Mixers

Definition
- Combines 2 or more inputs into 1 or more outputs
- Separate volume control of each input
- Separate volume control of each output

Simplest Mixer—2x1

Mixer Types-Recording
- Tracks often pass straight through during recording
- 1 Mic goes to 1 output
- Often called “tracking” consoles

Mixer Types-Mixdown
- Many tracks, usually 2 outputs
- Can be mode on recording console
- Automation commonly used and is getting cheaper

Mixer Types-Live
- Many inputs, fewer outputs
- Audio routed into “groups”
- Groups routed to mains
Mixer Types--Monitor
- Many outputs, many inputs
- Many modern consoles can do both

Physical/Electronic Relationship
- In an analog mixer, channel strip models signal flow
- In a digital mixer, all audio is processed digitally and the control surface is just control (no audio)

Mixer Schematic

Mixer Size Terminology
A mixer is described by the number of inputs times the number of outputs
- 8 x 2
- 4 x 1
- 16 x 4
- etc

Compound Mixers
- Many mixer consist of multiple mixers arranged in series

Sub Outs

16x4
4x2
The Buss Explained

- Each Output has its own buss
- Each Input is allowed access to each buss
- In some cases, there are specific inputs with limited buss access

Two ways of assigning to the Buss

- The Switch
- The Gain Control

The Switch

With a switched connection, the input is either completely on the buss or completely off the buss

The Gain Control

With a gain connection, you can control the amount of signal that is added to the buss

Metering

- Input Meters
- Clipping
- VU Meters
Mute

- Leaves all settings intact, but “mutes” sound

Solo/Pre-Fade Listen

- Allows operator to listen to one channel and mute all others, or listen to one channel before the “fader”

The Input Channel

- Pre-Amplifier

Boosts level from Mic Level to Line Level
Phantom Power

- Pin 1 (Ground)
- Pin 2 (Hot)
- Pin 3 (Cold)

Input Gain Control

Line Level input

Equalization
- Covered in signal processing class later
- Treble/bass controls

Main gain Control
- Sets volume level

Post Fade Assignment
- Assigns audio signal to bus
Pan Control

- Like “Panorama”, allows sounds to be placed left/right in stereo field

Types of Outputs

- Main
- Sub Mixes
- Auxiliary Mixes
- Direct Outs
- Matrix

Remember, an Out is an Out is an Out

- Do not get mislead by nomenclature.
- Determine the appropriate out by the signal path and required gain stages.

Main Outs

- Fed from a buss
- Switched

Direct Outs

Direct Out is usually Post Fader and only one channel on each out.
Matrix Outs

- Types of outputs that have an array of individual controls.
- Maximum control, but requires more adjustments, harder operate.

Matrix Layout.

Auxiliary Outs

- Used to feed:
  - Monitors
  - Effects (reverb, etc)
  - Backstage monitoring
  - Broadcast Mixes
  - Etc.

Aux Out—Used to feed:

- Pre-Fade—Before the fader, aux level set no matter where the faders are
- Post-Fade—After the fader, aux level set dependent on level set by faders