

WaveBalance User Manual

CodWaves

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1. Introduction

WaveBalance is an intelligent gain-staging plugin designed to help bring tracks and groups to a user-defined operating level before they reach the rest of the processing chain.

The plugin measures the incoming signal, compares it with the target level selected by the user, calculates the correction required to reach that target, and applies that correction in a smooth and controlled way.

WaveBalance is not designed to be a mastering loudness suite or a creative dynamics processor. Its main purpose is level management. It helps create a reliable starting point so that EQs, compressors, saturators, and other processors receive a more consistent input level.

WaveBalance can be used as:

- A static gain-staging tool
- A continuous level-riding tool for dynamic material
- A grouped balancing tool across related tracks

2. Recommended Insert Position

In most sessions, WaveBalance works best near the beginning of the insert chain. This allows it to manage the signal level before it reaches processors that are sensitive to input level, such as compressors, saturation plugins, analog-modeled EQs, and other dynamics-based tools.

Common placements include:

- First insert on an individual track
- Early in a bus chain
- On grouped material such as drums, backing vocals, guitars, synth layers, or stems

Using WaveBalance early in the chain helps create a cleaner and more predictable workflow throughout the rest of the mix.

3. Main Controls

3.1 Target

Target sets the operating level that WaveBalance aims for.

This is the main reference used by the plugin when deciding whether the incoming signal needs to be turned up or down. Since WaveBalance includes several measurement modes, the meaning of the Target control depends on the selected mode.

In VU mode, Target relates to traditional gain-staging values. In RMS or LUFS modes, it follows the scale of the active meter. This makes Target the main control for deciding where a track or bus should sit before it reaches the rest of the processing chain.

In simple terms, Target tells WaveBalance what level you want the signal to reach.

3.2 Response

Response controls how quickly WaveBalance reacts when the input level changes.

Lower settings create slower and smoother adjustments. These are often more transparent and work well on stable material. Higher settings make WaveBalance react faster, which can be useful when the source is uneven or needs tighter control.

The right setting depends on the material and on how active you want the correction to feel. Slower values are usually better for natural gain staging, while faster values are more useful when the source needs ongoing control.

In simple terms, Response determines how quickly WaveBalance moves toward the target.

3.3 Ceiling

Ceiling sets the maximum output level that WaveBalance will allow after applying gain correction.

This acts as a safety boundary to help prevent the corrected signal from getting too close to clipping. It is not intended to behave like a mastering limiter or to aggressively reshape dynamics. Instead, it keeps the plugin's output under control while WaveBalance applies the required gain correction.

Lower Ceiling values leave more headroom. Higher values allow the output to sit closer to full scale.

In simple terms, Ceiling sets a safe output limit after correction.

3.4 Threshold

Threshold determines the level below which WaveBalance stops making new gain adjustments.

This is useful for preventing the plugin from reacting to silence, background noise, room tone, fades, or very quiet tails. By telling WaveBalance to ignore low-level material, Threshold helps keep the correction stable and prevents unnatural movement during pauses or quiet passages.

If the plugin feels too active when the signal drops, Threshold is one of the first controls to adjust.

In simple terms, Threshold tells WaveBalance when a signal is too quiet to keep correcting.

4. Operating Modes

4.1 Static

Static is the main analyze-and-apply workflow in WaveBalance.

In this mode, the plugin analyzes a section of audio, calculates the required gain correction, and then keeps that correction stable after you press Stop. This makes Static especially useful when you want to analyze a representative part of a track or bus and then use that result as a fixed gain-staging correction.

For most gain-staging tasks, Static is the most straightforward mode. It provides a stable result that is easy to trust and easy to build the rest of the processing chain around.

Best for:

- Tracks or buses that need a stable correction
- Gain staging before EQ, compression, or saturation
- Sessions where repeatable results are important

Keep in mind:

- Static depends on the section you analyze.
- If the analyzed section is not representative, the correction may not reflect the whole track.

In simple terms, Static lets WaveBalance learn a correction once and then keep it fixed after Stop is pressed.

4.2 Ride

Ride is the continuous real-time workflow.

In this mode, WaveBalance keeps measuring the incoming signal and updating its gain correction as the level changes. This makes it useful for material that is too dynamic or inconsistent for a single fixed correction to work well.

Ride can be especially helpful on vocals, dialogue, and performances with large level changes over time.

Because Ride is always adapting, it behaves more like an active level manager than a one-time staging tool. Instead of setting a correction and leaving it there, it keeps responding as the source evolves.

Best for:

- Vocals

- Dialogue
- Uneven performances
- Material with ongoing level changes

Keep in mind:

- Ride does not produce a fixed correction.
- The feel of the result depends heavily on Response and Threshold.

In simple terms, Ride lets WaveBalance keep adjusting the signal in real time.

5. Measurement Modes

5.1 dBFS

dBFS shows signal level relative to full scale in the digital domain.

This is the most direct technical view of level. It is useful when you want to monitor raw digital level behavior without the averaging or weighting used by the other modes. dBFS can be helpful when your main concern is peak-oriented level awareness or when you want a strictly technical reference point.

Best for:

- Checking raw digital level
- Peak-oriented monitoring
- Technical reference use

Keep in mind:

- dBFS is less representative of perceived loudness.
- It can be less intuitive than VU or RMS for everyday gain staging.

In simple terms, dBFS shows raw digital level in relation to full scale.

5.2 VU

VU is the classic gain-staging view and is often the most intuitive starting point for music production.

In WaveBalance, VU is calibrated so that 0 VU corresponds to -18 dBFS. This makes it especially useful for traditional mix preparation and level management before downstream processing.

VU is often the clearest choice when the goal is healthy operating level rather than loudness delivery.

Best for:

- Traditional gain staging
- Music production and mixing
- Setting levels before the rest of the chain

Keep in mind:

- VU is designed for operating level, not precise loudness delivery.
- For many users, this is the easiest mode to start with.

In simple terms, VU gives you a classic mix-oriented gain-staging reference.

5.3 RMS

RMS gives an averaged view of signal energy over time.

Compared with dBFS, RMS is often more useful for judging how strong or weak a signal feels in practice, especially when the source has sharp peaks that do not represent its overall level very well.

RMS is a practical choice when you want a stable average-level reference without moving fully into loudness-based metering.

Best for:

- Average-level balancing
- Sources with sharp peaks
- Practical day-to-day staging

Keep in mind:

- RMS is more informative than dBFS for many balancing decisions.
- RMS is still different from loudness-based measurement.

In simple terms, RMS shows average signal energy over time.

5.4 LUFS M

LUFS Momentary uses a short loudness window and provides a program-oriented reading of level.

This mode is useful when you want WaveBalance to respond according to short-term perceived loudness rather than a simpler average-energy model. It can be especially helpful on spoken content or other material where loudness perception matters more than raw signal level.

Best for:

- Speech-focused material
- Short-window loudness behavior

- Situations where perceived loudness matters more than raw level

Keep in mind:

- LUFS M responds more to short-term changes than the longer LUFS modes.
- It can feel more active than LUFS S or LUFS I.

In simple terms, LUFS M shows short-window loudness.

5.5 LUFS S

LUFS Short-term uses a longer window than LUFS Momentary, which gives a more stable loudness reading.

This mode can make it easier to judge overall behavior on sources that move too much for a very short loudness window to feel reliable. It is a good option when you want loudness-based control with a smoother reading.

Best for:

- More stable loudness monitoring
- Spoken content
- Material that feels too jumpy in LUFS M

Keep in mind:

- LUFS S is smoother than LUFS M.
- It is often easier to read when you want a steadier loudness reference.

In simple terms, LUFS S gives a steadier loudness view over a slightly longer period.

5.6 LUFS I

LUFS Integrated measures loudness over time and builds a longer-term picture of the material.

Because it accumulates over a longer passage, it is less immediate than the other measurement modes. However, it can be useful when you want to evaluate overall loudness behavior across a section rather than react only to what is happening at the current moment.

Best for:

- Longer passages
- Overall loudness evaluation
- Material where long-term loudness matters

Keep in mind:

- LUFS I builds over time, so it reacts more slowly.
- It is not the best choice when you need instant feedback.

In simple terms, LUFS I gives a longer-term overall loudness reading.

6. Analyze and Stop

6.1 Analyze

Analyze is the first step in the Static workflow.

When activated, WaveBalance listens to the incoming signal and measures the section you want it to learn from. During this stage, the plugin focuses on understanding the material and preparing a useful correction.

Analyze works best when you play a section that represents the real level of the track or bus. Avoid analyzing sections that are unusually quiet, unusually loud, or not typical of the full performance.

Best for:

- Learning the level of a representative section
- Preparing a fixed correction in Static mode
- Setting up stable gain staging before later processing

Keep in mind:

- The result depends on what you choose to analyze.
- A section that is too quiet, too loud, or unrepresentative can lead to a misleading correction.

In simple terms, Analyze tells WaveBalance to listen and learn from the incoming audio.

6.2 Stop

Stop ends the analysis stage and tells WaveBalance to use what it has learned.

Once analysis is stopped in Static mode, the plugin calculates the correction needed to reach the selected Target, applies that gain correction, and then keeps it as the fixed result. This is the point where analysis becomes practical, because WaveBalance moves from listening to applying a defined correction.

Best for:

- Ending the learning stage
- Converting analysis into a usable correction
- Moving from measurement to action in Static mode

Keep in mind:

- Stop finalizes the learned result and keeps the applied gain correction fixed.

- If the analyzed section was not representative, the correction may still need adjustment.

In simple terms, Stop ends the learning stage, applies the calculated gain, and keeps that correction fixed in Static mode.

7. Applied Gain Display

WaveBalance includes a dedicated display in the lower-left area of the interface.

This display can be cycled between three different readouts:

- Applied Gain
- Input Loudness
- Output Loudness

This lets you focus on the information that matters most at the current stage of the workflow without adding unnecessary clutter to the interface.

8. Input and Output Meters

WaveBalance includes input and output meters that show the signal level before and after processing.

These meters provide a quick visual reference for signal activity at both stages of the plugin. The meter labels update according to the selected measurement mode, so the visual feedback remains aligned with the current way of measuring the signal.

Depending on the selected mode, the meters are contextualized as dBFS, VU, RMS, or LUFS.

9. Group Workflow

WaveBalance can be used as a single independent instance, but it also includes a group workflow for sessions where several related tracks need to be managed together.

This is useful when you want multiple instances of the plugin to share part of their behavior without forcing every track to be treated exactly the same.

A group allows several WaveBalance instances in the same session to become connected. Once grouped, they can share certain actions and, if selected, certain parameter changes. This makes the plugin practical on multi-track material such as drums, backing vocals, guitars, synth layers, and stems, where consistency matters but some per-track variation may still be needed.

In simple terms, groups let multiple WaveBalance instances work together as part of the same workflow.

9.1 Group Selector

The Group Selector is where you choose whether an instance stays independent or becomes part of a group.

From here, you can join an existing group, leave a group, or create a new one. This is the main control that defines whether the plugin is being used on its own or as part of a linked setup.

Once an instance is part of a group, WaveBalance can treat it as one member of a larger set rather than as a completely isolated plugin. This enables the rest of the group tools.

9.2 Group View

Group View lets you work with all tracks in the current group from a single panel.

Each column represents one grouped track. The name at the bottom identifies the track, and the vertical fader in that column controls that track's Target value directly. This makes Group View useful when you want to compare and adjust target levels across related tracks without moving between separate plugin windows.

Click a track name to select that track. The selected track is highlighted, so it is always clear which member of the group you are currently editing. If that track is in Ride mode, Group View also indicates that status within its column.

You can drag a track name left or right to reorder the columns inside the panel. This only changes the display order in Group View, making it easier to organize the group visually in a way that matches your session.

The controls shown below the Group View panel correspond to the currently selected track. This means the Response, Ceiling, and Threshold knobs always reflect and adjust the settings of whichever track is selected.

If Target is linked across the group, Group View also indicates that for the selected track.

The Analyze All button lets you analyze every STATIC track in the current group with one action. When no group analysis is running, the button shows ANALYZE ALL. When group analysis is active, it changes to STOP ALL so you can stop the analysis pass for all affected STATIC tracks at once. If the group has no STATIC tracks, the button is disabled.

After an analysis pass finishes, the group track faders briefly show the gain correction that was applied. This applied-gain readout makes it easier to confirm the result across the group without opening each plugin instance individually.

9.3 Link Overview

Link Overview is where you decide which parameters should stay synchronized across the group.

Not every setting is forced to match automatically. Instead, WaveBalance lets you choose which controls should behave as shared parameters across grouped instances.

The parameters that can be linked are:

- Response
- Ceiling
- Threshold
- Target

STATIC/RIDE

When one of these parameters is linked, changing it in one grouped instance propagates that change to the other members of the same group.

The STATIC/RIDE row links the operation mode across the group. When this row is enabled, changing one linked track between Static and Ride also changes the other linked tracks. This is useful when related tracks should move together between a fixed correction workflow and a continuous riding workflow.

This gives you control over how tightly the group behaves. For example, you may want every track in the group to share the same Target and operation mode while keeping Response, Ceiling, and Threshold independent.

Link Overview is an important part of the group workflow because it prevents grouping from becoming too rigid. You can keep only the parameters that matter in sync and leave the rest free on each track.

9.4 Reset

Reset returns the instance to its default single-track workflow.

It is designed as a quick way to clear the current working state without manually undoing each part of the setup.

When used, Reset removes the instance from its current group, clears any group-related context, stops analysis if it is active, clears the applied correction state, restores the main working parameters to their default values, and closes the group-related overlays.

In practice, Reset brings the plugin back to a clean starting point focused on normal independent use.

10. Common Workflows

WaveBalance can be used in several ways depending on the source and the role it plays in the session. In most cases, it works best when inserted early in the processing chain, before EQ, compression, saturation, or other processors that react strongly to input level.

10.1 Quick Track Gain Staging

For standard gain staging, insert WaveBalance near the beginning of the track chain.

Select a measurement mode such as VU or RMS, set the Target to the operating level you want, and use Static mode. Adjust Response for a slower or faster correction style, set Ceiling as a safety limit, and raise Threshold if you want the plugin to ignore very quiet material.

Then analyze a representative section and let WaveBalance apply the learned correction.

Suggested steps:

1. Insert WaveBalance early on the track.
2. Choose VU or RMS as a starting point.
3. Set the desired Target.
4. Use Static mode.
5. Play a representative section and press Analyze.
6. Press Stop when enough material has been measured.
7. Press Stop when enough material has been measured; the applied correction is then held automatically.

10.2 Continuous Vocal or Dialogue Control

For vocals, dialogue, or other uneven material, place WaveBalance early in the chain and switch to Ride mode.

Set the Target to the level you want to maintain, then adjust Response and Threshold so the correction feels natural and does not overreact to breaths, pauses, or quiet passages. Ceiling should remain set as a protective output limit.

Suggested steps:

1. Insert WaveBalance before compression or tone-shaping plugins.
2. Select a suitable measurement mode.
3. Switch to Ride mode.
4. Set the Target level.
5. Adjust Response until the movement feels natural.
6. Raise Threshold if breaths or background noise trigger unwanted correction.
7. Use Ceiling to keep the output safely controlled.

10.3 Bus Preparation Before Further Processing

When using WaveBalance on a bus, place it before compression or other dynamics-sensitive processing.

Set the Target level you want the bus to sit around, choose the measurement mode that best suits the material, and decide whether Static or Ride is more appropriate depending on how stable the bus is.

Use Ceiling and Threshold to keep the behavior controlled and predictable.

Suggested uses include:

- Drum bus preparation
- Backing vocal groups
- Guitar stacks
- Synth layers
- Stem balancing before mix processing

10.4 Grouped Session Workflow

To use WaveBalance across multiple related tracks, insert one instance on each track and assign them to the same group.

Use Link Overview to choose which parameters should be shared across the group, including whether STATIC/RIDE mode changes should follow the linked group. Open Group View when you want to compare tracks, adjust each track's Target directly, and run group analysis on all STATIC tracks at once.

The controls shown below Group View always correspond to the currently selected track, allowing you to make individual adjustments while keeping the full group visible. After a group analysis pass, the group faders briefly show the applied gain correction for each analyzed track.

Suggested steps:

1. Insert WaveBalance on each related track.
2. Assign the instances to the same group.
3. Open Group View.
4. Reorder tracks if needed.

Decide which parameters should be linked, including STATIC/RIDE if you want mode changes to follow the group.

Adjust each track's Target from the group panel.

Use ANALYZE ALL to analyze every STATIC track in the group, or STOP ALL to stop an active group analysis pass.

Check the brief applied-gain readout on the group faders after analysis.

Fine-tune Response, Ceiling, and Threshold per selected track.

11. Practical Tips

For best results, use WaveBalance as a preparation tool rather than as a final loudness processor.

Start with a representative section of audio and choose the measurement mode that matches your goal. VU is usually a good starting point for traditional music gain staging, while RMS and LUFS modes can be useful when you need a different kind of level reference.

When working in Static mode, take time to analyze a section that reflects the real energy of the track, then press Stop to apply and static the correction. When working in Ride mode, listen carefully to the movement of the correction and adjust Response and Threshold until the result feels natural.

Useful habits:

- Insert WaveBalance early in the chain.
- Use VU as a simple starting point for music production.
- Use Static when you want a stable correction.
- Use Ride when the source changes too much for one fixed correction.
- Use Threshold to avoid reacting to silence or noise.
- Use Ceiling as a safety boundary, not as a limiter.
- Match the workflow to the source instead of using the same settings everywhere.

12. Troubleshooting

12.1 The correction feels too strong

Lower the Target, reduce the input level before WaveBalance, or check whether the analyzed section was too quiet compared with the rest of the track.

If you are using Ride mode, try lowering Response so the plugin reacts more smoothly.

12.2 The plugin reacts during silence or quiet passages

Raise the Threshold control.

This tells WaveBalance to ignore material below a certain level, helping prevent unwanted correction during pauses, fades, room tone, or background noise.

12.3 The output is getting too close to clipping

Lower the Ceiling control.

Ceiling acts as a safety boundary after gain correction and can help keep the output under control.

12.4 Static mode gives an unexpected result

Analyze a more representative section of the track or bus.

Static mode depends on the audio used during analysis. If the selected section is unusually quiet, loud, or sparse, the resulting correction may not be suitable for the full track.

12.5 Ride mode feels too active

Lower the Response value or raise the Threshold.

Ride mode continuously adapts to incoming level changes, so Response and Threshold are especially important for shaping how natural the movement feels.

12.6 Grouped instances are not behaving as expected

Check the Group Selector and confirm that the instances are assigned to the same group.

Then open Link Overview and verify which parameters are linked. Only linked parameters will be synchronized across the group.