

# PZS™ 80

5 Channel Four Zone Mixing System

## OPERATING GUIDE

**PEAVEY®**  
ARCHITECTURAL ACOUSTICS®

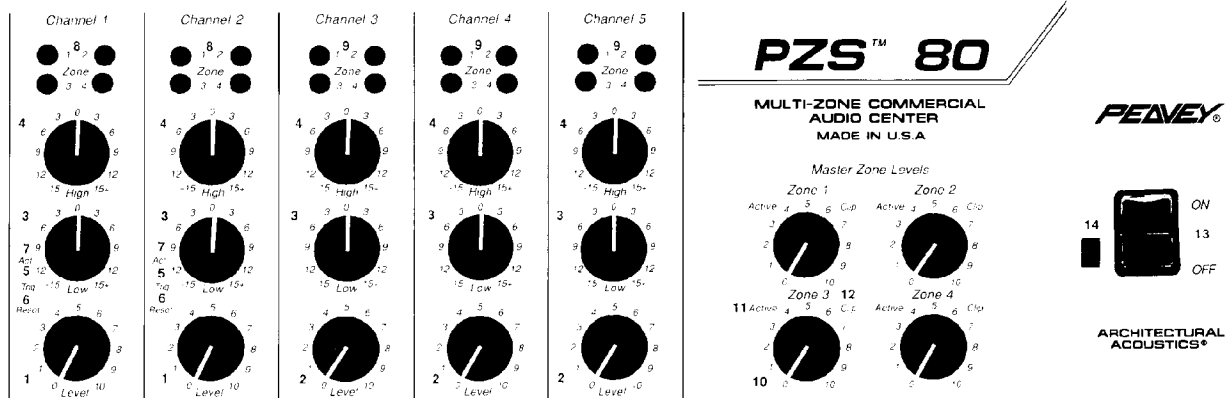
## FEATURES

- Five input channels
- Four zones
- 20 watts output per zone
- Two XLR low-Z mic inputs (balanced)
- Three dual RCA high-Z line inputs (paralleled)
- Input terminal strip for each channel
- Channel level control
- Low and high active EQ each channel
- Four zone assignment switches each channel
- Front panel adjustable trigger and paging release with active LED indicator on channels one & two
- Four master output level controls with active and clipping LED indicators
- Preamp output/power amp input terminal strip for each zone
- Each zone output is transformer isolated providing 2 & 8 ohm, 25 & 70 volt outputs
- Each zone has 600 ohm line level balanced output
- 120V AC accessory socket

- 19" standard rack-mount package with optional rack-mount flange kit
- Three vertical rack spaces high
- Externally accessible mains fuse
- 18 gauge steel chassis

## DESCRIPTION:

The Peavey Architectural Acoustics PZS™ 80 is a 5-channel mixing system with assignment capability to four independent powered zones. Each channel offers low and high equalization, channel level control, and zone assignment switching. Channels one and two offer low-Z (XLR) and terminal strip type microphone inputs for paging capability with channels three through five offering dual (paralleled) RCA jacks and terminal strip type line inputs for use with various music sources. Additionally channels one and two have recessed screw driver controls for trigger level and reset time, and an LED active indicator. Each zone has a master level control, active and clipping LED indicators, and terminal strip connections for preamp out/power amp in and balanced line output. Each zone power amp is rated conservatively at 20 W RMS and is transformer isolated providing 2 and 8 ohm, 25 and 70 volt outputs.



### CHANNEL 1 & 2 LEVEL CONTROLS (1)

Controls the signal level at the channel input for the associated microphones after the muting circuitry has been triggered. (See item 5 following for more information.)

### CHANNEL 3 THRU 5 LEVEL CONTROLS (2)

Controls the signal level at the channel input for the associated music sources.

### CHANNEL LOW EQ CONTROL (BASS) (3)

Active equalization control that adjusts the channel low frequency response. Clockwise rotation boosts low frequencies while counterclockwise rotation reduces low frequencies.

### CHANNEL HIGH EQ CONTROL (TREBLE) (4)

Active equalization control that adjusts the channel high frequency response. Clockwise rotation boosts high frequencies while counterclockwise rotation reduces high frequencies.

### CHANNEL 1 & 2 TRIGGER CONTROL (5) (SCREWDRIVER)

Controls the trigger level of the channel. At stand-by the two microphone channels are muted (not active) to allow a standard microphone (no switch) to be used without the usual background noise pickup associated with an open mic. This control sets the input signal level at which the channel becomes un-muted. Clockwise rotation increases the sensitivity of the circuit while counterclockwise rotation decrease the sensitivity.

**CAUTION:** Setting this control full CCW will render the channel inoperative. This control and the channel level control (1) are not related, i.e., the channel level control does not effect the trigger level sensitivity. However, once the channel is un-muted, the channel level will affect the signal level of the microphone in the various output zones. One should set the trigger level control high enough so that normal close talk microphone usage (paging) will trigger the channel, but

not so high as to allow the normal room ambient noise level to trigger the channel. This usually takes some experimentation and will vary depending upon applications.

**CHANNEL 1 & 2 RESET CONTROL (6)  
(SCREWDRIVER)**

Controls the reset time after the channel has been triggered. Used in conjunction with the trigger control above, this control sets the reset time after voice activation of the muting circuitry. Clockwise rotation increases reset time to a maximum of four seconds. Counterclockwise rotation decreases reset time to a minimum of 0.5 seconds. One should set the reset time long enough to prevent muting during a normal vocal page which again will take some experimentation.

**CHANNEL 1 & 2 ACTIVE LED (GREEN) (7)**

Used in conjunction with the trigger and reset controls above. This LED lights whenever the associated channel is un-muted. It therefore is a valuable aid in setting trigger and reset.

**CHANNEL 1 & 2 ZONE ASSIGNMENT SWITCHES (8)**

Switches used to route the paging signal to the desired zone. When a particular zone button is selected, the system is set so that when a paging signal triggers the muting circuit of that particular channel, the signal is routed to that zone. At the same time, the level of any music source assigned to that zone (via item 9 following) will be lowered. This technique is called "ducking" and is used to allow the paging signal to be heard over the background music. In the PZS 80 the ducking level is -14 dB, and is not adjustable. One can use the zone assignment switches to permit paging to any or all of the zones simultaneously if desired.

**CHANNEL 3 THRU 5 ZONE ASSIGNMENT (9)  
SWITCHES**

Switches used to route the background audio signal to the desired zone. Selecting a particular zone button sets up the system to route the audio source associated with that particular channel to the desired zone. At the same time, this audio source will be "ducked" in that zone whenever a paging signal occurs in that zone, as discussed in item 8

previously. One can use the zone assignment switches to route the audio source of one or more zones if desired. Note that only the zones assigned for paging will have the audio ducked during paging. Those zones not page assigned will not be ducked.

**MASTER ZONE LEVEL CONTROLS (10)**

Controls the signal level at the output of each zone. Normally these controls should be set at the 12:00 position (5), and the overall system levels set using the various channel level controls. This setting yields the best compromise for system noise performance and signal headroom. A setting of greater than five will increase system gain but could degrade system noise. A setting of less than five will reduce system gain and improve system noise, but will degrade the system headroom which could possibly cause clipping and distortion.

**ZONE ACTIVE LEDS (GREEN) (11)**

Indicates whenever any signal activity is occurring in that particular zone. These LEDs will light whenever a signal level above .1 W RMS occurs in the associated zone power amp. These indicators are helpful for setup of zone signal levels.

**ZONE CLIP LEDS (RED) (12)**

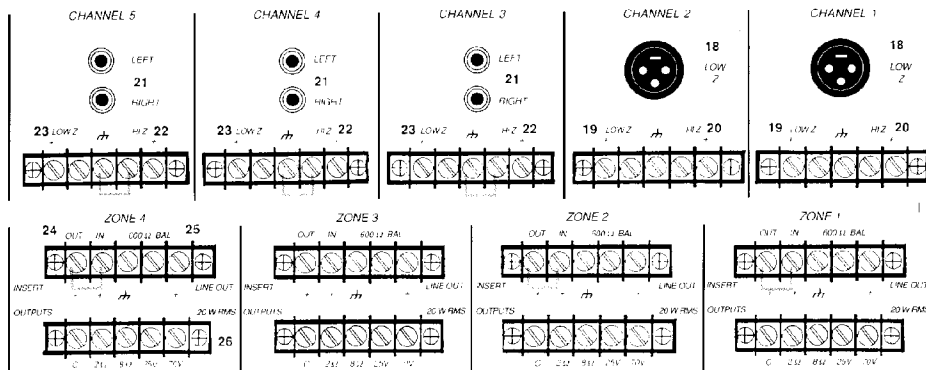
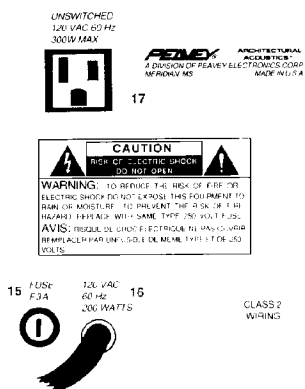
Indicates the possibility of clipping is occurring in that particular zone. These LEDs will light whenever a signal level above 10 W RMS occurs in the associated zone power amp. Depending upon the signal conditions and characteristics, these indicators can be a reasonable indicator for clipping and distortion. If these LEDs flash occasionally, and only on peaks of the music or paging signal, probably audible clipping is not occurring. If these LEDs come on and stay on during a paging signal, then the power amps are clipping, and audible distortion is probably occurring in that zone.

**MAINS POWER SWITCH (13)**

Rocker type switch, depress to "on" position to power unit.

**POWER ON LED (RED) (14)**

Indicates when AC mains power is supplied to the unit and the mains power switch in "on" and the rear mains fuse is okay.



### **MAINS FUSE (15)**

Always replace with the same size, type and rating. Failure to do so could create a fire or shock hazard.

### **MAINS POWER CORD (16)**

Connect to a 120V AC power source. This cord is fitted with a standard two prong power plug with an integral large ground pin. For your safety, we have incorporated a 3-wire line (mains) cable with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the equipment without proper grounding facilities, suitable grounding adaptors should be used. Less noise and greatly reduced shock hazard exists when the unit is operated with the proper grounded receptacles.

### **AC OUTLET (UNSWITCHED) (17)**

Provides AC mains power for auxiliary equipment with a power consumption of no more than 300 watts. Using this outlet for equipment with total power consumption ratings of more than 300 watts can create a fire or shock hazard.

### **CHANNEL 1 & 2 XLR INPUTS (18)**

Normal low-Z mic inputs for cables fitted with a standard XLR male connector. This receptical is a standard three pin XLR female wired as follows: pin 1 - ground; pin 2 - negative input; pin 3 - positive input. The circuitry associated with this input is electronic balanced and is designed to accept any normal low impedance dynamic microphone.

### **CHANNEL 1 & 2 LOW Z INPUT TERMINALS (19)**

Normal low-Z mic inputs for cables without connectors. Each screw terminal is marked clearly as to its function. Two conductor shielded cables should be carefully wired as follows: Cable shield - GND; conductor 1 - LOW Z POS; conductor 2 - LOW Z NEG. Normally conductor 1 should be the positive microphone output feed. Although this is a general rule, if the polarity of the associated microphone is not known, one should, at the very least, be consistent in wiring all mics the same way. Again the circuitry associated with this input is electronic balanced and is designed to accept any normal low impedance dynamic microphone.

### **CHANNEL 1 & 2 HI Z INPUT TERMINALS (20)**

Normal high-Z line input for cables without connectors. This high-Z input can be used for normal high impedance unbalanced microphones or other line level feeds, balanced or unbalanced, such as telephone signals or outputs from other mixers. Each screw terminal is marked clearly as to its function. For a balanced application, two conductor shield cables should be carefully wired as follows: Cable shield - GND; conductor 1 - HI Z POS; conductor 2 - HI Z NEG. Notice the ground terminal is shared by the low-Z inputs as well. Normally conductor 1 should be the positive output feed from the associated equipment. For unbalanced applications such as microphones with single conductor shielded cables and other such single ended equipment feeds, jumper the HI Z NEG input to GND, and wire the cable as follows: Cable shield - GND; conductor - HI Z POS.

**ADDITIONAL INFORMATION:** If desired, the XLR connector and the low-Z screw terminal can be used at the

same time with two different low-Z mics driving one channel. The technique would then allow up to four low-Z microphones to be connected for paging duty. It is also possible to use the low-Z screw terminals and the high-Z screw terminals as inputs at the same time.

### **CHANNEL 3 THRU 5 RCA INPUTS (21)**

Normal high-Z line inputs for use with cables fitted with RCA male connectors. These inputs are designed to accept normal line level unbalanced signals such as those from a typical hi-fi FM tuner or any other suitable background music source. The dual RCA inputs are mixed together internally to create a mono signal from a stereo feed if such is supplied. If only a mono signal is supplied, then either RCA jack can be used. To create the correct gain structure for the RCA jacks, a new PZS 80 unit has jumpers from the HI Z NEG input to GROUND on channels 3 thru 5. If your unit does not have such jumpers in place, and you intend to use the RCA jacks as inputs, it is suggested that you add the jumper to that particular channel. The use of these jumpers will be discussed in later sections.

### **CHANNEL 3 THRU 5 HI Z INPUT TERMINALS (22)**

Normal high-Z line input for cables without connectors. This high-Z input can be used for any line level signal feed, balanced or unbalanced. As mentioned above, a new unit has jumpers from the HI Z NEG input to GROUND on channels 3 thru 5. For unbalanced applications such as music sources with single conductor shielded cables, the jumper should be left in place or added if not in place, and then wire the cable as follows: Cable shield - GND; cable conductor - HI Z POS. For balanced signal feeds such as a transformer balanced telephone music feed, the ground jumper should be removed and the two conductor shielded cable wired as follows: Cable shield - GND; conductor 1 - HI Z NEG; conductor 2 - HI Z POS. In this case conductor 2 should be the positive output feed from the external device.

### **CHANNEL 3 THRU 5 LOW Z INPUT TERMINALS (23)**

Normal low-Z mic inputs for additional paging microphones as applications warrant. The PZS 80 mixing system was primarily designed for two paging microphones and three music sources. If desired channels 3 thru 5 can be used for additional mic inputs, although these channels do not have muting capability, and will not "duck" the music levels as channels 1 and 2 do. In this case microphones with push to talk switches can be used quite effectively in these channels. Here the muting and ducking is accomplished with the push to talk switch, where one set of switch contacts will open the mic circuit and another set of switch contacts will short the music source. A diagram is included later in this manual. In this case, the microphone feed is usually balanced and the two conductor shielded cable should be carefully wired as follows: Cable shield - GND; conductor 1 - LOW-Z NEG; conductor 2 - LOW-Z POS. Again, conductor two should be the positive mic feed.

### **ZONE OUT IN TERMINALS (24)**

A send/return patch point for external effects or EQ. A new unit is shipped with jumpers from OUT to IN on all four zones to complete the signal flow at this point. The OUT terminals

are line level preamp outputs following the master mix and master level stages of each zone. The IN terminals are line level power amplifier input points for each zone power amp. If these two terminals are not jumpered or connected through an external device, the master signals do not pass on to the respective power amps. Both the OUT and IN are unbalanced signals requiring only a single conductor shielded cable for patching to the external device. Wire the cables as follows: Cable shield - GND; cable conductor - OUT (or IN). Note both cables share the same GND terminal. The OUT has a low source impedance to drive any reasonable device, and the IN is a relatively high impedance input to not load down any reasonable device. It is recommended that all such external effects or EQ devices be in the same rack as the PZS. A wiring diagram showing an external EQ device connections is included at the end of this manual.

### **ZONE 600 OHM BALANCED OUTPUTS (25)**

A balanced output to drive additional power amplifiers. The PZS-80 has four 20 W RMS power amplifiers built in. For small installations this is probably an adequate power distribution system, but for larger systems, external power

amplifiers are generally added to supply the extra power required. In this case the external power amplifiers can be driven from this 600 ohm balanced line level output without causing unwanted ground loops or hum problems. Again, each terminal is marked clearly as to polarity and two conductor shielded cables should be carefully wired as follows: Cable shield - GND; conductor 1 - 600 ohm BAL NEG; conductor 2 - 600 ohm BAL POS. In this case conductor 2 should be wired to be the positive input feed for the external power amp, and such amp connections can be wired either balanced or unbalanced. A diagram of both unbalanced and balanced amp wiring is included at the end of the manual.

### **POWER AMP OUTPUTS (26)**

Outputs for speaker connections. Each power amplifier has a built in output transformer providing ground isolated feeds for 2 ohm and 8 ohm direct loudspeaker connections, and for 25 and 70 volt constant voltage distribution systems. Two such wiring diagrams are included at the end of this manual.

## **PZS™ 80 SPECIFICATIONS**

### **Power Output:**

20 W RMS per channel @ less than 0.5% THD  
(all four channels operating)

### **Power Bandwidth:**

40 Hz to 20 kHz, 0.5% THD

### **Outputs:**

Speaker: 2 ohms, 8 ohms, 25 V & 70 V  
(balanced)  
Line: 600 ohms, 1 V RMS (0 dBV,  
balanced)

### **Channel 1 & 2 Inputs:**

Mic: 4K ohms, 3 mV (balanced)  
Line: 40K ohms, 30 mV (balanced)  
XLR Mic: 4K ohms, 3 mV (balanced)

### **Channels 3 - 5 Inputs:**

Mic: 4K ohms, 3 mV (balanced)  
Line: 40K ohms, 30 mV (balanced)  
RCA: 40K ohms, 30 mV (unbalanced)

### **Patches:**

Send: 2K ohms, 1 V RMS (0 dBV,  
unbalanced)  
Return: 33K ohms, 1 V RMS (unbalanced)

### **Frequency Response:**

50 Hz to 15 kHz,  $\pm 2$  dB (transformer)

### **Signal To Noise Ratio:**

Residual: 80 dB below rated power  
Line Inputs: 75 dB below rated power, 2K ohms  
Mic Inputs: 70 dB below rated power, 200  
ohms (all tone & level controls  
centered)

### **Tone Controls:**

Low EQ:  $\pm 15$  dB @ 100 Hz  
High EQ:  $\pm 15$  dB @ 5 kHz

### **Controls:**

Channels 1 & 2:  
Level, low EQ, high EQ, four assign switches,  
unmuting trigger level and reset time  
Channels 3 - 5:  
Level, low EQ, high EQ, four assign switches  
Masters 1 - 4:  
Level

### **Indicators:**

Power: LED  
Level: Active & Clipping LED's each master  
Trigger: Active LED channels 1 & 2

### **Power Supply:**

Internal, 120 V AC @ 60 Hz, 200 watts  
Back panel accessory socket, 300 watts

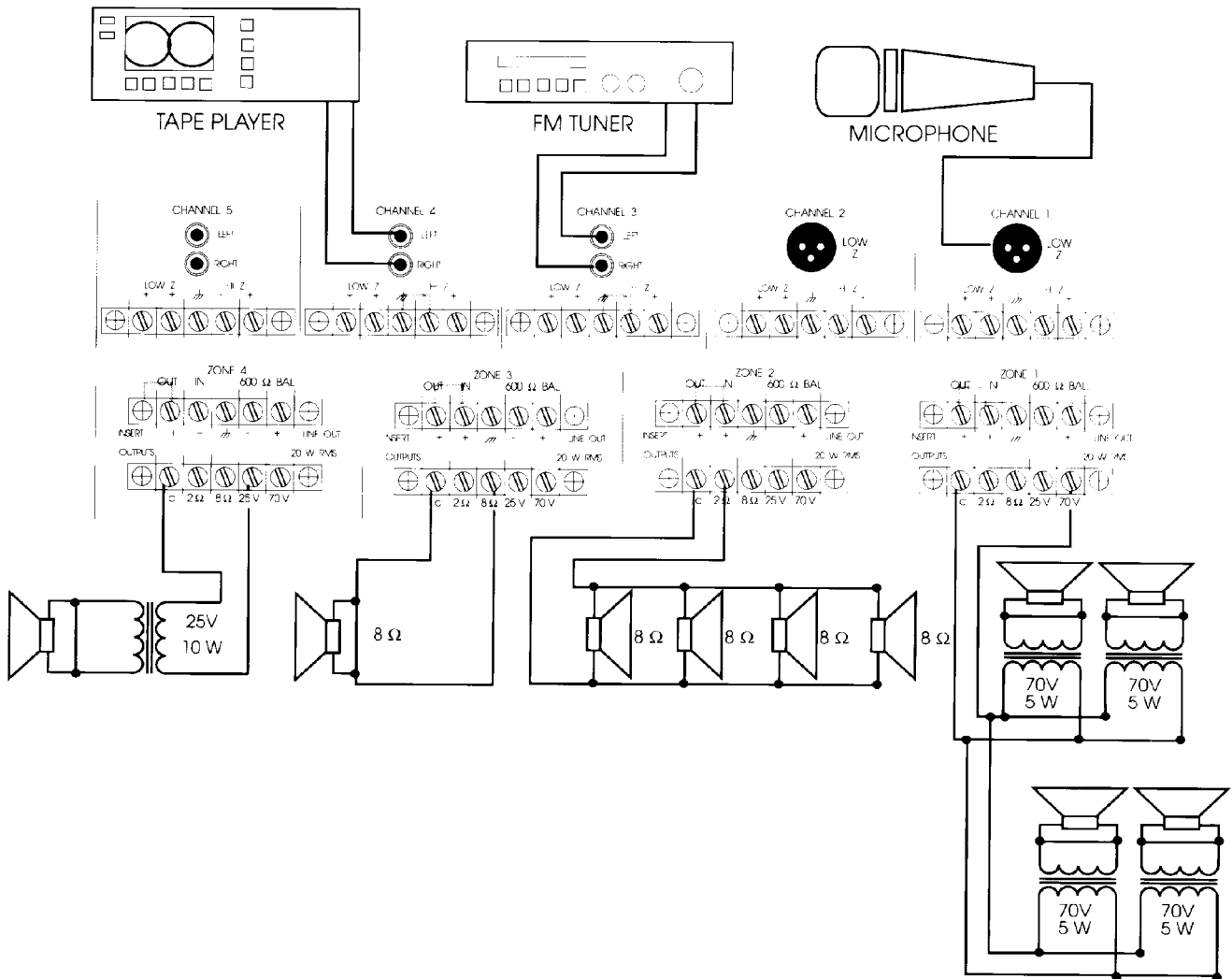
### **Other Features:**

Mic muting functions on channels 1 & 2  
Music ducking functions on channels 3 - 5

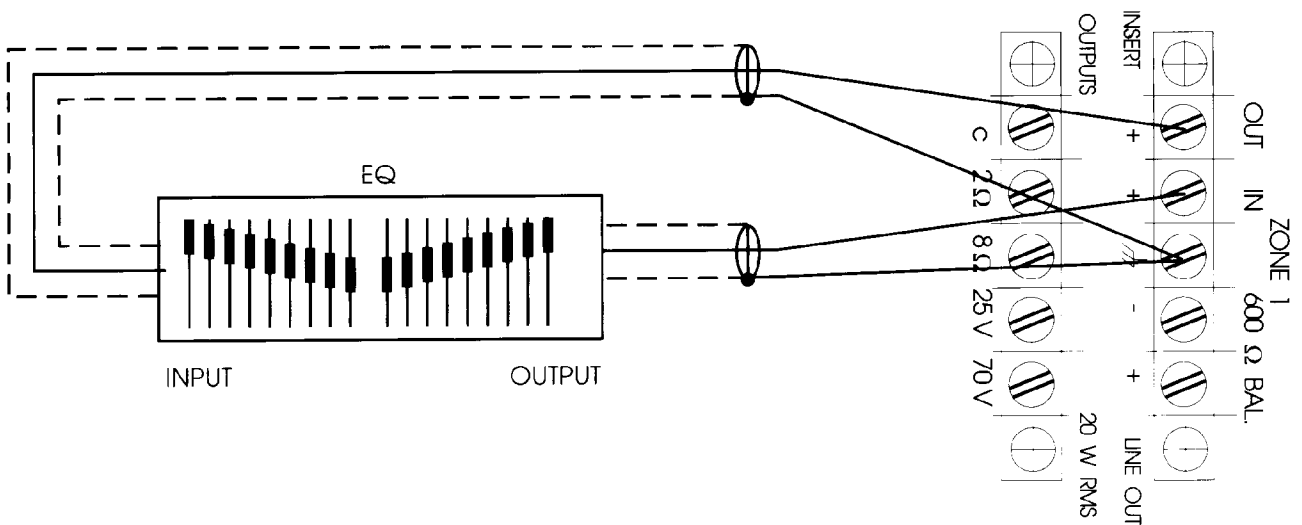
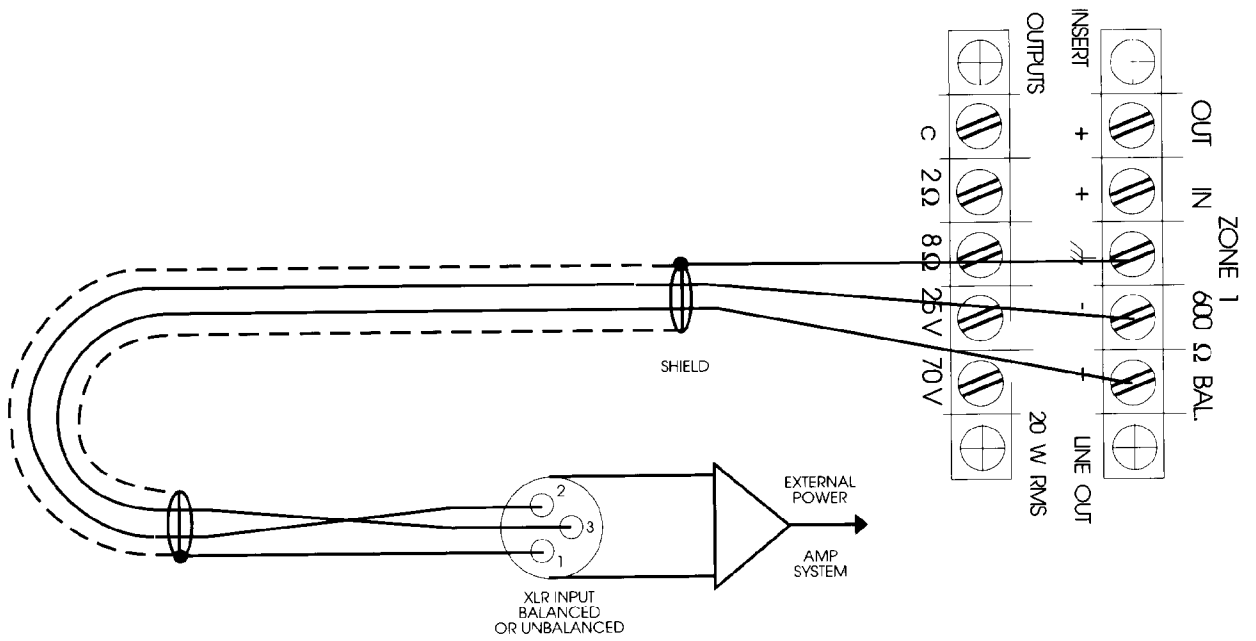
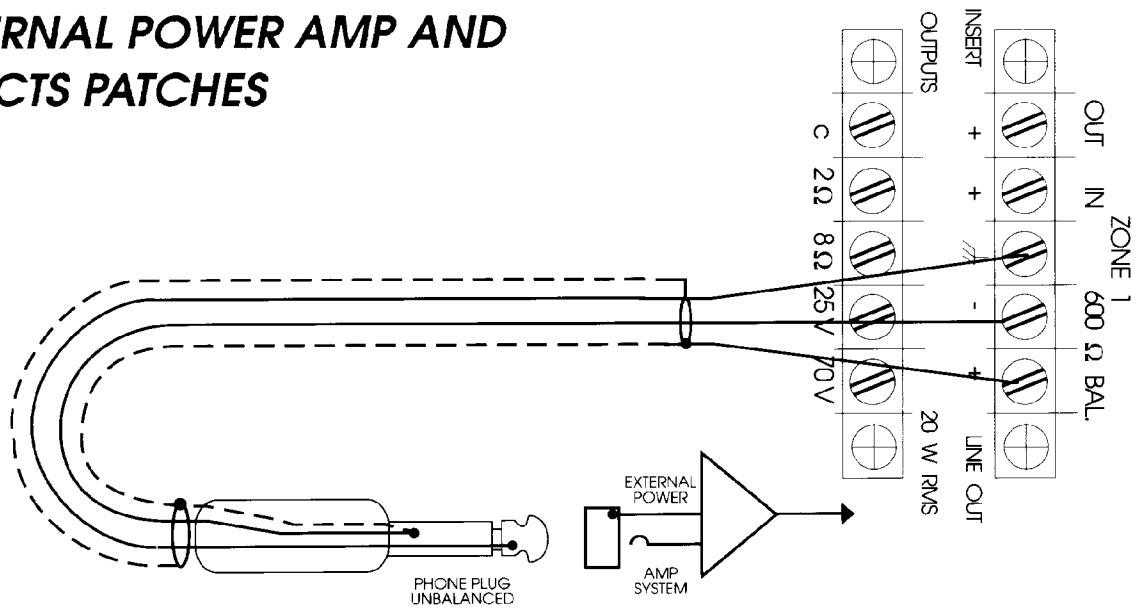
### **Dimensions & Weight:**

5 1/4" (H) x 17" (W) x 7" (D)  
12 pounds

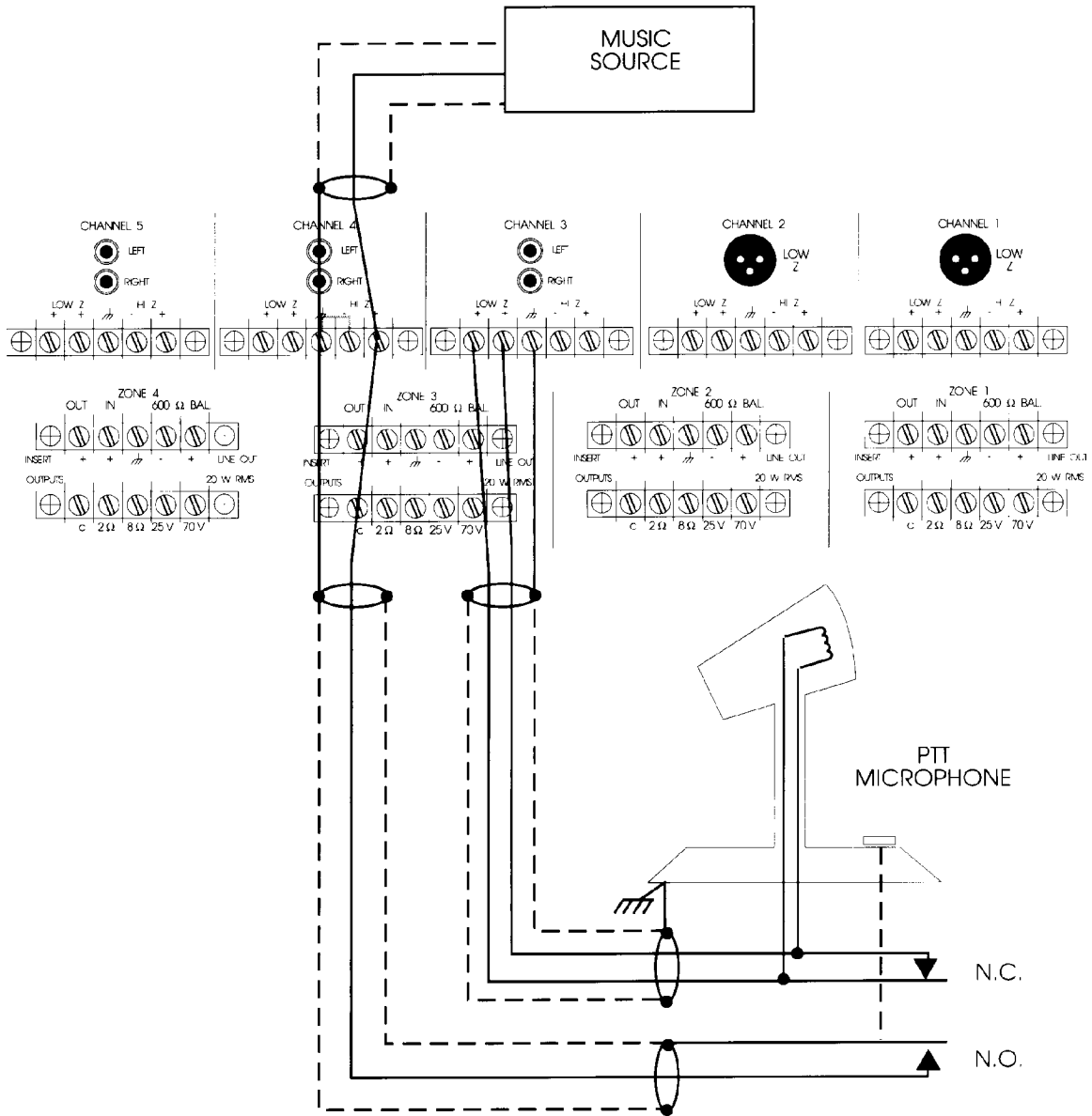
## TYPICAL SMALL MUSIC/PAGE SYSTEM



# EXTERNAL POWER AMP AND EFFECTS PATCHES

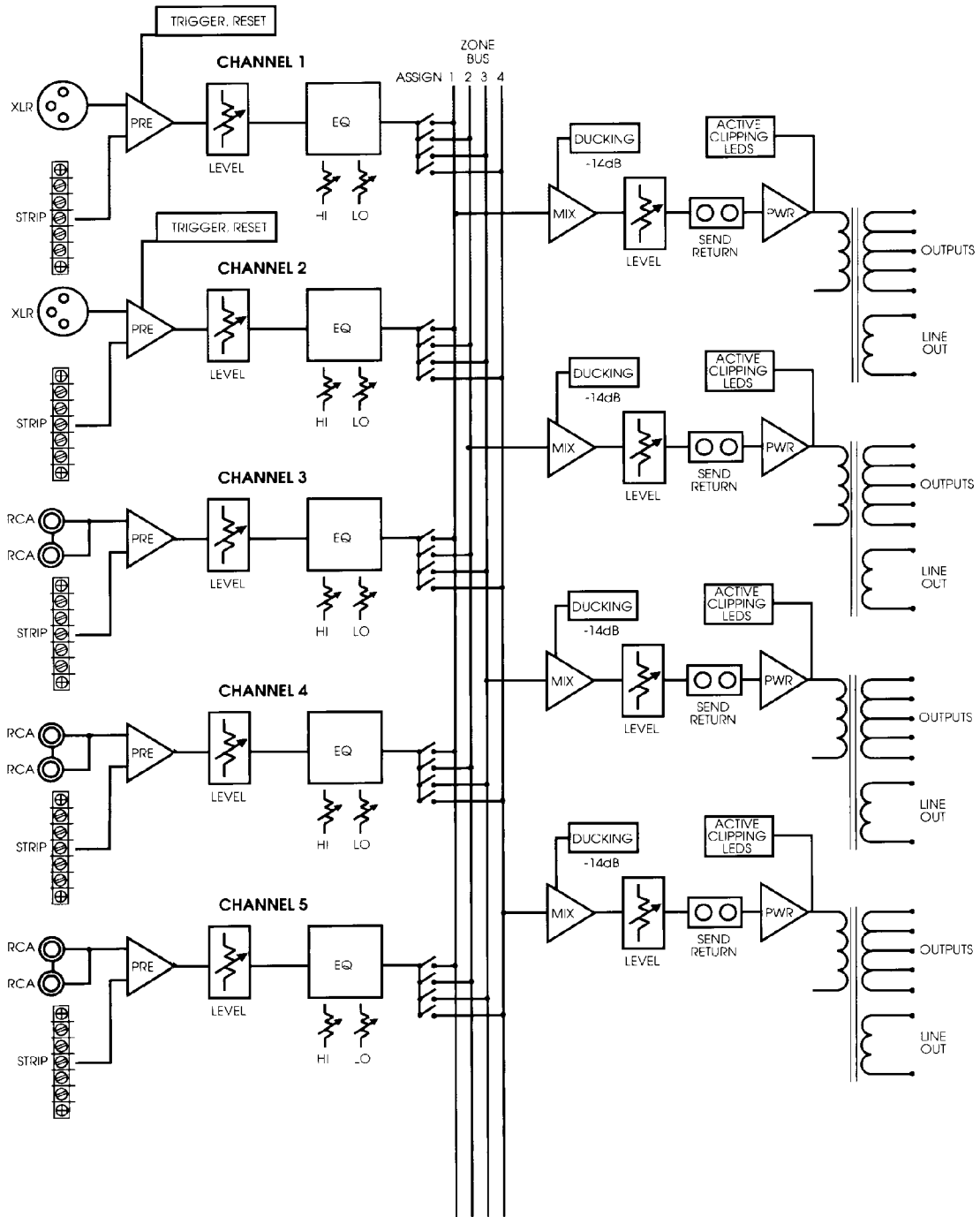


# PTT MICROPHONE ON CHANNEL 3





# PZS 80 BLOCK DIAGRAM



## LIMITED WARRANTY

Peavey Electronics Corporation warrants to the original purchaser of this new Architectural Acoustics product that it is free from defects in material and workmanship. If within one (1) year from date of purchase a properly installed product proves to be defective and Peavey is notified, Peavey will repair or replace it at no charge. (Note: Batteries and patch cords not covered.) "Original purchaser" means the customer for whom the product is originally installed.

Damage resulting from improper installation, interconnection of a unit or system of another manufacturer, accident or unreasonable use, neglect or any other cause not arising from defects in material and workmanship is not covered by this warranty. The warranty is valid only as to products purchased and installed in the United States.

**THIS LIMITED WARRANTY IS IN LIEU OF ANY AND ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. UNDER NO CIRCUMSTANCES WILL PEAVEY BE LIABLE FOR ANY LOST PROFITS, LOST SAVINGS, INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, EVEN IF PEAVEY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. THIS LIMITED WARRANTY IS THE ONLY EXPRESSED WARRANTY ON THIS PRODUCT, AND NO OTHER STATEMENT, REPRESENTATION, WARRANTY, OR AGREEMENT BY ANY PERSON SHALL BE VALID OR BINDING UPON PEAVEY.**

Peavey's liability to the original purchaser for damages for any cause whatsoever and regardless of the form of action, is limited to the actual damages up to the greater of Five Hundred Dollars (\$500) or an amount equal to the purchase price of the product that caused the damage or that is the subject of or is directly related to the cause of action. This limitation of liability will not apply to claims for personal injury or damage to real property or tangible personal property allegedly caused by Peavey's negligence. For information on service under this warranty, call a Peavey customer service representative at (601) 483-5376.

**WARNING**

EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS, BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME.

THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS	SOUND LEVEL dBA, SLOW RESPONSE
8	90
6	95
4	100
3	105
2	110
1.5	115
1	120

A: 100 MPH

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS. EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS AMPLIFICATION SYSTEM IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS AS SET FORTH ABOVE. TO INSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS, SUCH AS THIS AMPLIFICATION SYSTEM, BE PROTECTED BY HEARING PROTECTORS WHILE THE UNIT IS IN OPERATION.

**CAUTION**

THIS MIXING CONSOLE/EFFECTS DEVICE/PREAMP HAS BEEN DESIGNED AND CONSTRUCTED TO PROVIDE ADEQUATE SIGNAL (VOLTAGE) FOR PLAYING MODERN MUSIC. IMPROPER USE OF THE GAIN EQUALIZER CONTROLS AND/OR IMPROPER USE OF INTERNAL/EXTERNAL SUBS MAY CREATE CLIPPING, SQUARE WAVES, AND POSSIBLY CRASH, SUBSTANTIAL DAMAGE TO THE LOUDSPEAKER SYSTEMS. EXTENDED OPERATION OF THE GAIN EQUALIZATION CONTROLS IN THEIR MAXIMUM POSITIONS IS THEREFORE NOT RECOMMENDED. PLEASE BE AWARE THAT MAXIMUM POWER CAN BE OBTAINED WITH VERY LOW SETTINGS OF THE GAIN/EQUALIZATION CONTROLS IF THE INPUT SIGNAL IS VERY STRONG.

IT IS COMMON PRACTICE AMONG USERS OF SOUND REINFORCEMENT EQUIPMENT TO IDENTIFY THE INDIVIDUAL CHANNELS WITH A STRIP OF TAPE PLACED ABOVE OR BELOW THE ROW OF VOLUME FADERS. MANY TYPES OR BRANDS OF TAPE HAVE A VERY STRONG ADHESIVE WHICH CAN INHIBIT THE PAINT ON THE FACEPLATE AND ACTUALLY REMOVE THE PAINT WHEN THE TAPE IS REMOVED. WE STRONGLY RECOMMEND THAT SCOTCH TAPE NOT BE USED ON PAINTED SURFACES FOR ANY OTHER TAPE THAT IS NOT SPECIALLY DESIGNED FOR SUCH APPLICATIONS. VESPA OR LIGHT ADHESIVE MARKING OR POWER LABEL TAPE IS RECOMMENDED. IF TAPE IS USED, ANY TAPE LEFT ON PAINTED SURFACE FOR EXTENDED PERIODS WILL BE DIFFICULT TO REMOVE. NEVER USE CLEAR OR SCOTCH TAPE FOR THESE APPLICATIONS.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the back of the unit.
4. All operating instructions should be followed.
5. This product should not be used near water (i.e. a bathtub, sink, swimming pool, wet basement, etc).
6. This product should be located so that its position does not interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
7. This product should not be placed near a source of heat such as a stove, radiator or another heat producing amplifier.
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord. For more information on grounding write for our free booklet "Shock Hazard and Grounding".
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. If this product is to be mounted in an equipment rack, rear support should be provided.
13. Metal parts can be cleaned with a damp rag. The vinyl covering used on some units can be cleaned with a damp rag, or an ammonia based household cleaner, if necessary.
14. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
15. This unit should be checked by a qualified service technician if:
  - A. The power supply cord or plug has been damaged
  - B. Anything has fallen or been spilled into the unit
  - C. The unit does not operate correctly
  - D. The unit has been dropped or the enclosure damaged
16. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.



Features and specifications subject to change without notice.

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