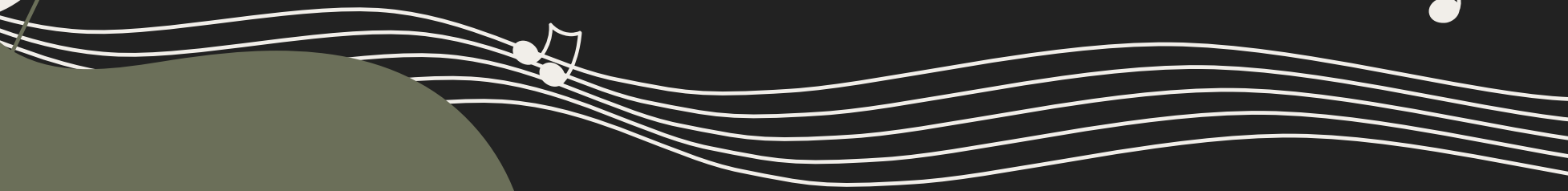


Audio Basics

The basics of hearing stuff



Balanced vs Unbalanced



Unbalanced

Uses **2 wires** (signal + ground).

More prone to **noise & interference**, especially with long cables.

RCA, 3.5mm aux cables



Balanced

Uses **3 wires** (positive, negative, ground).

The signal is carried twice (one inverted) → interference cancels out.

Much **cleaner over long distances**



Phantom Power (48V)

A small **voltage (48 volts)** sent through the same cable as the audio.

Used to **power condenser microphones** (which need electricity to work).

Doesn't USUALLY affect most other gear—dynamic mics & balanced devices ignore it.

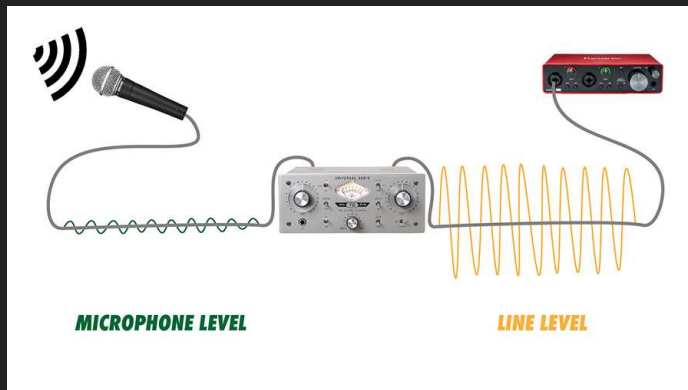
A good rule of thumb is: Does it have a visible power supply (battery)? If not, then it usually needs phantom power.



Mic vs. Line Level

Mic level: very **quiet signal** straight from a microphone. Needs a **preamp** to boost it that comes from in-camera or equipment it's connected to.

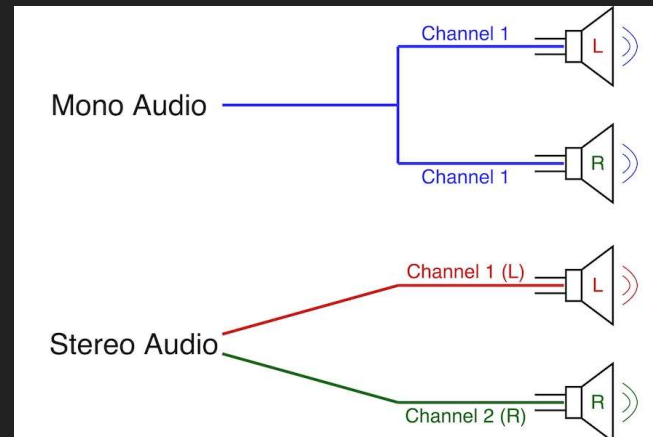
Line level: the **standard level** audio gear uses (mixers, interfaces, speakers). Which already comes from a preamp location. Doubling up can heighten interference and distortion.



Mono vs. Stereo

- Mono has one audio channel, while stereo uses two channels for spatial sound.
- Mono (Monophonic): Audio uses a single channel, with all sounds coming from one source.
- Stereo (Stereophonic): Audio uses two channels (left and right), creating spatial depth and directionality.

Example: Stereo allows you to hear a guitar on the left speaker and a piano on the right.



Some common cables

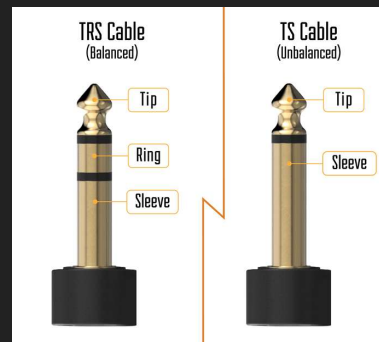
XLR



3.5mm
TRS (mini-
jack / aux)



TRS/TS
Jack



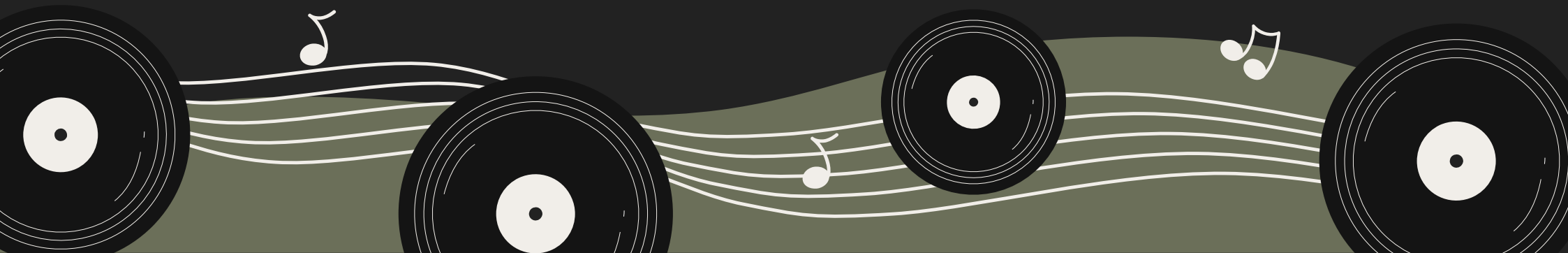
RCA
(phono
plugs)

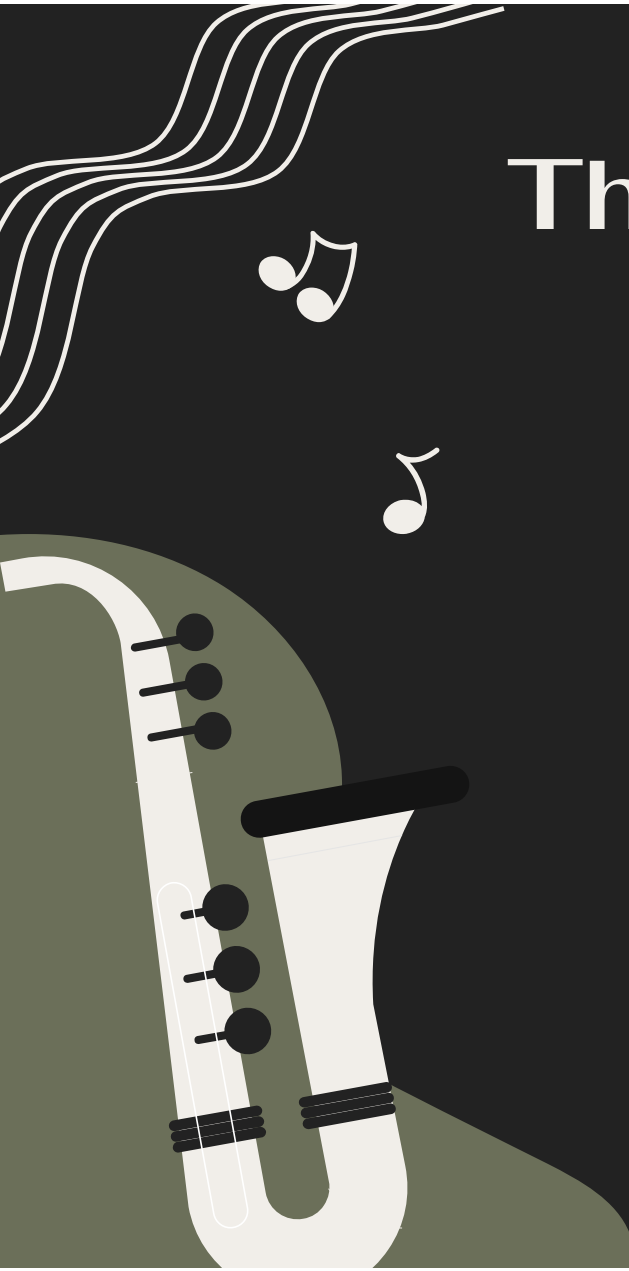


Audio/Radio Production Studios

“Squeeeaaaooooo”

– A mic and a speaker hanging out





The Audio Production Studio

01

Setup

Compact recording space with a **Samson MixPad MXP124FX** mixer.

02

Inputs

1 microphone, routed through the MixPad.

03

Use-case

Great for solo recording, voiceovers, or music demos with clean control of EQ, gain, and effects.

04

Analog-leaning

Builds transferable skills for any mixer, from small live setups to larger consoles.



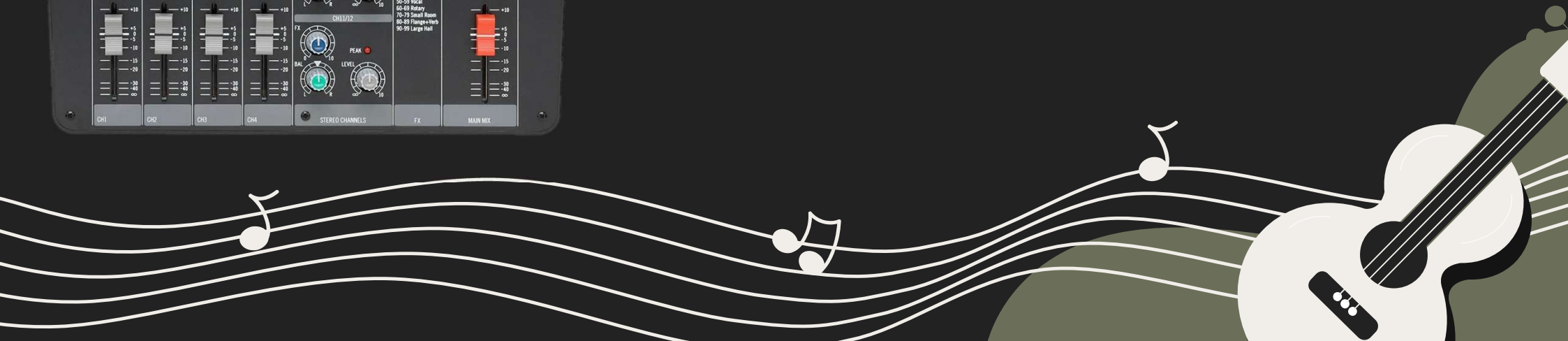
What's it do?

MIC (XLR jack) → Plug in microphones (dynamic or condenser).

LINE (1/4" jack) → Plug in line-level instruments/devices (e.g. keyboards, drum machines).

GAIN knob (red) → Adjusts input sensitivity (how much signal is amplified).

HI-PASS FILTER (button marked "HPF") → Cuts very low frequencies (rumble/handling noise) below 75Hz.

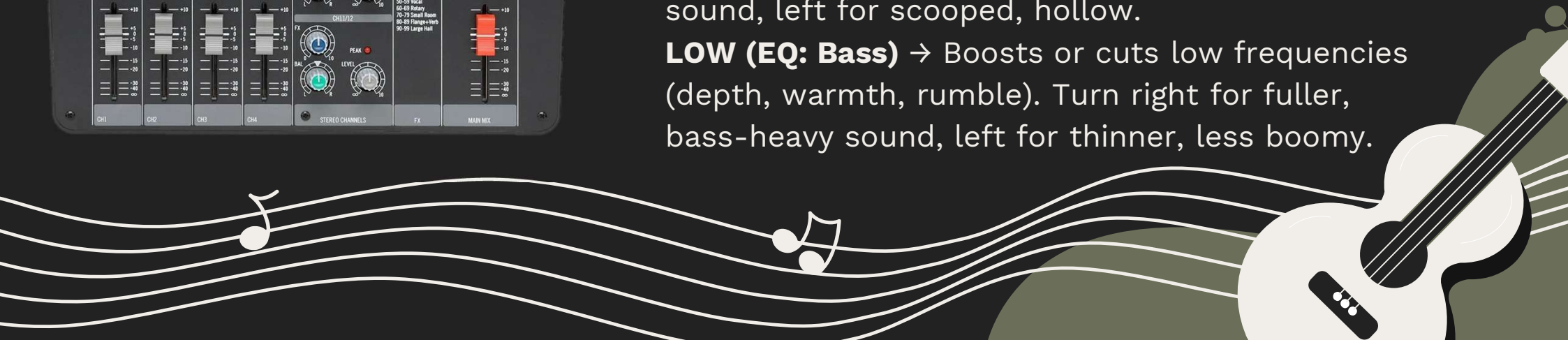


What's it do?

COMP (Compressor) → Smooths out the signal, keeps loud parts from clipping, makes quiet parts easier to hear.

HIGH (EQ: Treble) → Boosts or cuts high frequencies (brightness, presence, sibilance). Turn right for brighter, sharper sound, left for softer, duller sound
MID (EQ: Midrange) → Boosts or cuts mid frequencies (vocals/instruments). Turn right for forward, punchy sound, left for scooped, hollow.

LOW (EQ: Bass) → Boosts or cuts low frequencies (depth, warmth, rumble). Turn right for fuller, bass-heavy sound, left for thinner, less boomy.





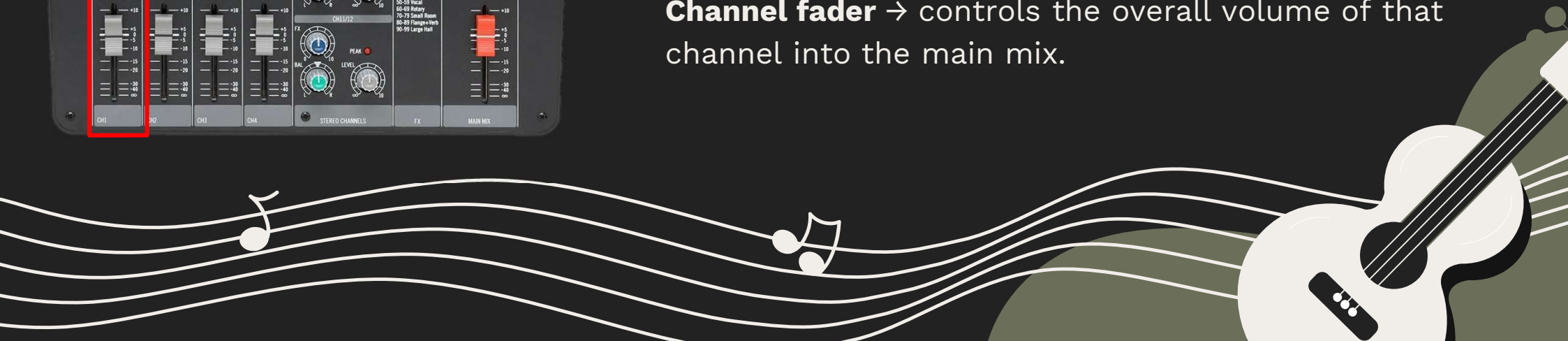
What's it do?

FX (Effects Send) → Decides how much of this channel goes into the built-in digital effects processor (reverb, delay, etc.).

PAN (Panorama) → Places the channel in the stereo field (Left ↔ Right). Center = equal in both speakers. Turn left/right = moves sound to that side.

PEAK light → warning if input signal is too hot (distorting).

Channel fader → controls the overall volume of that channel into the main mix.

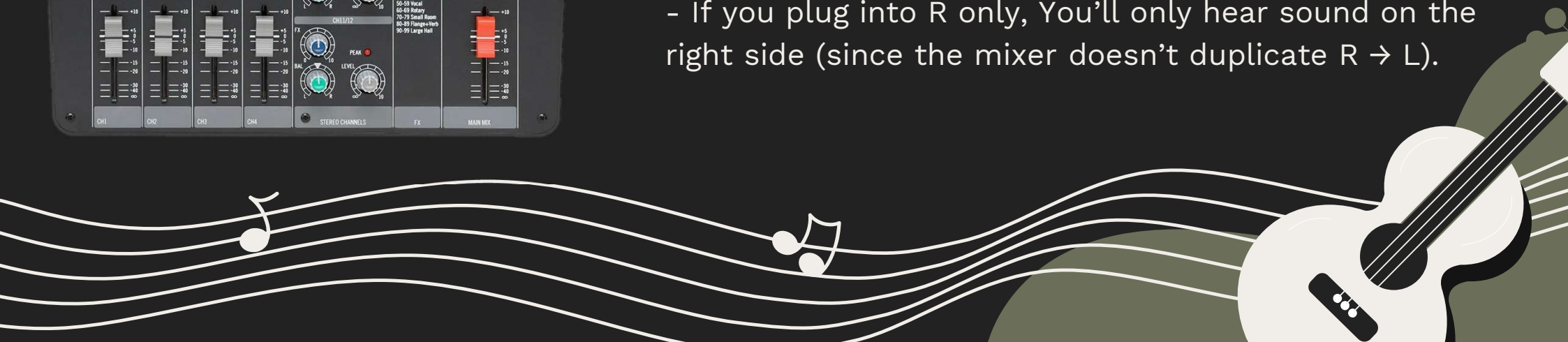




What's it do?

Channel Pairs (e.g CH5/6) → L/MONO (top) & R (bottom).

- If you plug into both L and R then the channel works as a true stereo pair (left signal goes left, right signal goes right).
- If you plug into L/MONO only, the mixer automatically sends that mono signal to both left and right outputs.
- If you plug into R only, You'll only hear sound on the right side (since the mixer doesn't duplicate R → L).





What's it do?

FX (Effects Send) → Controls how much of the channel's signal goes to the built-in digital effects (reverb, delay, etc.).

BAL (Balance) → Adjusts the level between the left and right sides of the channel.

- If both L and R are used: BAL controls stereo spread (like a pan for stereo).
- If only L/Mono is used: lets you place that mono source left ↔ right in the stereo field.
- If only R is used: BAL still adjusts, but you'll only hear sound on the right side.

LEVEL → Master volume for that channel





What's it do?

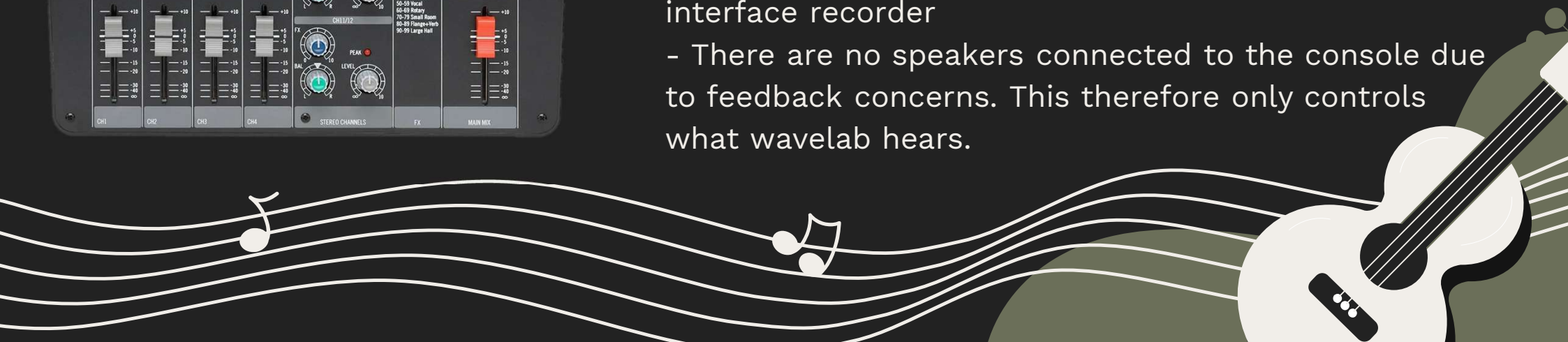
MIX 2 (Left / Right) → These are a secondary stereo output (separate from the Main Mix).

- Can be used for: A different set of speakers/monitors or sending an alternate feed to a recorder or broadcast system.

MAIN MIX (Left / Right) → These are the primary stereo outputs.

- This is what goes to your main speakers and audio interface recorder

- There are no speakers connected to the console due to feedback concerns. This therefore only controls what wavelab hears.



What's it do?

FX SEND (Top Jack) → This is an output that carries only the audio you send via the FX knobs on each channel. Purpose: to send a copy of the signal to an external effects processor which could then be brought back into the mixer.

PHONES (Bottom Jack) → This is the headphone output. Controlled by the Mix 2/Phones fader.



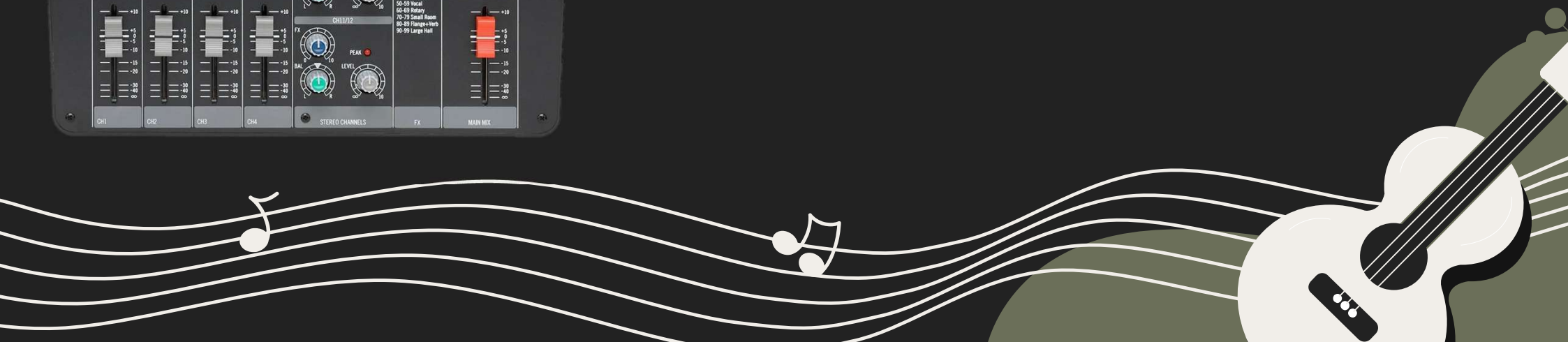
What's it do?

POWER (green) → Mixer is on.

CLIP (red) → Output is too hot (distorting).

0 / -10 / -30 (green/yellow) → Show output signal level.

PHANTOM +48V (orange) → Lights when phantom power is on (for condenser mics).



What's it do?

TO MIX 2 + PHONES → Sends the USB/Tape signal to your **headphones** and the Mix 2 outputs.

TO MAIN MIX (right button) → sends the USB/Tape signal directly into the Main Mix (the big master output).

USB RETURN / TAPE IN (orange knob) → Adjusts the volume of external playback (from computer via USB or Tape In RCA jacks).

MIX 2 / PHONES (red fader) → Controls the level sent to the headphones output and Mix 2 outputs (monitor mix).

MAIN MIX (bottom red fader) → Master volume for the main stereo outputs



What's it do?

Display (Top, 2-digit LED) → Shows the number of the currently selected effect program (00–99).

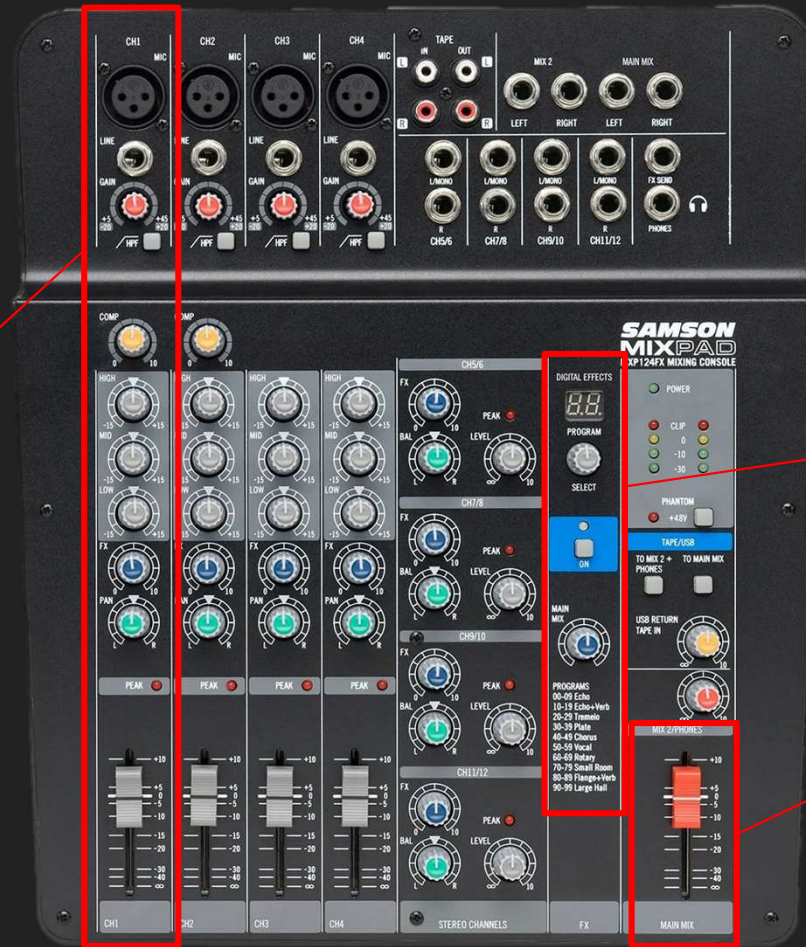
PROGRAM / SELECT Knob → Use to scroll through and select the desired effect program (listed at the bottom).

ON Button (Blue) → Turns the internal effects engine on or off.

FX TO MAIN MIX (Blue Knob at bottom) → Controls how much of the chosen effect is blended into the main mix.



Samson MixPad MXP124FX



Mic 1

Effects

Master



The Radio Production Studio

01

Setup

All-in-one digital podcast production console with the RØDECaster Pro and Traktor Z1

02

Inputs

3 microphones, sound fx, USB & SD card

03

Use-case

Designed for radio shows, podcasts, and panel discussions

04

Digital-Heavy Learning

Teaches how modern studios automate audio processing

What's that do?



Power Button (circle with line icon, left) → Turns the unit on/off.

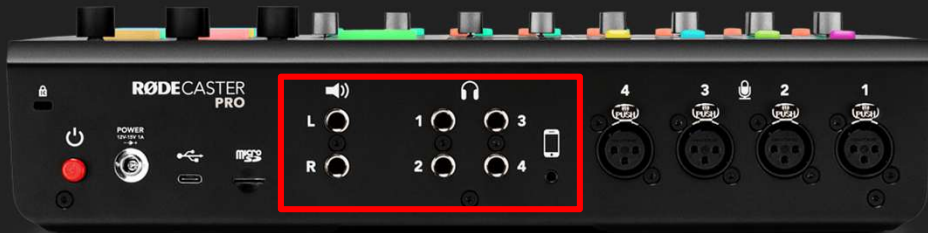
Power Input (12V–15V DC, 1A) → Connects to the RØDECaster's external power supply.

USB-C Port → Connected to the computer for recording, streaming, or firmware updates

microSD Slot → For standalone recording directly to a microSD card or loading in sound effects



What's that do?



Speaker Outputs (Left / Right) → ¼" balanced outputs for connecting to studio monitors or external speakers.

Monitor Volume Knob (speaker icon, right side) → Adjusts the level of the main speaker outputs (L/R) connected to studio monitors.



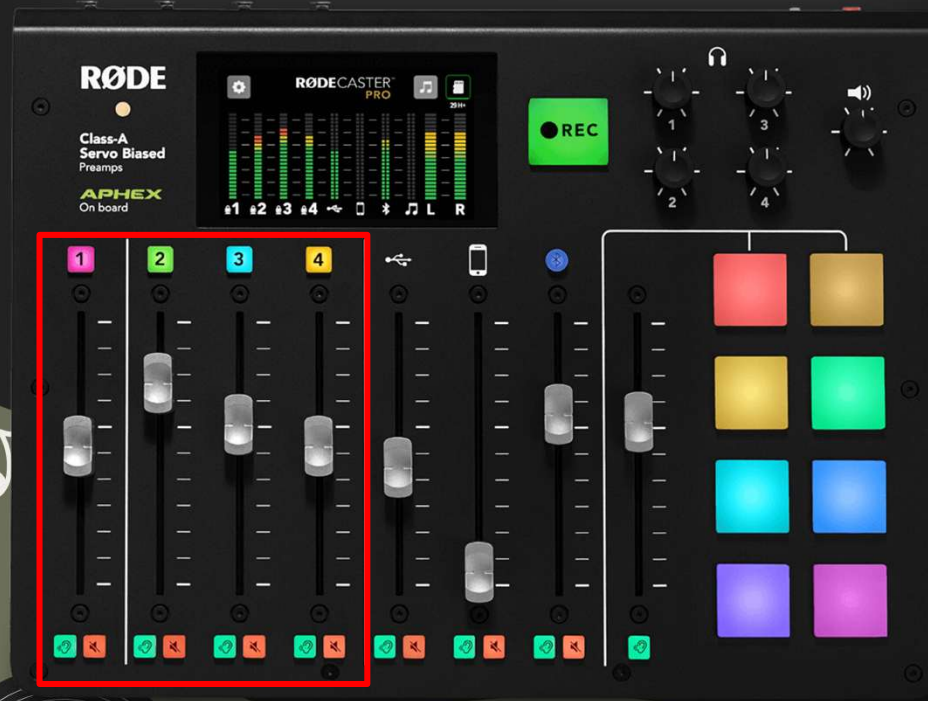
Headphone Outputs 1–4 → ¼" jacks for up to four sets of headphones, each with its own independent volume control. Two 3.5mm Adapters included on console.
Volume controlled by individual knobs

Smartphone Input → 3.5mm input for connecting a smartphone directly (for calls, music playback, etc.).

What's that do?



Mic Inputs 1–4 (XLR) → Balanced XLR inputs for connecting microphones. Supports dynamic and condenser mics (phantom power available).



Channel Labels (colored boxes 1–4) → Match the physical XLR inputs on the back (Mic 1–4).

Solo (green ear button) → Lets you listen to that channel alone in headphones (doesn't affect main mix).

Mute (red speaker crossed-out button) → Instantly mutes that mic channel (no sound to main mix).



What's that do?

USB (computer icon) → Controls audio coming from the computer via USB (e.g., remote guest on Zoom, music playback, Digital Audio Workstation output).

Smartphone (phone icon) → Controls audio from a smartphone plugged into the TRRS jack (calls, apps, music).

Bluetooth (Bluetooth icon) → Controls audio from a paired Bluetooth device (wireless calls, music, remote guest).

Sound Pads (coloured pad icon) → Controls the volume of the built-in sound pads (jingles, stingers, effects).

Sound Pads (8 large coloured buttons) → Trigger pre-loaded or custom sounds during recording/live shows.

What's that do?



Main Mix Fader → Controls the overall output level of the entire mix (all channels combined). Affects what goes to speakers, headphones, USB, and recordings. Green headphone button below lets you solo/monitor the main mix.

REC Button → One-touch record button. Starts/stops recording directly to a microSD card (standalone) or triggers recording in connected software. Lights up red when recording

What's that do?



Touchscreen Display

Meters → Shows audio levels for all inputs and outputs

Gain control → Adjust input level for each mic.

Processing options → High-pass filter, Compressor etc

Assign sounds to soundpads → pull from SD card, computer and set pad behaviours

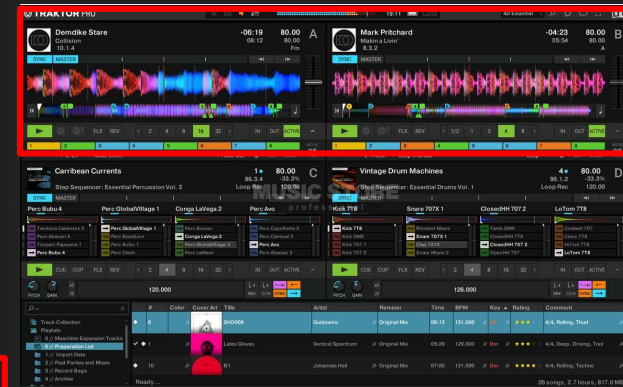
Manage Bluetooth pairing → for remote guests or music.

Settings → toggle various settings such as mute speaker output when microphone faders go up.

Who's what do?

Channel Faders (left & right vertical sliders) → Control the volume of Deck A (left) and Deck B (right).
Crossfader (bottom horizontal slider)

Crossfader (bottom horizontal slider) → Blends between Deck A and Deck B.
Slide left = only Deck A heard.
Slide right = only Deck B heard.
Middle = both heard together (blended).



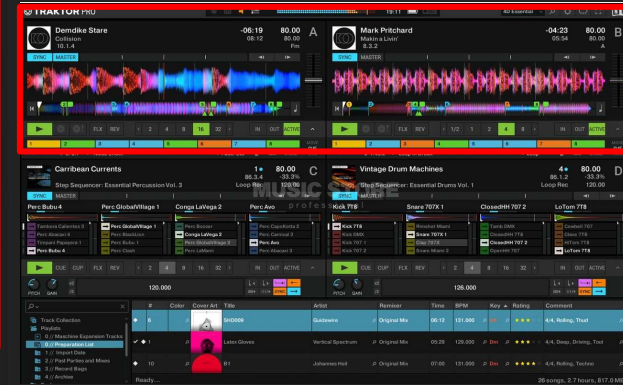
Who's what do?

GAIN → Adjusts input level of the deck (sets loudness before EQ/fader).

HI / MID / LOW (EQ knobs) → Control treble, midrange, and bass frequencies.

FILTER / FX → Assignable knob for sweeping a filter (low-pass / high-pass) or controlling effects.

FILTER ON button (blue) → Activates the filter/FX for that deck.



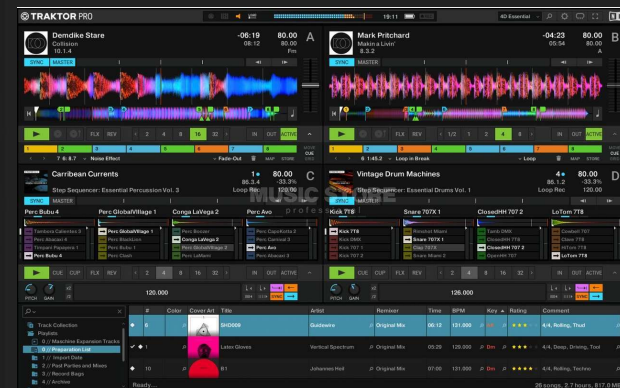
Who's what do?

MAIN → Sets overall master output level.

CUE VOL → Adjusts volume of the headphone cue mix.

CUE MIX (bottom knob) → Blends headphone monitoring between Deck A, Deck B or both

Cue Select Buttons (A / B) → Choose which deck(s) you want to monitor in headphones.



Jazler

A **software system** for running a radio station (music, jingles, ads, shows) automatically.

Scheduler → Runs daily/weekly programming clocks (e.g., news at the top of the hour, ads at 20 past).

Live Assist → A mode where a presenter/host can control songs, jingles, and mic live.

Teaches how radio automation works behind the scenes.



Steinberg Wavelab

A **software system** for running a radio station (music, jingles, ads, shows) automatically.

Scheduler → Runs daily/weekly programming clocks (e.g., news at the top of the hour, ads at 20 past).

Live Assist → A mode where a presenter/host can control songs, jingles, and mic live.

Teaches how radio automation works behind the scenes.





Lets go check the place out

