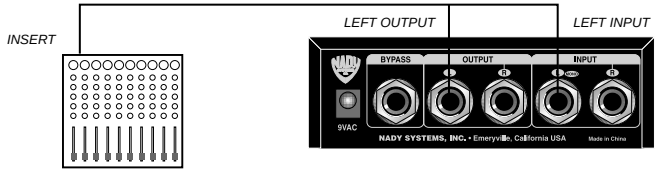
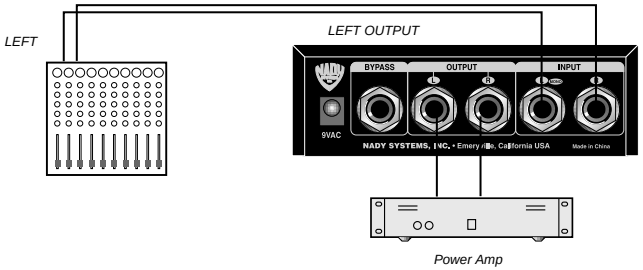
3. Using Mixer Inserts

If your mixer has Channel Insert jacks, you can "insert" the DSP 256 in the signal path of that channel after its input amplifier (and EQ on some mixers) and before its fader. Consult your mixer manual for understanding the proper way to utilize your DSP256 in this application. It will also provide the necessary wiring information for connecting your unit. After you've made the proper connection, set the desired "wet/dry" balance using the DSP 256's **MIX (8)** control. The **INPUT (7)** and **OUTPUT (9)** controls of the DSP 256 should be set for unity gain so that the volume remains approximately the same when the Insert jack is either plugged in or removed from the mixer.



4. Using a Mixer's Master Outputs

If you want to add effects to everything on the mixer, connect the DSP 256 between the mixer's outputs and the amplifier's or recording machine's input. Connect the Left and Right Master Outputs of the mixer to the **LEFT/MONO (1)** and **RIGHT (2)** inputs of the DSP 256. Then connect the **LEFT (3)** and **RIGHT (4**) outputs of the DSP 256 to a stereo amplifier or to two input channels of another mixer (for sub-mixing applications).



AC Power Hookup

After making your connections, follow this procedure:

1. Before turning on the DSP 256 power, check that:
   - All connections have been made correctly
   - The volume controls of the amplifier or mixer are turned down

2. The DSP 256 comes with a power adapter suitable for the voltage of the country it is shipped to (either 110 or 220V, 50 or 60Hz). Insert the Power Supply Adapter into the **9VAC (5)** input on the rear panel of the DSP 256 and plug the adapter into an AC outlet. The **Power On LED (11)** will illuminate, and the unit is ready for operation.

3. Turn on the power of the connected amplifier or mixer and adjust their settings as necessary.

(Note: Nady Systems, Inc. cannot be responsible for problems caused by using the DSP 256 or any associated equipment with improper AC wiring or voltage.)

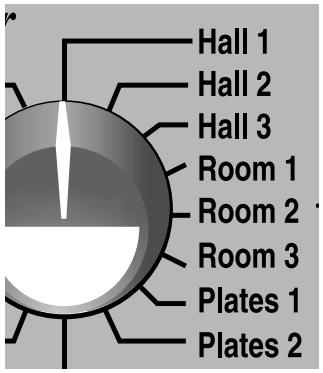
(Note: The DSP 256 has no need for safety grounding as it has no power supply ground. It is powered by an external low-voltage adapter with an internal transformer isolated for safety. As with most unbalanced equipment, signal ground is connected to chassis ground at the input and output jacks. Be aware that if you rackmount the DSP 256 with metal rack railing it would share a common ground with the other equipment in the same rack. If you develop hum or noise problems with this unit, you should switch to non-conductive rack rails or rack isolators to avoid ground loops.)

Line Conditioners

Although the DSP 256 is designed to tolerate typical voltage variations, the AC line may contain spikes or transients that can possibly stress your gear and, over time, cause a failure. The Nady Audio PCL-800/810/815 Power Line Conditioners offer advanced filtering and are the most cost effective way to ensure quietest operation of your DSP 256.

Program Descriptions
Reverb Effects (8 Programs)

Reverb consists of a variety of distinct echoes (reflections), each of different delay length. Over time, each echo's amplitude and timbre decays according to the unique characteristics of the acoustic space, such as sound location, distance and reflectivity of the walls and numerous other factors. The result is that there are many types of reverb, each with its own sound. The following types of reverberation are available with the DSP 256:



Concert Hall Reverb (3 Programs)
This algorithm simulates large concert halls, which are typically large rooms with many reflective surfaces. The complex echoes produced sound rich with a very noticeable change in timbre as the reverb decays. A classic versatile reverb, the Concert Hall programs sound good on vocals, drums, and acoustic, orchestral, and electric instruments.

• **Hall 1 -** A large, bright hall program specially suited for vocals, guitars or drums

• **Hall 2 -** A warmer hall program. Select a long delay for added depth and character with acoustic guitars and pianos.

• **Hall 3 -** This medium-sized hall program features a 12ms pre-delay before the reverb starts-perfect for that extra big rock snare drum, but also great on electric guitar and all vocals.

Room Reverb (3 Programs)
Offering the sound of a medium-size studio room, this algorithm has a bigger sound than a hall reverb, with added punch perfect for both rock and dance music. With reflective attack and smooth decay, the rich sound of this reverb is ideal for keyboards, drums and guitars.

• **Room 1-** This reverb simulates a highly reflective studio room with a pronounced early reflection slap-ideal for making drums sound big and enhancing acoustic instruments, especially with the decay turned up.

• **Room 2-** This program is ideal on the studio for livening up dry tracks such as synths or acoustic mixes.

• **Room 3-** Simulating a warm studio room, this program is perfect for acoustic guitars and classical instruments.

Plate Reverb (2 Programs)
This algorithm simulates a classic echo plate, typically a 4' by 8' suspended sheet of metal with transducers at either end popularly used in the 70's to produce reverb. Its lush, transparency is ideal for the classic rock sound, especially on vocals, guitars and piano.

• **Plate 1 -** A classic plate bright reverb sound particularly suited for vocals.

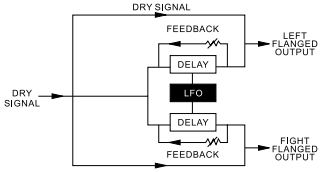
• **Plate 2 -** A warmer reverb-ideal for adding sustain on strings and acoustic guitar.

Reverb Decay Variations Adjust
The reverb decay determines how long the reverb will sound before it dies away. A longer reverb decay simulates an increased room size. High-energy dance and rock music usually use shorter decays, and jazz, ballads, and classical music generally utilize longer reverb decays.

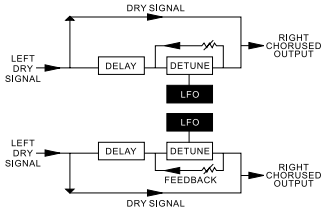
Pitched-Based Effects (5 Programs)

The DSP 256 can produce layered sounds that are far more complex than the input signal by altering its pitch and delay characteristics in several different ways. For example, the signal can be split into two parts, the pitch of one altered and then the two mixed back together so that the effect results from the difference between the dry original and the wet effects signals. Generally it's advisable to start such effect mixes at equal strengths for these two signals by setting, for example, the **MIX (8)** control at 50% for the DSP 256 on an instrument setup, or raising the effects return on a mixer.

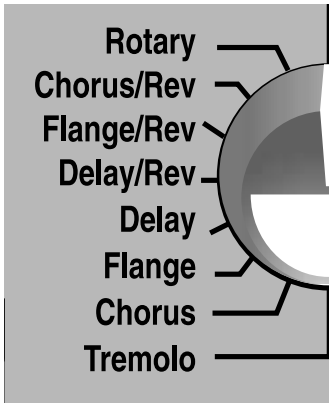
• **Flange -** Flanging was originally done by intermittently slowing down one of two tape machines by applying hand pressure against the flanges of the tape supply reels both playing the same program in synchronization. This resulted in the characteristic flanging "jet airplane" sound caused by varying phase cancellations occurring at different frequencies. The flanging produced by the DSP 256 is specially intensified by splitting the signal into four parts with a stereo dry signal and a separate delay section for both left and right channels with one channel flanging up while the other channel flanges down.



• **Chorus -** Chorusing is similar to flanging, but modulates the delayed signal over a much longer delay



range (typically >12 ms). In addition, the signal is split into four parts with a dry signal and a separate detuning section for both left and right channels that is modulated by an LFO (low frequency oscillator) that causes the detuning to vary, further increasing the chorus effect. The DSP 256's chorus produces a wider stereo image than regular stereo choruses because it is a "true" stereo chorus with individual LFOs , set to vary differently, controlling the left and right sides. This results in a constant chorus rate difference between the left and right sides, and thus, because the chorus processes the left and right sides individually, the stereo imaging will be maintained.



• **Chorus/Rev -** This multi-effect program combines stereo chorus with a large room reverb.

• **Flange/Rev -** This multi-effects program offers a layered stereo flange/large room reverb. Both Chorus/Rev and Flange/Rev are ideal for keyboards such as synths and electric pianos as well as guitars.

• **Rotary -** The Rotary effect simulates rotating speakers originally used during the 60's with both organs and guitars to produce the unique "Lezlie" sound, characterized by multi-layered tonal timbre changes. The rotary effect produced by the DSP 256 sounds authentic and with speed changes will slowly ramp to the new speed rather than change abruptly, just as the Lezlie would do mechanically.

(Note: Always turn the Variations control all the way to the right when using the Rotary program.)

Pitch-Based Variations Adjust
On the chorus and flange programs, the **VARIATIONS CONTROL (13)** functions as a rate adjust, setting the speed of the chorus or flanging sweep. Increasing the chorus rate simultaneously decreases the depth, thus maintaining a constant pitch shift. On the Rotary program, the **VARIATIONS CONTROL (13)** adjusts the speed of the Leslie motor. On the Flange/Rev and Chorus/Rev programs, the **VARIATIONS CONTROL (13)** edits the reverb decay time.

Delay Effects (2 Programs)

Delay is often utilized to add a depth to sound that is cleaner than that offered by reverb effects. Whereas reverb consists of numerous echoes of varying length, which can color sound, delay is purer and less "muddy" as it only has a distinct reflection repeat.

• **Delay -** This program provides a delay of up to 1000 ms.which can be adjusted in terms of delay and decay times. It is great for adding clean "space" effect to vocals and instruments.

• **Delay/Rev -**This program combines a room reverb with different delay presets.

Delay Variations Adjust
For the delay programs the **VARIATIONS CONTROL (13)** sets the time between the input signal and the first delay tap.

Tremolo (1 Program)

Tremolo is a long-popular effect for enhancing sustained electric piano or guitar chords, much like natural vocal vibrato. It is produced by amplitude modulating the signal.

• **Tremolo -** This program is normally used 100% "wet" so that the direct sound does not "cover" the amplitude modulation of the tremolo.

Tremolo Variations Adjust
For the tremolo program the **VARIATIONS CONTROL (13**) sets the amplitude modulation rate.

Troubleshooting Guide

If you experience problems while operating the DSP 256, please use the following table to locate possible causes and solutions before contacting Nady Service Department for assistance.

SYMPTOM	CAUSE	SOLUTION
The Power LED does not light when the unit is powered on.	No power.	Check that the power cable is plugged in properly.
Unit does not respond to front panel controls.	Unknown	Power down and power up again.
Hum or noise from output.	Ground loop, unshielded cables.	Try different power outlet or different audio cables.
No audio.	Bypass function is on with Mix turned 100% wet.	Turn the Mix control to the left or press the Bypass Footswitch.
	Too low output level.	Turn the Output control to the right.
Noisy sound.	Too low input level.	Turn up the Input Level control.
	Too low output level and Aux Return on mixer is up full.	Turn Output up and reduce Aux Retrun level on mixer.
Distorted sound, Peak LED lit.	Too high input level.	Turn down the Input Level control.

Specifications

SYSTEM PERFORMANCE

Frequency Response ..... ±2dB from 20 Hz to 20 KHz
Signal-to-Noise Ratio .....>82dB linear, 20 Hz - 22 KHz
Distortion..... <0.01% @ 1 KHz (-10dBV)
Crosswalk..... <90dB below full scale

INPUT

Number of Channels 2
Format .....1/4" unbalanced
Sensitivity .....-10dBV
Maximum Level .....+10dBV
Impedance .....1M Ω/channel stereo, 500K ?/channel mono

A/D - D/A CONVERSIONS

A/D converter .....18-bit Sigma-Delta
D/A converter.....18-bit Sigma-Delta

OUTPUT

Number of Channels 2
Format .....1/4" unbalanced
Maximum Level.....+11.5 dBu
Output Impedance..... <500Ω

FRONT PANEL

Controls .....INPUT, MIX, OUTPUT, PROGRAM, VARIATIONS
Indicators .....Power LED, Peak LED

REAR PANEL

Input (LEFT/MONO, RIGHT) .....1/4" 2-conductor
Output (LEFT, RIGHT) .....1/4" 2-conductor
BYPASS.....1/4" 1-conductor (accepts normally open/closed) (Momentary footswitches)
Power .....AC 9 Volt Power Transformer Adapter

EFFECTS

Processor Speed .....12.5 MIPs (million instructions per second)
Internal processing resolution .....52-bit accumulator
Factory Present Programs (ROM) 16
Factory Variations for each Present Program (ROM).....16
Delay memory .....3000 milliseconds
Reverb effects .....Concert Hall, Room, Plate
Delay effects .....Mono Delay, Delay/Rev
Pitch effects .....Stereo Tremolo, Stereo Chorus, Stereo Flange, Flange/Rev, Chorus/Rev, Rotary

SIZE

Dimensions .....5.2" x 4.6" x 1.7" (131 x 116 x 44mm)
Weight .....3 lbs (0.90 g)

The specifications above are correct at the time of printing of this manual. For improvement purposes, all specifications for this unit, including design and appearance, are subject to change without prior notice.

SERVICE FOR YOUR NADY AUDIO PRODUCT

(U.S.) Should your NADY AUDIO product require service, please contact the Nady Service Department via telephone at (510) 652-2411, or e-mail at service@nadywireless.com.

(International) For service, please contact the NADY AUDIO distributor in your country through the dealer from whom you purchased this product.

DO NOT ATTEMPT TO SERVICE THIS UNIT YOURSELF AS IT CAN BE DANGEROUS AND WILL ALSO VOID THE WARRANTY.

NADY™
AUDIO

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