IDL™ 1000

users guide

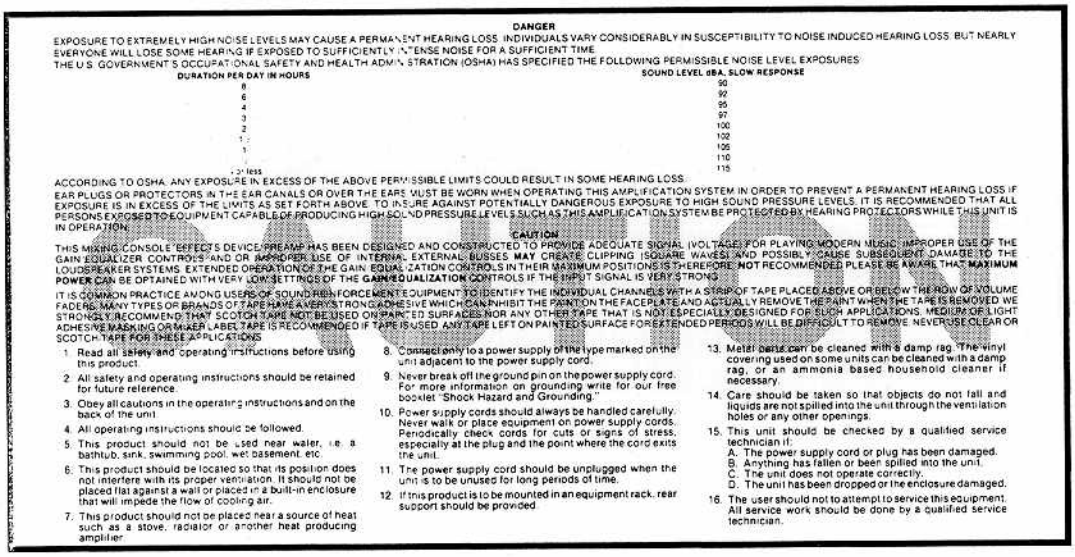
Intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

CAUTION: Risks of electrical shock — DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not remove cover. No user serviceable parts inside. Refer Servicing to qualified service personnel.

Contents



DANGER

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 ADMIN STRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS	SOUND LEVEL dBA, SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

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 THIS 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 BUSSES MAY CREATE CLIPPING (SQUARE WAVES) AND POSSIBLY CAUSE SUBSEQUENT 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 NOR ANY OTHER TAPE THAT IS NOT ESPECIALLY DESIGNED FOR SUCH APPLICATIONS. MEDIUM OR LIGHT ADHESIVE MASKING OR MAILER 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 to attempt to service this equipment. All service work should be done by a qualified service technician.

1.0 Introduction

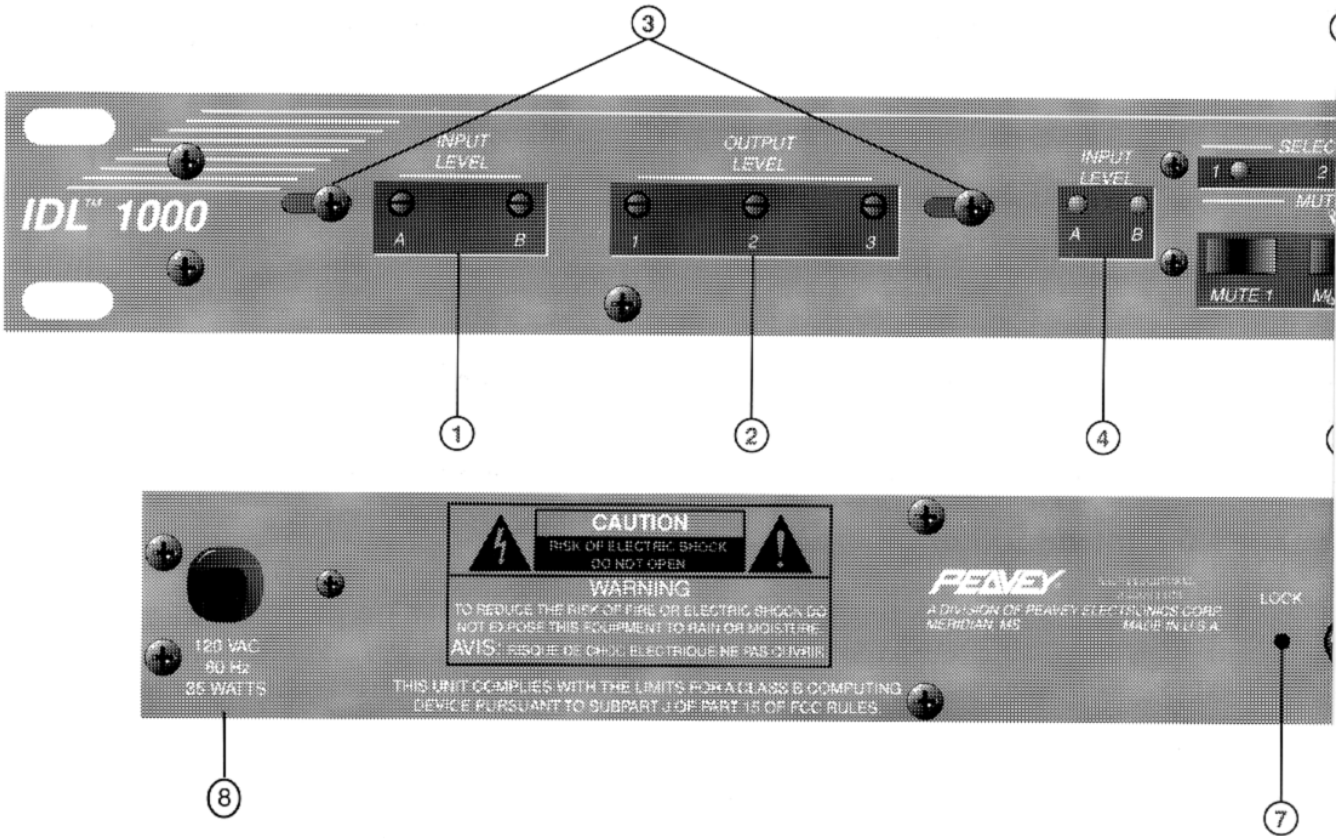
Congratulations and thank you for purchasing the IDL™ 1000. The IDL 1000 is a 2-input, 3-output, multi-tap digital delay line designed primarily for time alignment in multi-speaker sound systems. With 1.35 seconds of delay (over $^1/_4$ mile), the IDL 1000 can align multiple speaker systems in even the largest arenas and stadiums. In the stereo mode, Input "B" and Output 3 form a second delay line that dynamically shares the delay memory. The minimum delay increment of 20.8 microseconds in the IDL 1000 allows alignment of drivers in an array with $^1/_4$″ precision.

Setting the IDL 1000 is easy with its 4-digit display and its variable rate increment and decrement buttons. The delays can be set using milliseconds, feet, or meters. To further aid the setting of delay times, the IDL 1000 has buttons that allow each output to be muted or temporarily set to zero delay.

The IDL 1000 uses a 16-bit Delta-Sigma A/D converter and a 48 kHz sample rate to keep the noise and distortion low and to maintain a full 20 kHz bandwidth. Both the inputs and outputs are electronically balanced and use XLR connectors. Transformers for the inputs and outputs are optional.

2.0 Features

- Two electronically balanced inputs (transformers optional)
- Three electronically balanced outputs (transformers optional)
- Stereo or mono operation
- 1.35 seconds maximum delay time
- 20.8 microseconds minimum delay steps
- 4-digit, 7-segment LED display for data entry
- Delay can be entered in milliseconds, feet, or meters
- Individual output switches to mute or compare delay to zero
- 16-bit, 64 times oversampled Delta-Sigma A/D converter
- 48 kHz sample rate
- 20 kHz bandwidth
- Input and output level controls with built-in security cover
- Maximum input level +25 dBu
- Maximum output level +24 dBm
- Rear panel security lock switch to protect delay settings
- Relay bypass or mute with power off
- 1 I.U. 19″ rack-mount configuration



3.0 Front Panel Descriptions

1. **Input Level Control (A and B)**
   This adjusts the input level of the sound source connected to Input A and B, respectively.
2. **Output Level Control (1,2, and 3)**
   This adjusts the output level of Output 1, Output 2, and Output 3, respectively.
3. **Security Door**
   Use these two screws to move the security door. Loosen the screws and slide the door, covering or uncovering the input and output level controls, then tighten the screws.
4. **Input Level LED's (A and B)**
   The Input LEDs are bicolor LEDs that glow green when less than 18dB of headroom remains and red when the headroom is less than 6dB. Generally, to achieve the best performance the Input LED should blink red occasionally on the loudest program material.
5. **Mute Buttons (Mute1, Mute 2, and Mute 3)**
   Use the Mute buttons to mute the outputs or to compare output delay time to zero. The Output LED will glow red when an output is muted. If the output is both is both selected and muted, the LED will glow green and red simultaneously.
6. **Output LEDs (1,2, and3)**
   The Output LEDs are bicolor LEDs that glow green when the output is selected (using the Select button) for viewing or changing of the delay. They glow red when the output is muted or when using the compare delay time to zero mode.
7. **Select Button**
   Use the Select button to select the output or the unit's information display. Once selected, use the increment and decrement buttons to change values.
8. **Display Window**
   The display window consists of a 4-digit, 7-segment LED used to display the delay time for each output, the operation mode (stereo or mono), and the delay units (milliseconds, feet, or meter).
9. **Decrement Button**
   Use this button to decrease the delay of the selected output or to change the display units. Pressing and holding this button will cause the delay to automatically decrement at an increasingly fast rate.

10. Increment Button

Use this buttob to increase the delay of the selected output or to change the display units. Pressing and holding this button will cause the delay to automatically increment at an increasingly fast rate.

4.0 Back Panel Descriptions

1. Input A

Female XLR input connector. Input A feeds Outputs 1,2, and 3 in mono mode, and Outputs 1 and 2 in stereo mode.

2. Input B

Female XLR input connector. Input B feeds Output 3 in stereo mode.

3. Output 1

Male XLR output connector that uses the signal from Input A in both mono and stereo modes.

4. Output 2

Male XLR output connector that uses the signal from Input A in both mono and stereo modes.

5. Output 3

Male XLR output connector that uses the signal from Input A with mono mode and Input B in stereo mode.

6. Operation Mode Button

This sets the IDL 1000 to either stereo or mo;no operation. When the button is "in," the IDL 1000 is in stereo mode. When the buttons is "out," the IDL 1000 is in mono mode.

7. Lock Switch

When locked, the conrols of the IDL 1000 are inoperative. The only button that works is the Select button, which allows current settings to be viewed.

8. Line Cord (120V products only)

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 with out proper grounding facilities, suitable grounding adaptors should be used. Less nosie and greatly reduce shock hazard exists when the unit is operated with the proper grounded geceptacles.

5.0 Setting Levels

The IDL 1000 has two audio inputs and three audio outputs, all located on the rear of the unit. Each of the inputs and outputs have separate level controls located behind the security cover on the front pane. The Level LEDs are bicolor, green and red. A *green* LED indicates that you have less than 18 dB of headroom available. If the LED is *red*, you have less than 6 dB of headroom available.

Note: It is normal to see the LED glow a steady *green*. It is not normal to see the LED glow a steady *red*. It is, however, acceptable for the LED to blink *red* on the loudest program material.

5.1 Setting the Input Levels

1. If the security cover is in place, use a phillips head screwdriver to loosen the two screws and slide the cover to the right until the adjustment pots can be seen.
2. Using a small slotted screwdriver, turn the adjustment pot clockwise until the LED has a steady *green* glow. Continue to turn the pot clockwise until the LED blinks *red* occasionally during the loudest program material.
3. After setting the input levels, continue by setting the output levels.

5.2 Setting the Output Levels

1. If the security cover is in place, use a phillips head screwdriver to loosen the two screws and slide the cover to the right until the adjustment pots can be seen.
2. Using a small slotted screwdriver, turn the adjustment pot clockwise. Generally, the *Output Level* is set to achieve a 1:1 ratio between the input and output audio levels. When using the **Power Off Bypass** option described in section **10.0**, unplugging the IDL 1000 will give you an idea if you have achieved a 1:1 ratio. If the program material sounds the same with the IDL 1000 plugged in as it does with the IDL 1000 unplugged, you probably have a ratio close to 1:1. If the program material is noticeably lower, plug in and continue to adjust clockwise. If the program material is noticeably louder with the IDL 1000 unplugged, plug it back in and turn the adjustment pot counterclockwise.
3. Once the *Input* and *Output Levels* are set to your satisfaction, you can replace the security cover. This will prevent the *Input* or *Output Levels* from being changed accidentally.

6.0 The Display

The display provides information on the status of the IDL 1000. You can check or change the Output Delay times, delay units, and operation mode (stereo or mono) of the IDL 1000.

The delay times are displayed with two resolutions depending on the length of the delay. Short delays are displayed with high resolution and long delays with lower resolution. When the maximum high resolution setting is reached, the IDL 1000 automatically switches to low resolution. *For example:* When setting the delay for Output 1, you decide it is necessary to provide more than **100** milliseconds of delay. When you are incrementing the delay setting, the display will show the milliseconds increasing in *hundredths* of milliseconds, i.e., **48.87**, **48.88**, etc. When **99.99** milliseconds is reached, pressing the increment button will give you **100** milliseconds. You no longer have a decimal point and the milliseconds will now increase at a rate of *1 millisecond* with each press of the increment button.

Although the display unit for the display may be expressed as ms (milliseconds), ft (feet), or m (meters), the IDL 1000 always calculates, internally, using milliseconds. That value is converted to ft (feet) or m (meters) for

display. This sometimes causes the numbers being displayed to skip. *For example:* The display units are set to *ft*, and you are incrementing in high resolution. If you are at **40.06** ft you would expect the next number to be displayed to be *40.07* ft. However, this might not happen because the IDL 1000 internally calculates using milliseconds, then converts to feet; since rounding may be necessary, it is possible for the next number to be **40.08** ft.

6.1 Setting the Units

1. Press the *Select* button until the display looks similar to this:

Note: If the first LED contains an **S**, the IDL 1000 is in the *stereo* mode. If not, it is in the *mono* mode. Changing the operating mode is as easy as pushing a button. Simply press the **Stereo/Mono** button located on the rear of the unit. The "**in**" position selects *stereo* mode and the "**out**" position selects *mono* mode.

The bar, located on the right side of the window, will line up with either **ms**, **ft**, or **m**, labeled on the unit. Choosing **ms** shows *Output Delays* in **milliseconds**. Choosing **ft** shows *Output Delays* in **feet**. Choosing **m** shows *Output Delays* in **meters**.

2. Use the *increment* or *decrement* button to select the units to use when setting the *Output Delays*.

Note: The units can be changed at any time. If you change units, the converted units instantly replace the old units.

7.0 Setting Delay Times

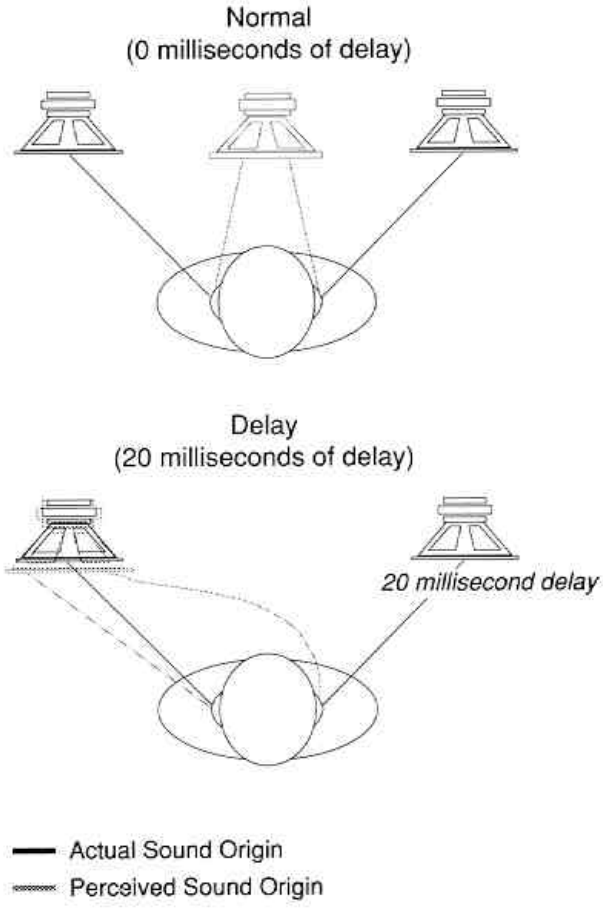
The IDL 1000 allows each of the outputs to have separate delays up to 1.35 seconds in the mono operating mode. Stereo operation requires that the longest delay (Output 1 or 2) plus the delay at Output 3 must be less than or equal to 1.35 seconds.

The mono and stereo delay times are stored separately. This allows you to adjust delays in one mode without affecting the delays in the other mode.

7.1 Hass or Precedence Effect

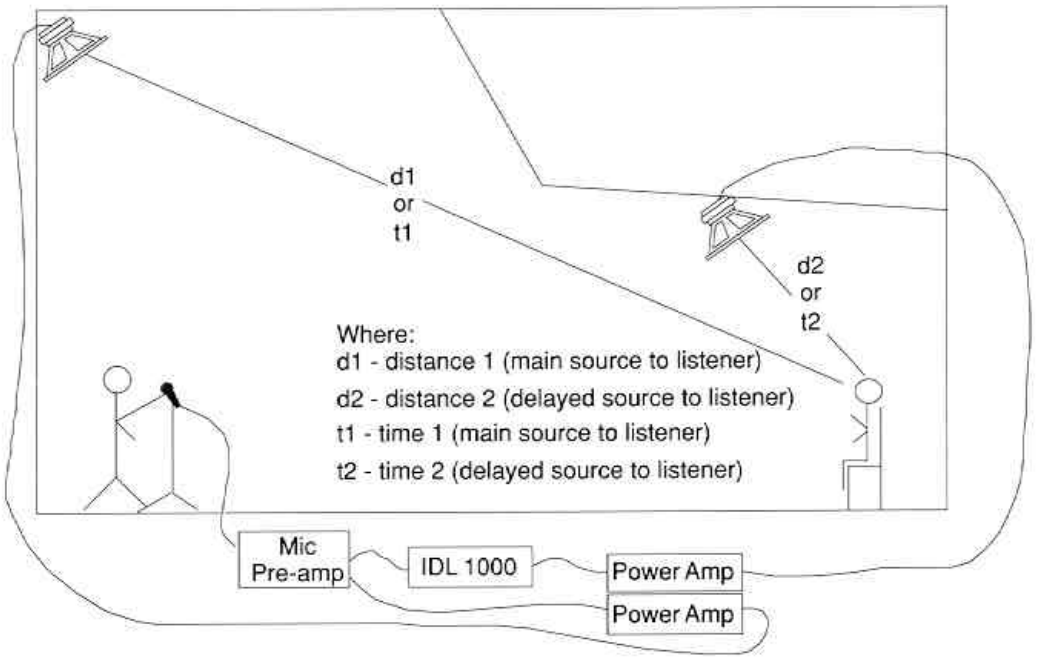
When listening to two equidistant speakers reproducing identical signals, the sound will appear to come from an imaginary source centered between the speakers. If the signal to one speaker is delayed 20 ms (milliseconds) but the level kept the same, the image will move entirely to the un-delayed speaker. If the delayed speaker level is increased 10 dB, the image will move back to the center.

Using this information, if an additional 10 to 20 ms of delay is added to supplemental delayed speakers, even though they will be louder, the image can be moved back toward the un-delayed source.



7.2 Determining Delay Times

To calculate the delay setting required, a listening position in the main coverage of the delayed speaker is chosen. Determine the distance (or delay) from the main source to the listener and also from the delayed source to the listener.



Electronic delay = d1- d2 + (11 to 22 feet)
or
t1 - t2 + (10 to 20 ms)

Note: The 11 to 22 feet or the 10 to 20 milliseconds is the amount of distance or time to be added to the delay in order to give the listener the illusion that the sound they hear is coming from the speaker cluster located at the front of the room, not the speaker directly above.

Example (distance):

If:	Then:
d1 = 60 ft	d1- d2 + (22 feet) = 60 - 10 + 22 = 72 ft.
d2 = 10 ft	

Example (time):

If:	Then:
t1 = 53.1 ms	t1- t2 + (20 milliseconds) = 53.1 - 8.86 + 20 = 64.24 ms
t2 = 8.86 ms	

7.3 Setting Delay Times

7.3a Setting delay times (mono operation):

1. Use the *Select* button to choose an Output Delay to set. The output selected is indicated by the LED glowing *green*. If the LED is glowing *red*, the output is muted.
2. Use the *increment* and *decrement* buttons to set the required delay time or distance.
3. Listen to the delay and fine adjust if necessary.

7.3b Setting delay times (stereo operation):

1. Setting delays for stereo operation is the same as for mono operation. Stereo mode requires that the longest delay of Output 1 or 2 plus the delay of Output 3 must be less than or equal to 1.35 seconds.

The delay can also be set strictly by ear. Listen in the overlap area as the delay is increased. As the correct delay setting is approached, the two signals will blend and a distinct delay will no longer be heard. Continue to increase the delay until the sound image moves toward the front of the room. If you hear a distinct echo again, you have increased the delay too much. Basically, this means keep increasing the delay until you hear the Primary speakers a split second before the Secondary speakers.

8.0 Muting Outputs

Each of the three outputs are capable of being individually muted. To mute an output, press the *Mute* button under the output to be muted. The LED will glow *red*. It is still possible to select a muted output and to change the delay setting of a muted output. However, the changes are not heard until pressing the *Mute* button a second time restoring the output to normal operation.

Example:

To mute *Output 1*, press the *Mute 1* button. The LED will glow *red*, indicating that the output has been muted.

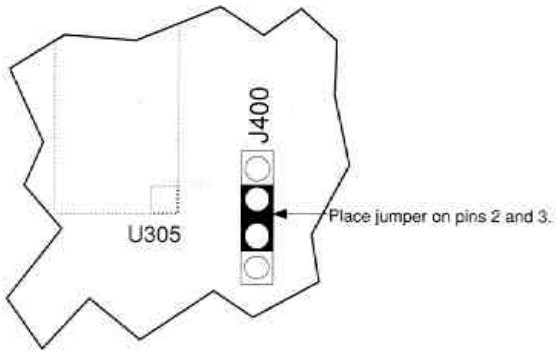
8.1 Compare Delay to Zero

By moving an internal jumper, the function of the Mute buttons on the IDL 1000 can be changed from muting an output to comparing that output's delay to zero delay. In this mode, when the Mute button is pressed the Output LED is red and the delay for that output is set to zero. Pressing the mute button again turns off the red LED and restores the delay to normal; the delay time shown in the display does not change as a result of this feature. The output also does not need to be selected for this function to work.

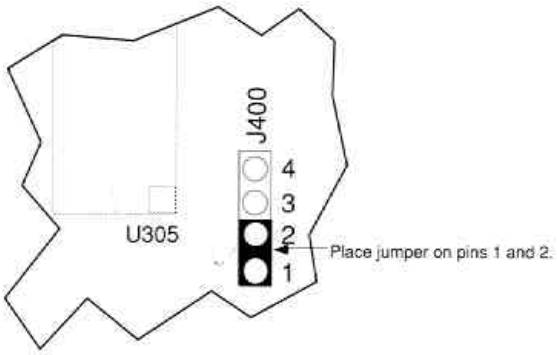
8.1a To convert from mute operation to compare to zero:

1. **Remove** the *7* screws holding the top.

2. Use the following diagram for jumper placement.



Mute



Zero Delay

3. **Replace** the *7* screws to secure the top.

9.0 Security

The IDL 1000 has two forms of security:

- Security door
- Lock switch

9.1 Security Door

The security door is located on the front of the IDL 1000. When the door is in the secure position, it covers the *Input* and *Output Level* adjustment pots. This helps to prevent accidental changes to the settings.

9.2 Lock Switch

The lock switch, on the rear of the IDL 1000, requires a small object, such as a pencil, to be inserted into the hole and press the switch.

Once the switch is placed in the "**lock**" ("**in**") position, none of the settings accessed from the front panel can be changed. The only button on the IDL 1000 that will continue to operate is the *Select* button. This will allow you to view the output delays, units, and operating mode, but won't allow them to be changed.

10.0 Power Off Bypass

The IDL 1000 is shipped from the factory in the **Power Off Bypass** mode on all outputs. This option allows the program material to pass, unaltered, through the IDL 1000 when there is no power to the unit.

When the **Power Off Bypass** mode is not selected, the program material is muted when there is no power to the unit.

If this mode is selected when setting the *Output Levels*, it allows you to check for a 1:1 ratio by simply unplugging the unit and listening to the difference in sound levels.

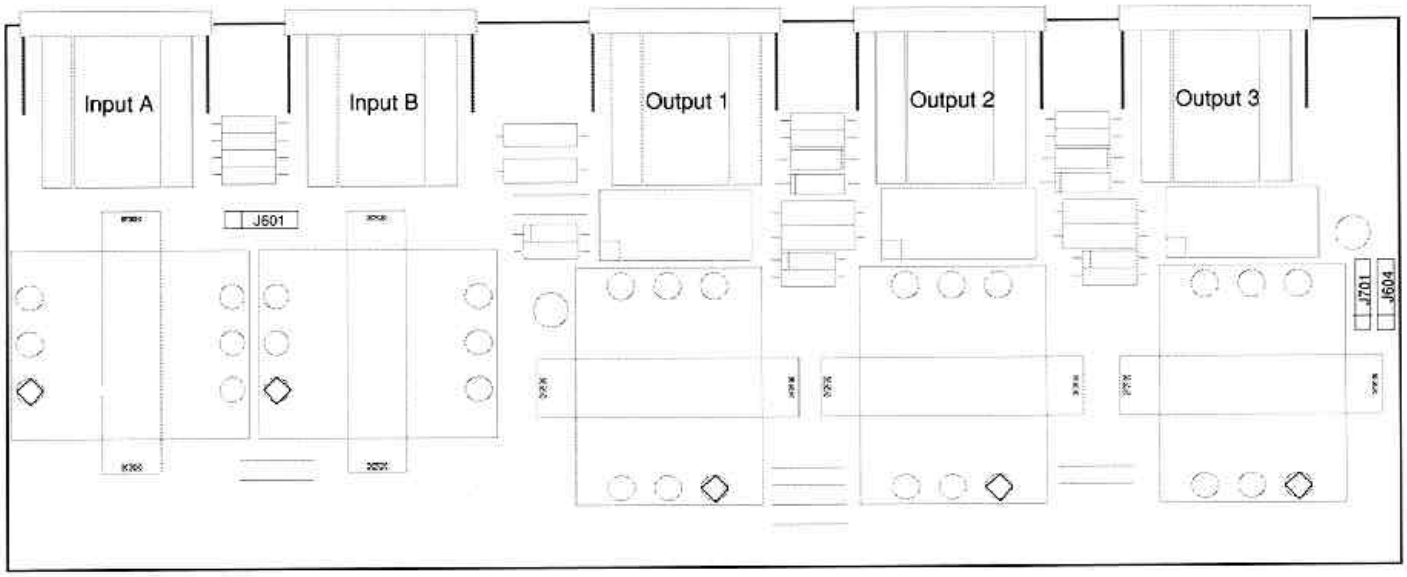
The **Power Off Bypass** option can be set for each output.

10.1 Changing the Power Off Bypass Setting

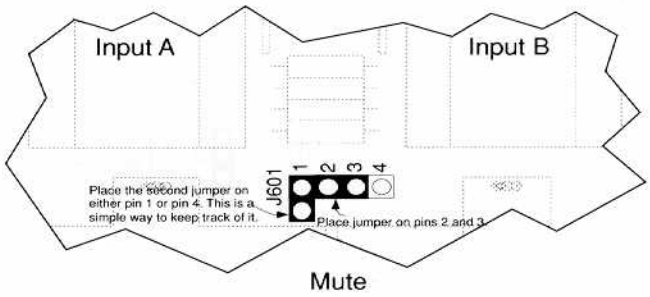
1. **Remove** the *7* screws holding the top.
2. **Remove** top and set aside.
3. Use the following table to determine the proper pin connections for each output:

	Output 1	Output 2	Output 3
Connector	*J601*	*J604*	*J701*
To Mute	Connect pins *2* & *3*	Connect pins *2* & *3*	Connect pins *2* & *3*
To Bypass	Connect pin *1* to *2* and pin *3* to *4*	Connect pin *1* to *2* and pin *3* to *4*	Connect pin *1* to *2* and pin *3* to *4*

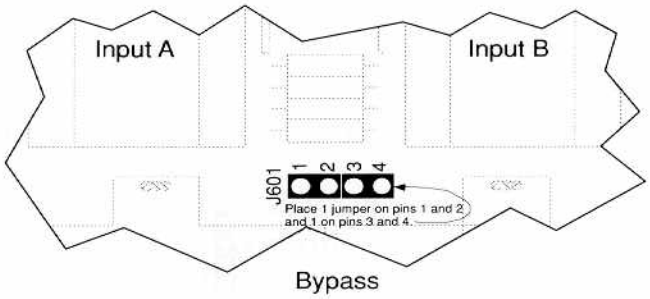
4. Use the following diagram to locate the connector positions:



5. Use the following diagram as a guide to pin connections for J601 (Output 1):

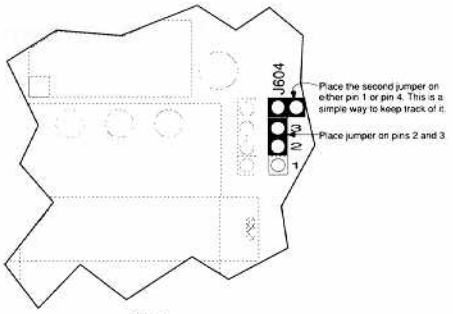


Mute

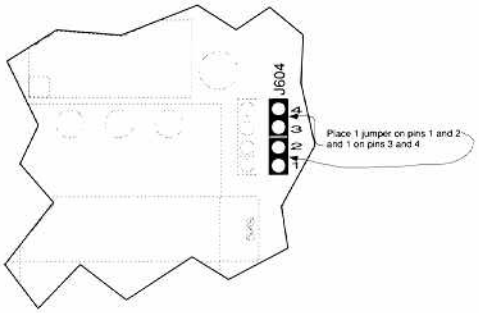


Bypass

6. Use the following diagram as a guide to pin connections for J604 (Output 2):

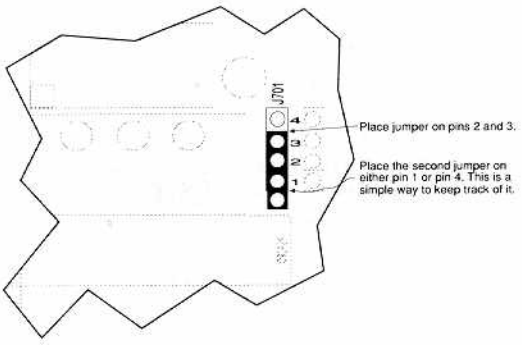


Mute

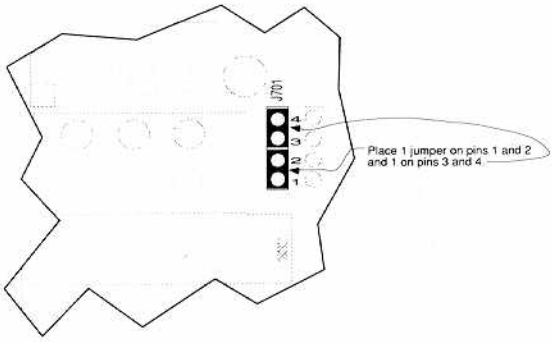


Bypass

7. Use the following diagram as a guide to pin connections for J701 (Output 3):



Mute



Bypass

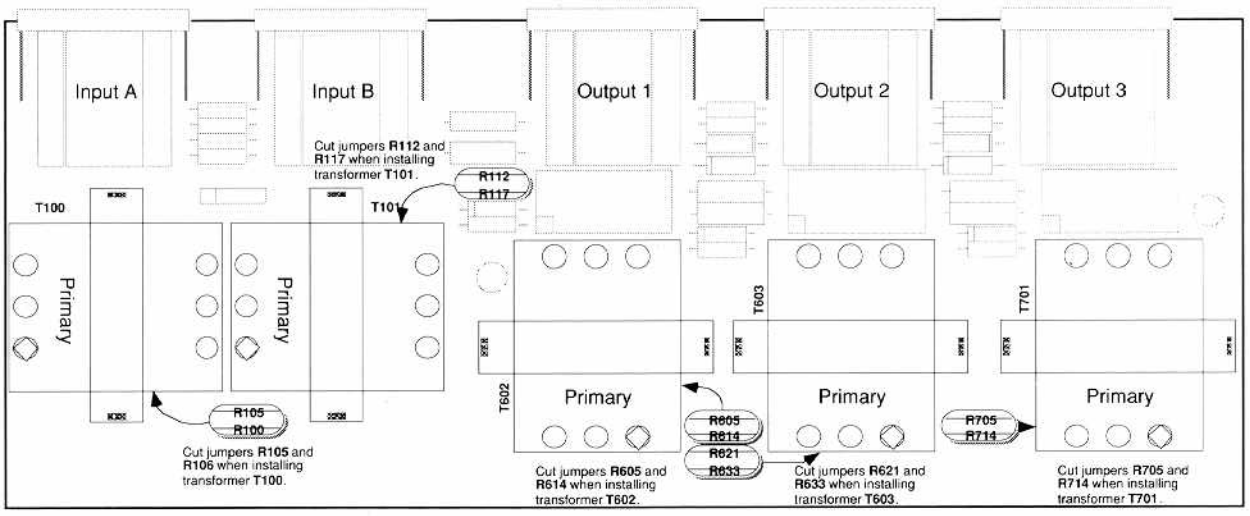
11.0 Installation of Optional Transformers

Optional transformers for use with the input and output circuits are available from Peavey (part #70500166). The optional transformers may be added one at a time, all at once, or in any combination.

Warning: The installation of input and output transformers should be performed by qualified service personnel.

11.1 Installing the Optional Transformers

1. **Unplug** the IDL 1000.
2. **Remove** the *7* screws holding the *top* of the IDL 1000. **Remove** the *top* and set aside.
3. **Remove** the *6* screws holding the *back panel* to the chassis.
4. **Remove** the *1* screw and nut holding the *ground wire* to the side of the chassis.
5. **Remove** the *4* screws holding the *display board* to the front panel.
6. ***Carefully*** turn the IDL 1000 *upside down.*
7. **Remove** the *9* screws holding the *circuit board* to the bottom.
8. **Remove** the chassis and front panel and set aside. (The front panel should still be attached to the chassis.)
9. ***Carefully*** turn the *circuit board* over (making it right side up). ***Make sure the display circuit board is supported.***
10. Locate the 5 XLR connectors. It is in this area that the transformers will mount.



11. Before installing the transformers, you will need to cut some jumpers. The jumpers are labeled with reference designators on the circuit board.
12. For each transformer being installed, two jumpers will need to be cut. The following table shows which jumpers need to be cut for each transformer installed.

	T100 *(Input A)*	**T101** *(Input B)*	**T602** *(Output 1)*	**T603** *(Output 2)*	**T701** *(Output 3)*
Cut jumper #'s	*R105, R100*	*R112, R117*	*R605, R614*	*R621, R633*	*R705, R714*

13. One side of the transformer should be marked **PRI**. If you are installing transformers on the *inputs*, the side marked **PRI** needs to face the *left* side of the unit. If you are installing transformers on the *outputs*, the side marked **PRI** needs to face the *front* of the unit.

14. Place a transformer into the circuit board and solder. Repeat for each transformer beinginstalled.

11.2 Re-installing the Circuit Board and Re-assembling the Unit

1. **Place** the *chassis/front panel* combination right side up.
2. **Place** the *circuit board* into the *chassis/front panel* combination. ***Make sure to support the display board.***
3. ***Carefully*** turn the unit *upside down* and **replace** the *9* screws securing the circuit board to the chassis.
4. ***Carefully*** turn the unit *right side up.*
5. **Align** the *display board* with the holes in the *front panel* and **replace** the *4* screws that hold the display board in place.
6. **Replace** the *ground wire* using the *1* screw and nut removed, to the side of the chassis.
7. **Secure** the back panel using the *6* screws removed earlier.
8. Put the top on and **replace** the *7* screws securing it to the *chassis.*

12.0 Non-Volatile Memory

The IDL 1000 uses non-volatile, EEPROM, memory to store the delay settings for each output. Non-volatile memory is not lost when the power is turned off. This eliminates the need for the memory to be backed up by a battery.

13.0 Recommended Connections

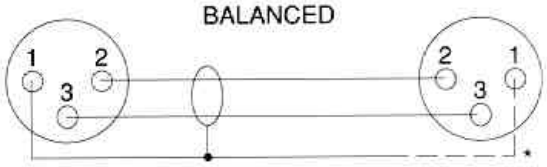
INPUT / OUTPUT CONNECTIONS:
The inputs and outputs on the IDL 1000 are a"transformer like" electronically balanced circuit. When used in an unbalanced application, be sure not to leave pin 2 or 3 on the XLR connector unconnected. Both the high and low sides of the balanced line must be connected for proper operation.

NOTE:

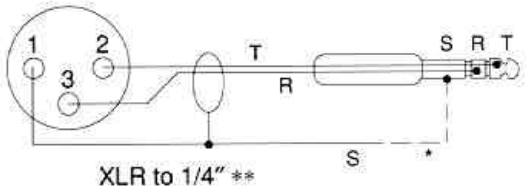
* To prevent ground loops, the shield is best connected only at one end. (The end with the best earth ground.) In environments where a strong RF field exists, the shield can be connected to ground at the other end with a 0.001 µf ceramic disc capacitor.

** A 3 circuit 1/4" plug should only be used with equipment that has balanced connections on a 3 circuit jack.

BALANCED

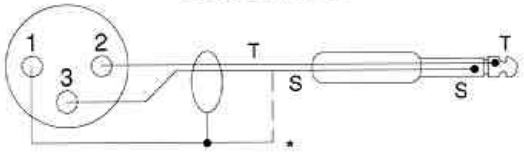


XLR to XLR

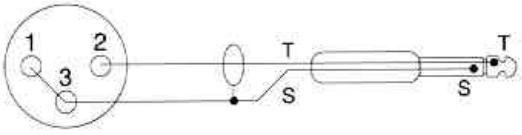


XLR to 1/4" **

UNBALANCED



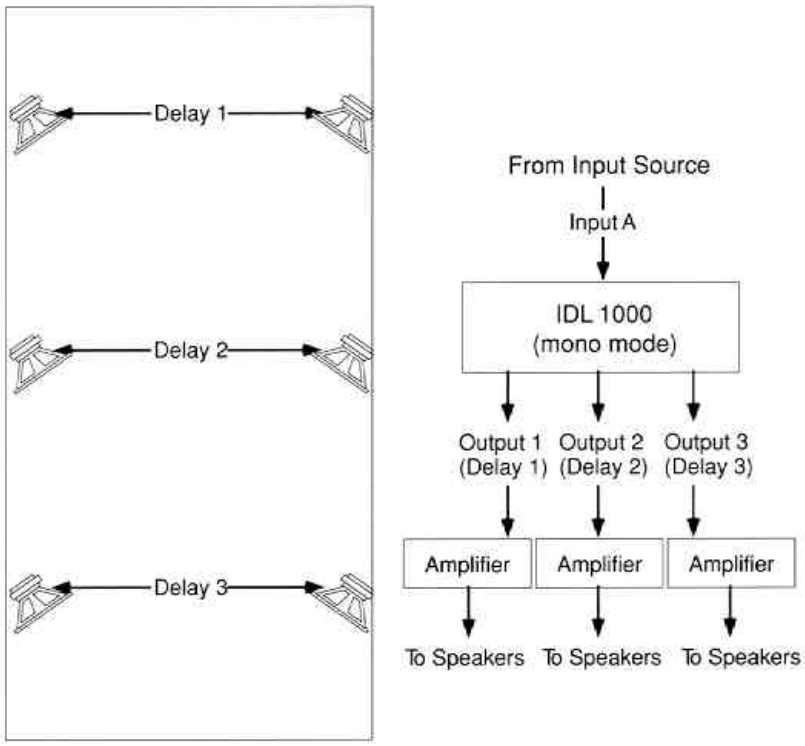
XLR to 1/4"



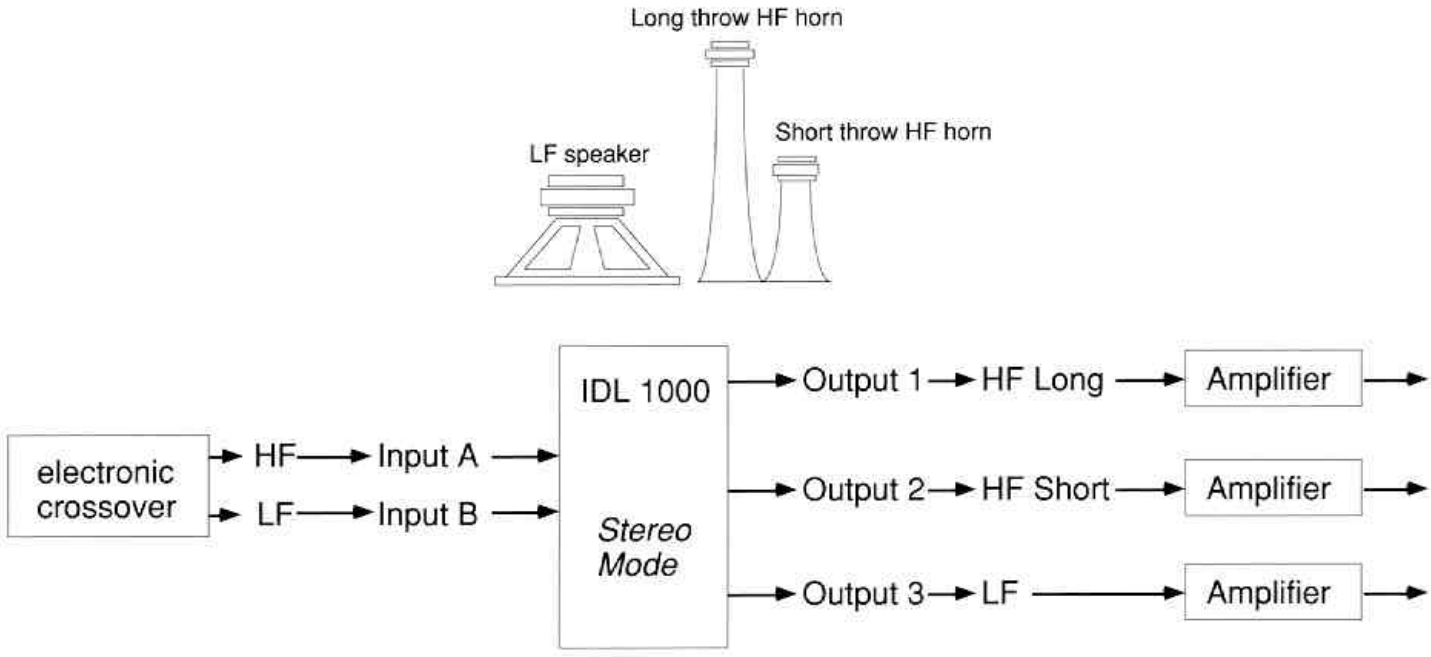
XLR to 1/4"

14.0 Application Examples

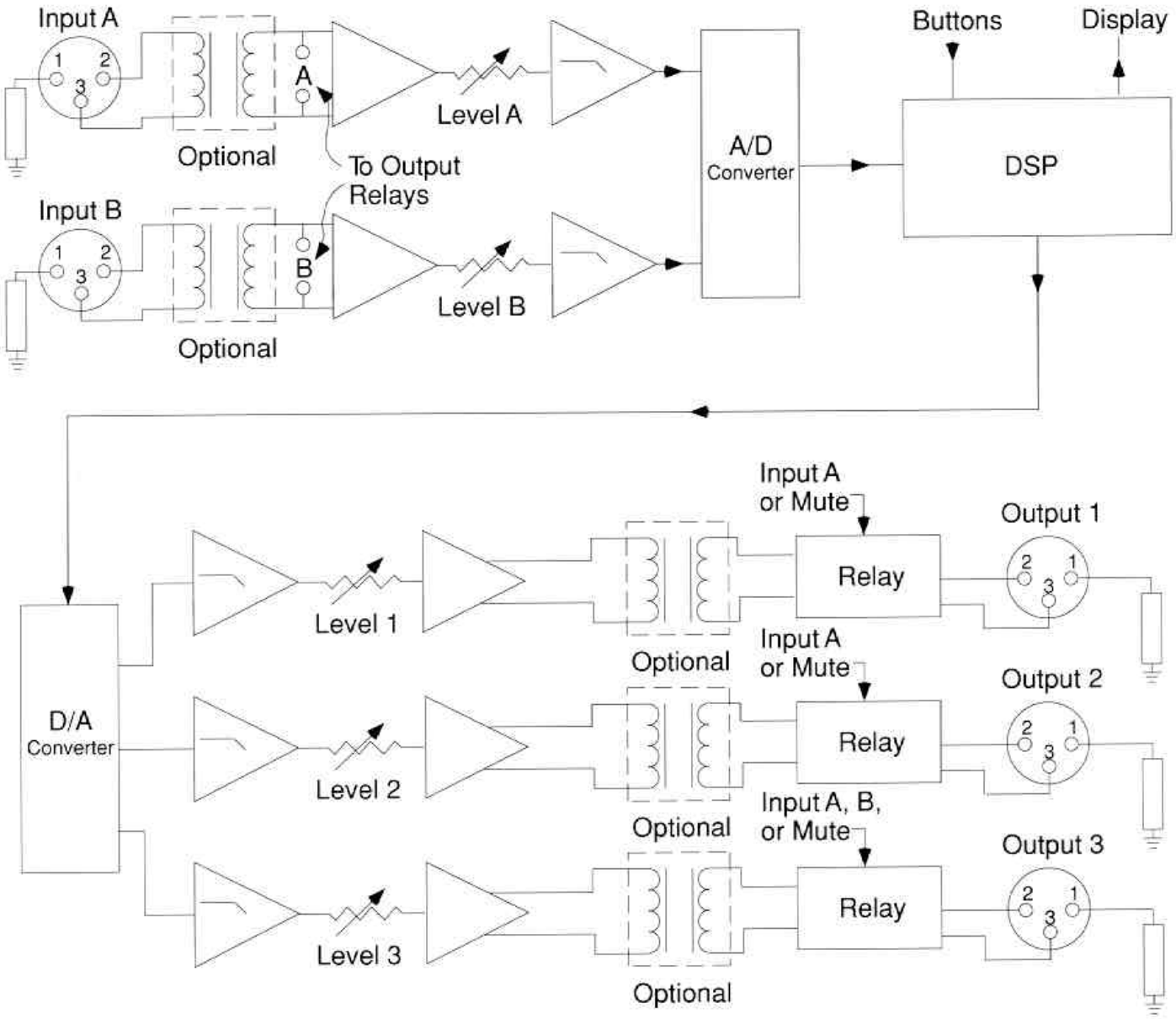
Delay use in a long narrow room with side speakers



Time alignment of a two-way speaker system with long and short throw high frequency horns



15.0 Block Diagram



16.0 Specifications

Frequency Response
±1.5 dB 10 Hz to 20 kHz

Signal to Noise Ratio
Greater than 90 dB

Total Harmonic Distortion
Less than 0.015% at 1 kHz

Input Impedance - 15KΩ
Electronically balanced
(Transformers optional)

Output Impedance - 200Ω
Electronically balanced
(Transformers optional)

Maximum Input Level
+25 dBu

Maximum Output Level
+26 dBu (Hi Z load)
+24 dBm (600Ω load)

Maximum Delay Time
Mono Mode
1.35 seconds
Stereo Mode
Longest delay (Output 1 or 2)
+ delay Output 3 ≤ 1.35 seconds

Minimum Resolution
20.8 microseconds

Maximum High Resolution Delay

ms display mode	99.99 ms
ft display mode	99.98 ft (88.48 ms)
	1130 ft/sec
m display mode	9.996 m (29.06 ms)
	344 m/sec

64x Oversampling Decimation Delay
470 microseconds

Input Level Indicator
Bicolor LED

green	18 dB of headroom
red	6 dB of headroom

Analog to Digital Converter
16 bit 64x oversampled A/D converter

Digital to Analog Converter
16 bit linear

Non-volatile Memory
Does not require batteries

Security
Slide cover for Input and Output level controls. Rear panel lock switch disables buttons to protect settings. Delay settings can still be viewed.

Dimensions
19″ wide x 1 $^{3}/_{4}$″ high x 7 $^{1}/_{4}$″ deep

Power Requirements
Domestic
120 V AC 60 Hz
Export
220-240 V AC 50/60 Hz

Weight
7 $^{1}/_{2}$ pounds

THIS LIMITED WARRANTY VALID ONLY WHEN PURCHASED AND REGISTERED IN THE UNITED STATES OR CANADA. ALL EXPORTED PRODUCTS ARE SUBJECT TO WARRANTY AND SERVICES TO BE SPECIFIED AND PROVIDED BY THE AUTHORIZED DISTRIBUTOR FOR EACH COUNTRY.
Ces clauses de garantie ne sont vaiables qu'aux Etats-Unis et au Canada. Dans tous les autres pays, les clauses de garantie et de maintenance sont fixees par le distributeur national et assuree par lui selon la legislation en vigueur.
Diese Garantie ist nur in den USA and Kanada gultig. Alle Export-Produkte sind der Garantie und dem Service des Importeurs des jeweiligen Landes unterworfen.
Esta garantia es valida solamente cuando el producto es comprado en E.U. continentales o en Canada. Todos los productos que sean comprados en el extranjero, estan sujetos a las garantias y servicio que cada distribuidor autorizado determine y ofrezca en los diferentes paises.

ONE-YEAR LIMITED WARRANTY/REMEDY

PEAVEY ELECTRONICS CORPORATION ("PEAVEY") warrants this product, EXCEPT for covers, footswitches, patchcords, tubes and meters, to be free from defects in material and workmanship for a period of one (1) year from date of purchase, PROVIDED, however that this limited warranty is extended only to the original retail purchaser and is subject to the conditions, exclusions and limitations hereinafter set forth:

PEAVEY 90-DAY LIMITED WARRANTY ON TUBES AND METERS

If this product contains tubes or meters, Peavey warrants the tubes or meters contained in the product to be free from defects in material and workmanship for a period of ninety (90) days from date of purchase; PROVIDED, however, that this limited warranty is extended only to the original retail purchaser and is also subject to the conditions, exclusions and limitations hereinafter set forth.

CONDITIONS, EXCLUSIONS AND LIMITATIONS OF LIMITED WARRANTIES

These limited warranties shall be void and of no effect if:

a. The first purchase of the product is for the purpose of resale; or
b. The original retail purchase is not made from an AUTHORIZED PEAVEY DEALER; or
c. The product has been damaged by accident or unreasonable use, neglect, improper service or maintenance, or other causes not arising out of defects in material or workmanship; or
d. The serial number affixed to the product is altered, defaced or removed.

In the event of a defect in material and/or workmanship covered by this limited warranty, Peavey will:

a. In the case of tubes or meters, replace the defective component without charge;
b. In other covered cases (i.e., cases involving anything other than covers, footswitches, patchcords, tubes or meters), repair the defect in material or workmanship or replace the product, at Peavey's option;

and provided, however, that, in any case, all costs of shipping, if necessary, are paid by you, the purchaser.

THE WARRANTY REGISTRATION CARD SHOULD BE ACCURATELY COMPLETED AND MAILED TO AND RECEIVED BY PEAVEY WITHIN FOURTEEN (14) DAYS FROM THE DATE OF YOUR PURCHASE.

In order to obtain service under these warranties, you must:

a. Bring the defective item to any AUTHORIZED PEAVEY DEALER or AUTHORIZED PEAVEY SERVICE CENTER and present therewith the ORIGINAL PROOF OF PURCHASE supplied to you by the AUTHORIZED PEAVEY DEALER in connection with your purchase from him of this product.
If the DEALER or SERVICE CENTER is unable to provide the necessary warranty service you will be directed to the nearest other PEAVEY AUTHORIZED DEALER or AUTHORIZED PEAVEY SERVICE CENTER which can provide such service.

OR

b. Ship the defective item, prepaid, to:

PEAVEY ELECTRONICS CORPORATION
International Service Center
Highway 80 East
MERIDIAN, MS 39301

including therewith a complete, detailed description of the problem, together with a legible copy of the original PROOF OF PURCHASE and a complete return address. Upon Peavey's receipt of these items:
If the defect is remedial under these limited warranties and the other terms and conditions expressed herein have been complied with, Peavey will provide the necessary warranty service to repair or replace the product and will return it, FREIGHT COLLECT, to you, the purchaser.

Peavey's liability to the purchaser for damages from any cause whatsoever and regardless of the form of action, including negligence, is limited to the actual damages up to the greater of $500.00 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. Such purchase price will be that in effect for the specific product when the cause of action arose. 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. Peavey does not assume liability for personal injury or property damage arising out of or caused by a non-Peavey alteration or attachment, nor does Peavey assume any responsibility for damage to interconnected non-Peavey equipment that may result from the normal functioning and maintenance of the Peavey equipment.

UNDER NO CIRCUMSTANCES WILL PEAVEY BE LIABLE FOR ANY LOST PROFITS, LOST SAVINGS, ANY INCIDENTAL DAMAGES OR ANY CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, EVEN IF PEAVEY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THESE LIMITED WARRANTIES ARE IN LIEU OF ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE; PROVIDED, HOWEVER, THAT IF THE OTHER TERMS AND CONDITIONS NECESSARY TO THE EXISTENCE OF THE EXPRESS, LIMITED WARRANTIES, AS HEREINABOVE STATED, HAVE BEEN COMPLIED WITH, IMPLIED WARRANTIES ARE NOT DISCLAIMED DURING THE APPLICABLE ONE-YEAR OR NINETY-DAY PERIOD FROM DATE OF PURCHASE OF THIS PRODUCT.

SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THESE LIMITED WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

THESE LIMITED WARRANTIES ARE THE ONLY EXPRESS WARRANTIES ON THIS PRODUCT, AND NO OTHER STATEMENT, REPRESENTATION, WARRANTY OR AGREEMENT BY ANY PERSON SHALL BE VALID OR BINDING UPON PEAVEY.

In the event of any modification or disclaimer of express or implied warranties, or any limitation of remedies, contained herein conflicts with applicable law, then such modification, disclaimer or limitation, as the case may be, shall be deemed to be modified to the extent necessary to comply with such law.

Your remedies for breach of these warranties are limited to those remedies provided herein and Peavey Electronics Corporation gives this limited warranty only with respect to equipment purchased in the United States of America.

INSTRUCTIONS — WARRANTY REGISTRATION CARD

1. Mail the completed WARRANTY REGISTRATION CARD to:

PEAVEY ELECTRONICS CORPORATION
POST OFFICE BOX 2898
MERIDIAN, MISSISSIPPI 39302-2898

   a. Keep the PROOF OF PURCHASE. In the event warranty service is required during the warranty period, you will need this document. **There will be no identification card issued by Peavey Electronics Corporation.**
2. IMPORTANCE OF WARRANTY REGISTRATION CARDS AND NOTIFICATION OF CHANGES OF ADDRESS:
   a. Completion and mailing of WARRANTY REGISTRATION CARDS — Should notification become necessary for any condition that may require correction, the REGISTRATION CARD will help ensure that you are contacted and properly notified.
   b. Notice of address changes — If you move from the address shown on the WARRANTY REGISTRATION CARD, you should notify Peavey of the change of address so as to facilitate your receipt of any bulletins or other forms of notification which may become necessary in connection with any condition that may require dissemination of information or correction.
3. You may contact Peavey directly by telephoning (601) 483-5365.
4. Please have the Peavey product name and serial number available when communicating with Peavey Customer Service.

PEAVEY®
ARCHITECTURAL ACOUSTICS®

Features and specifications subject to change without notice.

Peavey Electronics Corporation / 711 A Street / Meridian, MS 39302-2898 / U.S.A. / (601) 483-5365 Telex: 504115 / FAX: 484-4278

#80301607 3/92