Valcom equipment is not field repairable. Valcom, Inc. maintains service facilities in Roanoke, VA. Should repairs be necessary, attach a tag to the unit clearly stating your company name, address, phone number, contact person and the nature of the problem. Send the unit to:

**Valcom, Inc.**  
**Repair and Return Dept.**  
**5614 Hollins Road**  
**Roanoke, VA 24019-5056**

**Table 1 - Troubleshooting Chart**

Symptom	Solution
1. No output	A. Verify -24VDC present on pins 29 and 30. Power reversal LED should not be on. B. Verify music present on pins 4 and 19. C. Verify proper polarity on power leads to speakers. D. Verify volume control settings.
2. No output when using Input 1	A. Test unit by placing telephone test set on pins 1 and 16, going off hook and paging.
3. No output when using Input 2	A. Verify ground is present on pin 3 when accessing page. B. Verify audio is present on pins 2 and 17 when paging.
4. No tone signaling	A. Verify V-9942 plugged in correctly. B. If V-9937 is not working correctly in all other respects, then start at troubleshooting chart Step 1. C. Verify connections on pins 11 and 26 and/or 12 and 27. Test by momentarily shorting these pairs and listening for tones at speakers.

**VALCOM LIMITED WARRANTY**

Valcom, Inc. warrants its products to be free from defects in materials and workmanship under conditions of normal use and service for a period of one year from the date of shipment. The obligation under this warranty shall be limited to the replacement, repair or refund of any such defective device within the warranty period, provided that:

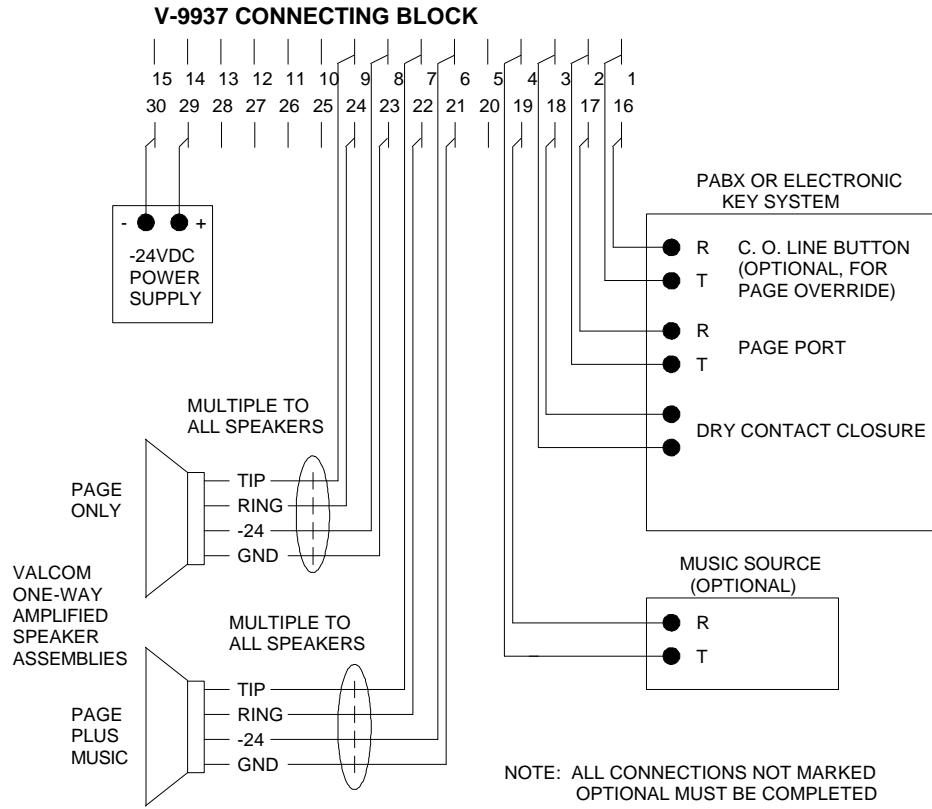
1. inspection by Valcom, Inc. indicates the validity of the claim;
2. the defect is not the result of damage, misuse or negligence after the original shipment;
3. the product has not been altered in any way or repaired by others and that factory sealed units are unopened (a service charge plus parts and labor will be applied to units defaced or physically damaged);
4. freight charges for the return of products to Valcom are prepaid;
5. all units 'out of warranty' are subject to a service charge. The service charge will cover minor repairs (major repairs will be subject to additional charges for parts and labor).

**This warranty is in lieu of and excludes all other warranties, expressed or implied, and in no event shall Valcom, Inc. be liable for any anticipated profits, consequential damages, loss of time or other losses incurred by the buyer in connection with the purchase, operation or use of the product.**

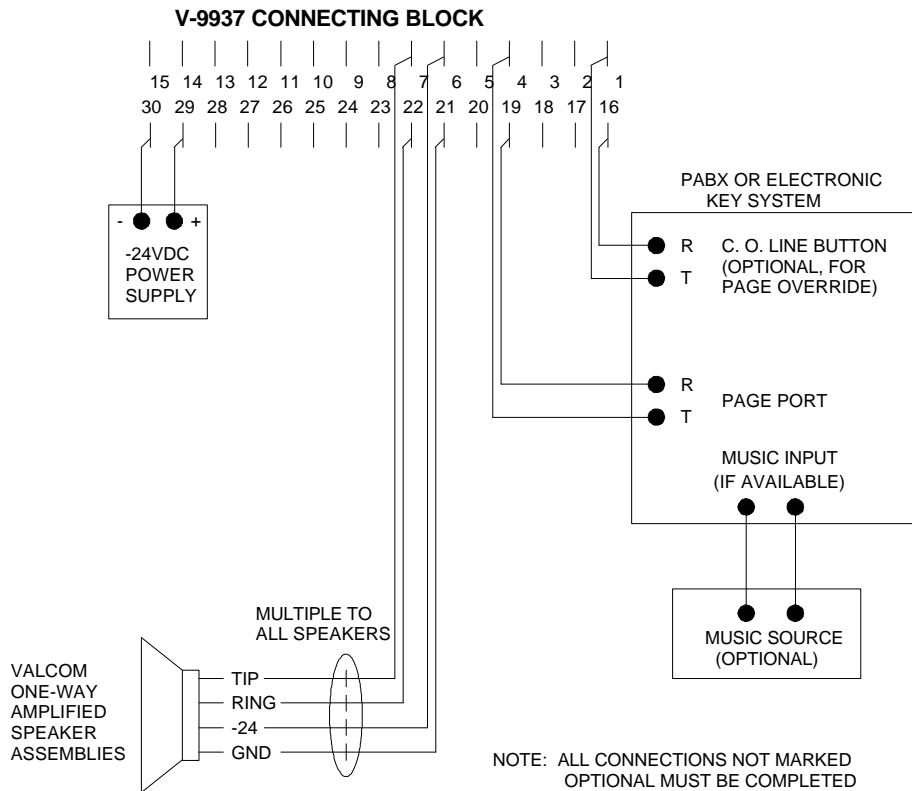
This warranty specifically excludes damage incurred in shipment. In the event a product is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved in accordance with the F.O.B. point.

Headquarters:  
Valcom, Inc.  
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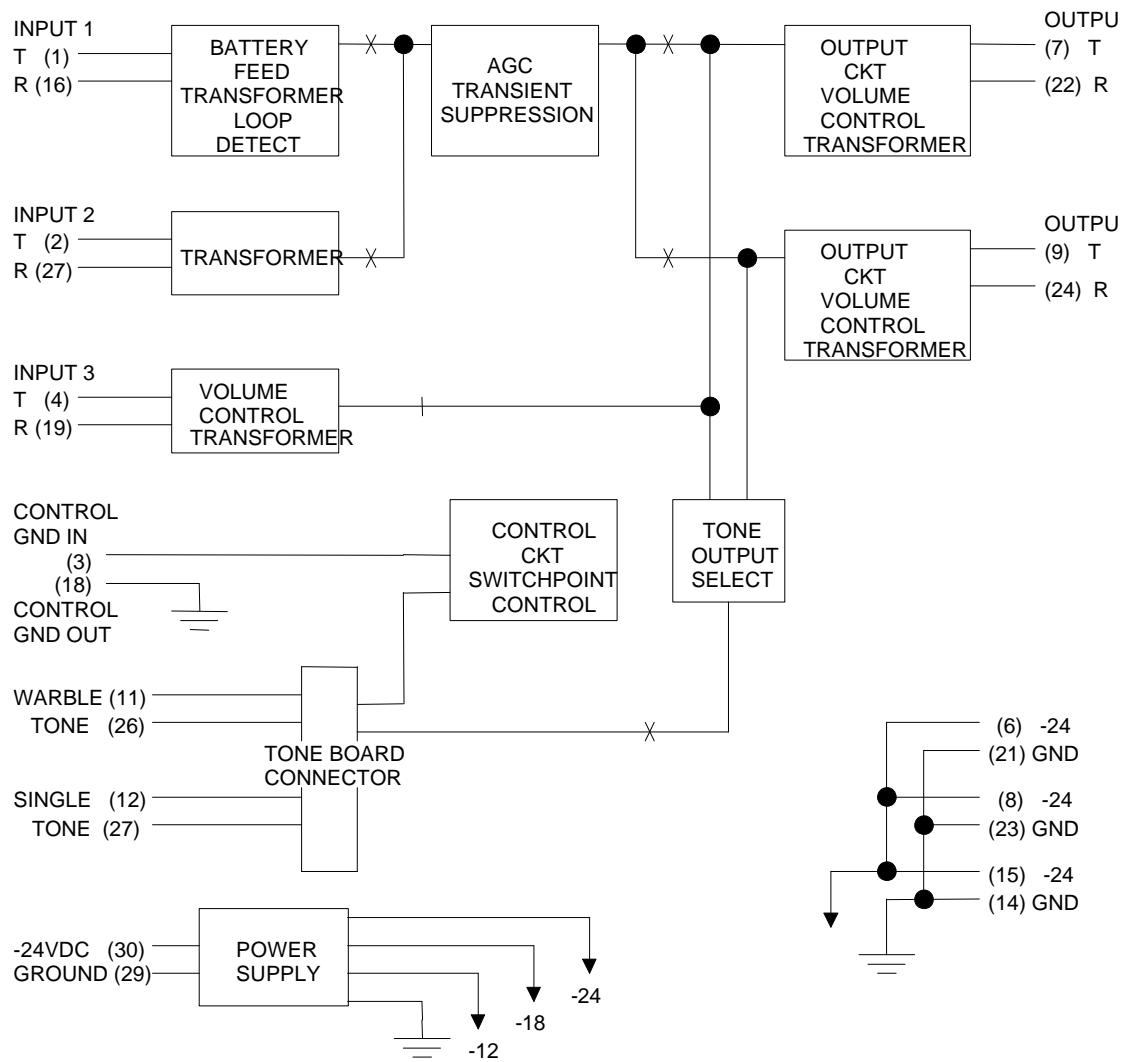
In Canada  
CMX Corporation  
35 Van Kirk Drive #11 and 12  
Brampton, Ontario L7A 1A5  
Phone: (905) 456-1072  
FAX: (905) 456-2269



**FIGURE 5 - WIRING CONNECTIONS FOR ARRANGEMENT 1**



**FIGURE 6 - WIRING CONNECTIONS FOR ARRANGEMENT 2**



**V-9937 SIMPLIFIED**