

Consoles and Mixers

Coms/Film 20A

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Differences between Consoles & Mixers

- Job to be done
- Size
- Features
- **MIXER:**
- Smaller
- Less inputs and outputs
- Less features

- **”On set” Production Mixers:**
- Usually can run on batteries
- Usually have more outputs than “regular” mixers
- **Consoles:**
- Also called “boards” (short for mixing boards)
- Larger than mixers
- Have many more features than mixers
- **All (Mixers/Consoles) have the following:**
- 1. Inputs

- 2. A method of controlling the amplitude of the inputs
- Either through rotary knobs or sliders
- 3. Output(s)
- 4. A method of controlling the amplitude of the output.
- 5. Except for the least expensive, all have meters to see audio levels.
- **There 4 general overall technical models:**
 - 1. Analog
 - 2. Digital
 - 3. Hybrid
 - 4. Virtual


















- **Inputs:**

- The “I” in “I/O”
- The greater the number, the larger the board
- Most inputs are either XLR, ¼” (Phone), or hybrid (XLR & ¼” on same input). Some consumer models have RCA (Phono)
- Inputs are switchable (*Input Selector Control*) from *Microphone* to *Line* input to match the impedance of the input device.
- A *Phantom Power* switch. Supplies voltage to capacitor (condenser) microphones
- Microphone Preamplifiers
- Trim or Gain
- Pan Pots

- **Other features before Output (Master):**

- (on some): Pads
- (on some): Overload indicators
- (on some): Polarity (Phase) reversal
- (on some): Channel assignment and routing
- (on most): Channels strips
- (on some): Equalizers and Filters
- (on some): Monitor and/or Headphone controls
- (on some): EFX sends and Returns
- Solo (PFL-Pre-Fader Listen) controls
- Mute controls

- (on some): Speaker (Monitor) selection
- (on some): Talkback / Slate control
- (on some): Oscillator (with at least one tone: 1k Hz)

	Mic Trim
	Pad
	Mic/Line
	High Freq. EQ
	Mid Freq. EQ
	Low Freq. EQ
	Aux Send 1
	Aux Send 2
	Aux Send 3
	Aux Send 4
	Direct Assign
	1/2 Assign
	3/4 Assign
	Odd/Even Pan
	Solo
	Channel Mute
	Channel Fader



← Gain (and 48v, phase, low-cut)

← Equalisar (EQ)

← Aux Sends (aka Bus Sends)

← Pan

← Bus Selectors (LR and Groups)



Input Channel or Strip

- XLR mic or line level input
- 1/4-inch line level input (not mic)
- Trim or Gain potentiometer (pot)
- Aux 1 and Aux 2 sends
- Hi, Mid, and Low EQ
- Pan (Left/Center/Right)
- Solo (Pre Fade Listen or After Fade Listen)
- Main Fader

- **4 Basic types of audio meters:**

- 1. VU (Volume Units):

- Because of mechanical properties it has ballistic properties
- It takes a bit getting it moving, once it's moving it wants to continue to move, and it want to slow down gradually
- It is an averaging meter, works good for the human voice, can be easily damaged, and needs to be calibrated from time-to-time

- 2. PPM (Peak Program Meter):

- More accurate than a VU meter
- More expensive than a VU meter
- There is a slight delay of display between the signal & the display
- Like a VU meter it can be damaged & needs to be calibrated

- LED Meter (Light Emitting Diodes):
 - Not as accurate as a PPM
 - Less expensive than VU and PPM meters
 - “Easier” on the eyes (especially in low-light situations) than VU and PPMs
- Plasma Meters
 - Much more accurate than LED meters
 - Much more expensive than LED meters
 - NOTE: Mixers, especially consoles can have any number of different types of meters; some at output, some on every channel

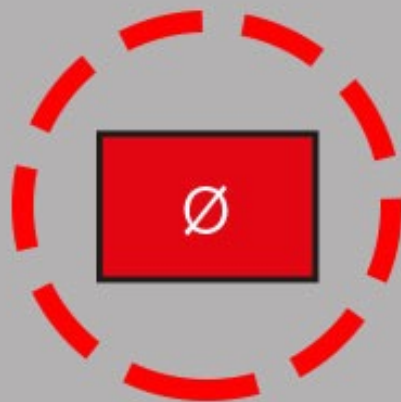
Meter Levels

- There are only “correct” levels per what you are recording on and recording to.
- Analog can take more of an “overload” than digital
- An overload recording to digital media can often lead to unwanted and uncorrectable distortion
- Recorded to an overload is called “peaking”
- Recorded too low is called “in the mud”
- The best rule of thumb in most situations is record at the highest level possible without causing an overload
- NOTE: NEVER USE JUST METERS OR JUST HEADSETS/MONITORS TO MONITOR LEVELS! USE BOTH.



Gain

+48



Output

SOLO

- PFL (Pre-Fader Listen) vs. After-Fader Listen
- Neither will change what is being recorded
- PFL lets you monitor a signal and/or signals without taking the fader lever into account. It is the default and on some mixers the only option for soloing
- After-Fader Listen let's you monitor the signal and/or signals after the fader. This is something you might do on a AUX track containing effects like reverb.

Signal Routing

- Two main types:
 - 1. *Internal Signal Routing*
 - 2. *External Routing*
- **Internal Signal Routing:**
 - Where do you want to sent a signal?
 - The simplest route is from the Input – to the channel strip – to the Output (Master Fader).
 - There are other options.
 - One of the most common option is to send a signal or signals to other tracks (Channel Strips) before the Output.

- We can do that with either track I/O options in Pro Tools (the Output to one track to the Input of another track) or,
- We can send a signal either through the Output or the **Send** on to a bus (buss) and then send the signal on the bus to the Input of an another *audio* track or more often to an AUX (Auxiliary) channel (track).
- **Why would we want to do either of these?**
- 1. To combine signals before they reach a Master (or Sub-Master) fader,
- 2. Or to add a “controlled” effect or effects over multiple signals all at once, especially reverb.

AUX Tracks

- In Pro Tools they should always be “solo-safed”
- You do that by **Option-Clicking** on the solo button on the aux channel.
- **NOTE: This is critical as if you forget this in some situations you will not be able to hear and/or record your signal!**
- **Also, if you name your AUX track before you assign other channels to it you'll find the bus will take the name of the AUX track.**
- Beside Pro Tools Audio, AUX, and Master tracks, there are other tracks available in Pro Tools but we will not be covering them in this course.
- Besides sending tracks to an AUX track, is there another way to put effects on a track in Pro Tools?

- You can put an effect on a track in Pro Tools by using the **INSERT** area on the channel strip that is located above the mixer SEND section.



- **External Signal Routing:**

- You use a patch bay to send the signal from one location to another
- You use patch cords in the patch bay
- The male ends of the cord is called a **PLUG**
- The female holes in the patch bay are called **JACKS**
- Most use either ¼” or XLR (Cannon) plugs & jacks
- NOTE: The XLR letters do not stand for anything specific as they are just a part “number” that Cannon assigned to them when they created them.