



Brauer Motion

User Guide



Waves Brauer Motion

User Guide

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Welcome

Thank you for choosing Waves! In order to get the most out of your new Waves plugin, please take a moment to read this user guide. To install software and manage your licenses, you need to have a free Waves account. Sign up at www.waves.com. With a Waves account you can keep track of your products, renew your Waves Update Plan, participate in bonus programs, and keep up to date with important information.

We suggest that you become familiar with the Waves Support pages: www.waves.com/support. There are technical articles about installation, troubleshooting, specifications, and more. Plus, you'll find company contact information and Waves Support news.

About Brauer Motion

Waves Brauer Motion is an innovative auto-panner that moves an audio signal within the two- or three-dimensional space between the listener and the loudspeakers. It was created in close collaboration with Grammy-winning mix engineer Michael H. Brauer (Coldplay, John Mayer, Florence and the Machine). It combines his signature panning methods with Waves plugin engineering expertise. The result is a processor with limitless imaging possibilities and innovative visual feedback about the signal's position and path.

Brauer Motion pans, spins, and bounces mono or stereo signals in or around a visual sphere that's located in front of you. It allows you to choose various methods of movement, path ranges and types. You can control the movement of the signal, determine how it will start and stop, and use dynamic effects to emphasize its position and movement. It can be used in many creative ways, such as bringing dull shakers to life, making lifeless synths move and breathe, and much more. It is also a mixing tool that can be used, among other things, to help an instrument pop out of a crowded mix.

Brauer Motion lets you move sound objects in a complex manner by using several processors that interact with each other. You can adjust the dynamics of the dry and processed signals separately, while controlling the path, modulator, range, and direction of the panned signal. There are several methods of selecting how panning is triggered. Each control section influences the others, so there are nearly limitless possibilities.

Important Note: Brauer Motion is intended to be used while monitoring with stereo loudspeakers, not with headphones. The spatial effect and movement introduced by the plugin will not be perceived properly on headphones.



A Note from Michael H. Brauer

When I first heard Eddie Kramer panning Jimi Hendrix's solo around the stereo space, it had a huge impact on me. The music sounded so alive and emotional. Since then I've always wanted to have movement in my mixes. A mix sounded more spontaneous and alive to me when I moved the faders. It wasn't long before I had in my head 3D images of sounds moving around, inside and outside of the mix.

Unfortunately, there was no easy way to bring those ideas to life until the Cyclosonic Panner came out. Once I got hold of that toy there was no turning back; just about every one of my mixes had an instrument moving around. Eventually I found myself wanting to go beyond what the Cyclosonic could offer. When Waves approached me to design a plugin, I presented the idea of creating a spatial dimension on a whole new level. Three years in the making, the Brauer Motion plugin is visually and sonically everything I could ever imagine, and more.

This is a tool that feeds your imagination. It allows movement to reach new levels. There are the three traditional pan positions: left, center and right. But even the standard left/right panner has a more spatial feel. There are also fourth and fifth panning positions for things like auto panning and static placement outside the stereo image. The plugin has two stereo panners. This gives you the ability to have two different modes while working on one stereo instrument.

Besides the classic and circle mode, I've designed one that's called X-Lights. It's like the lights at a railroad crossing where the two red lights flash back and forth, except here it's a sound that flashes back and forth between left and right.

The plugin was designed to have endless options. For example, you can have a synth circling just around your left ear and then automate it so that it moves over to your right ear as it increases in speed, or manually position a stereo image that sits on the outer edge of one or both ears. Turn a mono loop into a stereo groove with the hi hat moving to the left and other elements moving to the right, all being controlled by its input signal or side-chained by another instrument.

The default position is a great start. It's a combination of circular and classic panning and is intended as an insert. I think you'll have a lot of fun with Brauer Motion.

Emotion in motion kids!

Michael H. Brauer



Suggested Uses

Brauer Motion can be used to create effects that enhance a performance or to draw focus and clarity to an instrument that's otherwise lost in the mix. It can be used as an insert on any type of track or on an aux return.

As a creative sound design tool

There are many ways to use Brauer Motion to create special effects. Here are a few examples:

- Pan the two channels of a stereo signal in a mirrored fashion, between their natural positions and the center.
- Use rhythmic panning to enhance the performance of an instrument or voice.
- Create a “planetary” system with the dry signal at the center and a dramatically processed signal orbiting around it.

As a tool to emphasize tracks or instruments while mixing

An instrument can be moved, subtly or not, to change how it relates to other parts of the mix. Here are a few examples:

- Move mix elements to reveal tracks that would otherwise be masked, without increasing their levels.
- Use a side chain to control the panning motion of an instrument or voice.
- Spin and move naturally rhythmic tracks around the mix while other tracks remain steady.
- Move your backing vocals around the sides of your mix while freeing up space in the center for your lead vocal.

Important Note: A primary process of Brauer Motion's panning effect is gain change. To reliably match plugin output when the processor is engaged and when in bypass, Brauer Motion introduces up to 6dB of gain compensation to its output. Feeding a particularly “hot” signal to the plugin may result in clipping. Adjust the input accordingly.



Components

The Waves Brauer Motion plugin has two components.

1. **Brauer Motion Mono-to-Stereo**
2. **Brauer Motion Stereo**

The two components use the same interface and operate identically. The difference is that the stereo component processes the two sides of a stereo input signal separately, each with its own panner. The mono-to-stereo component duplicates the mono input signal and sends it to both panners.



Brauer Motion Interface

The interface is divided into several functional sections:

- PANNER:**
 - Modes:** Panner 1, Link, Panner 2
 - Path Type:** CIRCLE
 - Modulator:** Includes a REVERSE button and an OFFSET knob.
 - Speed Control:** Includes PREDELAY, MOD DELAY, DEPTH, and WIDTH knobs.
- TRIGGER:**
 - Selector:** SIMPLE
 - SENS and HP:** Two knobs for sensitivity and high-pass filter.
- DYNAMICS:**
 - Selector:** OFF, PANNER 1, DIRECT, OUTPUT
 - Controls:** DRIVE, RATIO, HP, LP knobs.
 - COMP and DIRT:** Two additional knobs.
- MOTION FILTER:**
 - ON/OFF:** Toggle switch
 - Shelf Freq. Gain:** 1000 Hz, 0.0, 0.0
- SPHERE DISPLAY:** A 3D sphere showing movement paths. Labels include START, A, B, and Range Markers (Start - Start Position, A and B - Range).
- MIXER SECTION:**
 - Inputs:** Input, Panner 1, Panner 2, Output, Mix
 - Controls:** MUTE, STOP 1, STOP 2 buttons
- GLOBAL SECTION:**
 - Auto Reset:** Button
 - External Side Chain:** 1, EXT. S.C., 2
 - BPM:** BPM button



Interface Sections

Signal panning and treatment of the signal are controlled on the left side of the plugin. With stereo components, there are two identical panners. When a panner is selected, all controls in the section relate to that panner. For the sake of clarity, we refer to the panners as “Panner 1” and “Panner 2,” not “left” and “right.”

Panner Section	This section establishes the type and speed of the panning motion.
Panner Selector	Two independent, linkable panners with identical functions. In the stereo component, the panners represent two channels of a stereo signal, or two independent sources. The mono-to-stereo component sends a duplicated input signal to each panner.
Mode Selector	This sets the means by which panning is controlled and establishes the controls and modulators that are available on the interface. There are four modes.
Path	Sets the type of path the signal will follow. The path is the route along which the panned signal will move in a two- or three-dimensional plane or space. There are several types of paths.
Modulator	Sets what shape of signal is applied to the panner signal. This affects the way the panned signal will move. Modulation is represented by waveform shapes: Sine, Triangle, Sawtooth, and Square.
Range Markers (in the Sphere display)	Defines the extent of motion within the sphere: overall path description, limit of travel, location where panning action begins.
Trigger Section	Sets the triggering mechanism that automatically starts, stops, and changes the signal's movement direction in relation to the incoming (or side chained) signal's behavior.
Dynamics Section	Controls the dynamics processing of a signal that's sent through the panner.
Motion Filter Section	Controls high-shelf filter settings of the signal as it moves along the selected path.
Sphere	The globe-shaped display provides a conceptual model of the width and depth of your speakers and listening environment. It displays the markers, which define the path, range, and motion of panning, and exhibits how each of these affect the signal.



Display Legend	Show/hide the Panning Paths and Direct Signal's visualizations on the sphere.
Mixer Section	Controls the levels of the paths and the dry/wet mix. Beneath the mixer is the Global section for controlling tempo and side chain.
Global Section	Controls means of sync and control such as Auto Reset, manual BPM and External Side Chain assignments.

These sections are described in detail in the **Controls** chapter of this user guide.



Getting Started

There's no one correct way to use Brauer Motion to pan sounds. It depends on the sounds you're panning, the effect you wish to achieve, and mostly, how you like to work. When Brauer Motion opens, it loads the Michael H. Brauer preset (MHB Default). This gives you complex panning with different modes, paths, modulation, and dynamics for each of the two panners. It's a good general-purpose starting point. Experiment with the controls to learn how they affect the signal and how they interact with each other.

You should, however, learn how to build a panning setup from scratch. Follow these steps and you'll understand the essential Brauer Motion controls. At each step, note to how the signal is moving. Compare the new setting with the previous one.

Brauer Motion has two components: mono-to-stereo and stereo. The stereo component independently processes the two sides of a signal. The mono-to-stereo component splits the input into two identical mono signals. Aside from that, the components are identical.

Step	Section	What to do
1		Insert the Brauer Motion stereo or mono-to-stereo component on a channel. In the WaveSystem toolbar, load the <i>Full Reset</i> preset.
2	Panner	The default Panner Mode is <i>Sync</i> . Keep this setting for the time being. The default Path Type is <i>Classic</i> . This provides basic side-to-side panning. Pay attention to how the signal moves.
3	Panner	Change the Path Type to <i>Circle</i> . Now the signal is rotating around your head.
4	Sphere	By default, Markers A and B are located together, so the moving signal completes a full circle. Grab Marker A and move it to the right until its value reads <i>50</i> . You can also double-click on the marker and type in a value. This defines the limits of panning, so now the signal will circle between the middle and the right side.



Path settings control the route of panning. Panning speed is set in the same panel, and the means of setting the speed are determined by the Mode setting: tempo-based beats and bars; user-defined time value; or threshold-triggered, based on the input signal or a side chain.

The default speed in the Sync mode is 1 bar, 0 beats.

- | | | |
|----|---------------|---|
| 5 | Panner | Deselect the Link button (between the two Panner buttons). This allows you to control the two panners independently. Controls are color-coded by panner. The markers on the Sphere—A, B, and Start—are also color-coded. |
| 6 | Panner | Select Panner 2 and choose <i>Classic</i> pan type. Note that the Panner 2 signal is moving only from center to right. That's because you adjusted Panner 1 while the two panners were linked. They are now no longer linked, so any changes you make to one panner will not affect the other. As you can see, the two panners have different path types. |
| 7 | Sphere | Move the green Marker A all the way to the left. Now the green ball (Panner 1) pans across the entire sphere, while the orange ball (Panner 2) moves only halfway. |
| 8 | Panner | Select Panner 2. Change its beats to 1/4. Now you'll see Panner 2 completing two cycles in the time it takes Panner 1 to complete one (since Panner 1 is set to 1/2 notes). |
| 9 | Panner | Return to Panner 1 and change the time to 4 beats. Panner 1 will now finish the cycle in a rather long for bars, while Panner 2 zips along, finishing the cycle in 1/4 notes. |
| 10 | Global | If Brauer Motion is not receiving tempo from the host application, select the Manual BPM control and choose the desired tempo. Type a value in the box or drag up or down to set a value. |
| 11 | Global | If the movement is too sharp, go to the Mix control and blend in some of the direct signal. This will “tone down” the signal's motion. |

That's it for basic panning. Once you understand how to move things in a space, experiment with the other controls that make panning more interesting. These include triggers, depth and width, dynamics, modulator type, and mix, all of which are described later in this user guide.



Note: If you wish to use this plugin for static positioning, without any movement, select the **Manual** mode, set the desired path type, and then set the position using the “S” (Start) marker on the sphere.

Factory presets provide templates for many types of panning. Load a preset, then adjust the **Free** or **Sync** controls and **Trigger** parameters to suit your material, and you will probably be off to a good start. Presets can be useful for learning how various settings combine to make a panning effect. Load a preset, listen to what it does, and see how the controls were used to create this sound. This understanding will make it easier to construct effects from scratch.



Controls

Panner Controls



Panner Select Panel

Panner 1 / Panner 2

The mono-to-stereo component has one input and two panners. The stereo component has two inputs. The stereo component is color-coded:

All controls and displays for Panner 1 are **green**.

All controls and displays for Panner 2 are **orange**.

Range: Panner 1 / Panner 2

Default: Panner 1

Reset: Panner 1

Link

Sets panner linking. If the two Panners are linked, any control change in one Panner will affect the other Panner identically.

Unlinked, the panners are independent of each other. If unlinked panners with different settings are subsequently linked, their controls will assume the same values the first time a control is used.

Range: On/Off

Default: On

Reset: On



Mode Select

Selecting a mode means setting up an environment for controlling the plugin. Different kinds of panning and different kinds of syncing require different controls, so each mode provides the combination of controls needed to achieve a certain effect.

Sync



Panning speed is determined by user-selected bars and beats units, as they relate to the tempo of the DAW or the BPM set in the Global section. The plugin syncs to the grid (bars, beats, tempo changes, and measurement changes). **Bars, Beats, Dotted**, and **Triplet** measurement controls are available in this mode.

Free



Panning speed is set by the user's definition of how long it will take the signal to complete the path. This is controlled with the **Speed** Control.

Input



In this mode, the input signal's amplitude is the modulator of the path. Positive amplitude changes will move the panner forward along the path; negative amplitude changes will move it in the opposite direction. The amount of amplitude change defines how far the panner will travel along the path. A **Sensitivity** knob lets you define how responsive the panner will be to amplitude changes. Higher sensitivity settings result in a very responsive, but jumpy, panner. Low sensitivity yields a less responsive, smoother motion.

Manual



In this mode, you manually position the signal on the path. This is a static positioning just like a regular Panner. You can position the signal at any point on the selected path (whatever the path shape is) or automate the Start Position marker to design your own movement.

Mode selector default: Free

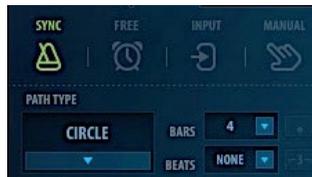
Reset: Sync



Mode Selection Affects Other Controls

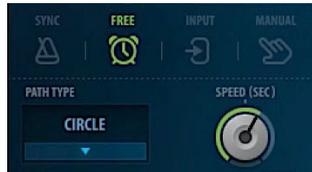
Mode selection affects the appearance and behavior of certain other controls. The controls most influenced by the Mode setting are the **Path Speed** controls, which are used to set how quickly a signal pans within the sphere. This diagram shows how the Path Speed controls change based on the Mode selection.

Sync



The **Sync** mode calculates panning speed based on the host BPM, and the user settings for bars, beats, dotted and triplets.

Free



In **Free** mode the panning speed is set manually, so a speed control is shown here.

Input



The **Input** mode uses the amplitude of the input signal (or a side chain) to control signal motion. A sensitivity knob is displayed.

Manual



The **Manual** mode is static, so there is no Path Speed control.

Throughout this section of the user guide, control names are color-coded to match the modes in which they are available.

Choosing a mode will change the display in the Path panel, but the actual speed value will not change. For example, if you change from Sync mode to Free mode, Brauer Motion will translate from bars and beats to the equivalent value in seconds. Conversely, if you set a value while in Free mode and then change to Sync mode, the plugin will translate to the closest time in bars and beats.



Path Type

There are four path types that determine the route in or around the sphere. Use the drop-down menu to choose a path type. A path type includes path and range parameters needed to define the panning, as well as a modulator selection that suits the purpose of the path type. You can select a path type and then change to a different modulator, but the result will be different from the preset.



Classic: This is classic left-to-right panning. It gives the perception of a two-dimensional panorama. Modulator = Triangle.

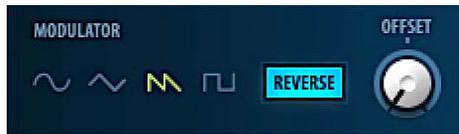
Circle: This creates the perception of a circular motion between the speakers and the listening point. The most distant point of the circle is perceived as being beyond the speakers, while the closest point is perceived as being where the listener is sitting. Modulator = Sawtooth

Circle Phase: This is much like the Circle path, but the processed signal on one side of the sphere is phase inverted. The perception is that of a sharper circular movement, as though the closest point in the path is behind your head. Modulator = Sawtooth.

X Lights: This is an alternate left-to-right hard-panning path, with no depth. When one side is on, the other side is off. Modulator = Sawtooth (no other modulator type is available in this mode). The Offset control is replaced by the **Pulse Width** control, which determines the width of the pulse on each side. The Pulse Width control appears only in the X-Lights mode.



Modulator Select



The selected modulator determines the shape in which the signal moves across the defined path. This is analogous to a carrier in a synthesizer.

- Sine**  This is a smooth modulator, which moves slower around the path's start and end, and speeds up in between. The signal will bounce back and forth between the path start and end.
- Triangle**  This modulator has a linear increase or decrease gain in all directions. The signal will bounce back and forth between the path start and end.
- Sawtooth**  This modulator will jump from the end of the path directly to the start point without bouncing backwards.
- Square**  This modulator will jump instantly between the start and end points of the path, with no motion in between.

Default: Triangle (Classic Mode Modulator). Each Path has its own default modulator.

Reset: Sine

Reverse

Reverses the direction of Panner movement.

Range: On or Off

Default: Off

Reset: Off

Offset (Not available in X-Lights Path Type).

This control groups the A / B / S Markers, enabling you to define a path and range, and then offset that range. Higher offset values can result in the panned signal disappearing from one side of the Sphere and reappearing on the other side to complete its motion.

Range: 0–100

Default: 0

Reset: 0



Path Speed Controls

Path Speed Controls Available in the Sync Mode

Bars

Determines the number of bars it will take for the signal to complete the entire defined path. This is session/BPM dependent. Time settings will be translated to Bars/Beats values when Panner mode changes from *Time* to *Sync*.

Range: 0–32 bars.

Default: Calculated measure based on 1 sec.

Reset: 0

Beats

Determines the number of Beats (in addition to the Bars setting) that it will take the signal to complete the entire defined path. This is session/BPM dependent. Time settings will translate to Bars/Beats values when Panner mode changes from *Time* to *Sync*.

Range: None, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64

Default: Calculated measure based on 1 sec. For example: 1/2 at 120 BPM

Reset: 1/2

Dotted

Increases the duration of the Beats setting by half its value, adding to the time it will take the signal to complete the entire defined path. This is session/BPM dependent. Time settings will translate to Bars/Beats values when Panner mode changes from *Time* to *Sync*. Dotted and Triplets controls cannot be applied simultaneously. Selecting one will deselect the other.

Range: On or Off

Default: Off

Reset: Off

Triplets

Changes the rhythm of the Bars and Beats setting, calculating three notes instead of two. This shortens the time it will take the signal to complete the entire defined path. This is session/BPM dependent. Time settings will translate to Bars/Beats values when Panner mode changes from *Time* to *Sync*. Dotted and Triplets controls cannot be applied simultaneously. Selecting one will deselect the other.

Range: On or Off

Default: Off

Reset: Off



Path Speed Controls Available in the Free Mode Speed

Determines the time (in seconds) that it will take the signal to complete the entire defined path.

Range: 125 sec to 0.05 sec

Default: 1 sec

Reset: 1 sec

Path Speed Controls Available in the Input Mode

Input Sensitivity

Sets how sensitive the movement will be to amplitude changes. Lower sensitivity settings will move the signal based on the most abrupt amplitude changes. Higher sensitivity settings will move the signal in greater correspondence with more subtle amplitude changes.

Range: 0 to 100

Default: 0

Reset: 0

Pulse Width

Determines the ratio between the time the signal plays steady on one side and the fade out and quiet time before the signal crosses to the other side. The time is relative and dependent on Time/Sync settings. At 0, the signal will play for a short duration on the Left and Right boundaries of the X-Lights path, with a longer pause in between them. At 100, the signal will be played for a longer duration on the Left and Right boundaries of the X-Lights path, with a shorter pause in between them. "Pulse Width" represents the width of the pulse within a square wave:



Range: 0 to 100.

Default: 0

Reset: 0



Modulation Controls Available in All Modes

PreDelay

Applies a pure delay (not filtered or modulated) to the input signal of the panner(s). This delay becomes apparent when the delayed signal is mixed with other non-delayed signals (e.g. Panner 2 vs. Panner 1, Panner 1 vs. other tracks in the mix, Panner 1 vs. Dry).

Range: 0 ms–200 ms

Default: 0

Reset: 0

Mod Delay

Simulates your perception of the change in time as the source moves farther or closer to you. When the signal is nearby, no delay is applied, but as the signal moves farther away, delay is added to the signal until it reaches its maximum distance: the delay setting of this control.

Range: 0 sec to 10 sec in 0.001 sec increments

Default: 0

Reset: 0

Mod Delay On/Off

Turns the Mod Delay effect on or off.

Range: On or Off

Default: Off

Reset: Off

Depth

Defines the perceived depth of the movement. This control starts at 100% and lowers the perceived depth by reducing the amplitude changes of panning occurring in the path.

Range: 100–0

Default: 100

Reset: 100

Width

Controls the boundaries of the stereo image in which movement will occur. 100 represents a full stereo image and 0 represents mono, where the panning effect will not be perceived. 200 represents a widening of the stereo (outside the sphere). This control is independent of the range markers.

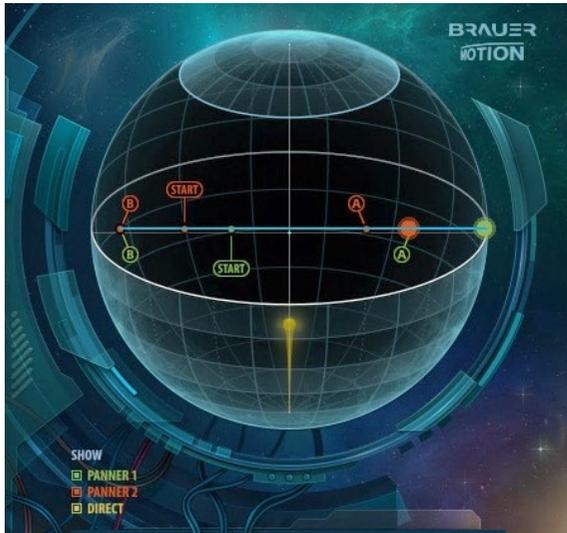
Range: 200–0

Default: 100

Reset: 100



Sphere Range Markers



Range Marker A*

Defines the beginning of the selected path in the sphere. This control is located on the spherical display as a colored marker labeled “A” (Panner 1 marker is green, Panner 2 marker is orange).

Range: 0–100

Default: 0

Reset: 0

Start Position Marker*

Defines where movement starts. It can be moved anywhere along the path between Range A and Range B. By default it is set hard left. This control is located on the spherical display as a colored marker labeled “Start” (Panner 1 or 2 color coding in stereo).

Range: 0–100

Default: 0

Reset: 0

**When Range Marker A is moved beyond the Start Position Marker location, the Range Marker will move the Start Position Marker with it until the user separates them manually.*



Range Marker B

Defines the end of the selected path in the sphere. This control is located on the spherical display as a colored marker labeled “B” (Panner 1 marker is green, Panner 2 marker is orange).

Range: 100–0

Default: 100

Reset: 100

Trigger Controls

Trigger Selector

This drop-down menu determines the triggering mechanism of the Panner. Triggers are available in **Sync** and **Free** Panner modes, and are not available in **Input** or **Manual** Panner modes.

Off	No trigger mechanism applied. Signal movement will occur continuously.
Simple	The plugin will wait for a signal to exceed the threshold. Once the signal passes the threshold, it will start the movement until the user stops it using the stop button.
One Shot	The plugin will wait for the signal to pass the set threshold. Once it does, it will complete the defined path and then stop. Note: If the signal is above the threshold at which movement is intended to stop, the movement will continue to a second round until it reaches a state where the signal is below threshold at the end of the path. It will then stop.
Re-trigger	When the input signal passes the threshold, movement will start. When the signal falls below threshold, movement will stop. This trigger mode will create a rhythmic movement that correlates with the input signal.
S-Trig Reverse	Signal will start movement when the set threshold is passed. Once the signal is below the threshold, it will stop moving forward and return to the start point in a reverse motion.
A to B	Signal is initially positioned at A. When threshold is exceeded, the signal will jump to B. When the signal drops below the threshold, it will Jump back to A. This enables you to add a stereo experience to a mono recording. As an example, with a mono recording of a drum set, you can leave the kick and snare centered and throw the high hat to the right when it is hit. Hold sets the amount of time before panning begins once the signal crosses above or below the threshold.



Sensitivity

Determines the input level threshold above which the trigger is activated and panner movement begins.

Range: +/- 48 dB

Default: 0

Reset: 0

Sensitivity LED

This Green LED indicates when the input or side chain signal passes the sensitivity control setting, thus triggering panner movement.

HP

Removes low frequency information from the input or side chain signal feeding the trigger mechanism. This enhances the difference between transient content, which activates the trigger, and non-transient content. This can result in more accurate triggering with certain sources, such as bass guitars.

Range: Off (16 Hz)–2000 Hz

Default: Off

Reset: Off

A to B / B to A

Determines from which marker (A or B) the signal will start and to which marker it will jump when the threshold is exceeded. This Control is present in only the A to B Trigger mode.

A to B starts at A and jumps to B when the threshold is passed.

B to A starts at B and jumps to A when the threshold is passed.

Range: A to B / B to A

Default: A to B

Reset: A to B

HOLD (A to B mode only)

Delays the start of panning after the signal has crossed above or below the threshold.

Range: Off (1 ms)–1000 ms

Default: Off

Reset: Off



Dynamics Controls

Dynamics Selector

Select which of the signals is routed through the dynamics processor.

Off	No dynamic processing is applied, even if controls are assigned values.
Path 1 / Path 2	Dynamic processing is applied to the “wet” signal only. In the Mono-to-Stereo component, only Path 1 is available. In the Stereo component, each path can be controlled separately.
Direct	<p>Dynamic processing is applied to the “dry” signal only. When Mix control is set to 100%, there is no direct/dry signal present in the output, so no dynamic processing will be heard. In order to hear this process, the Mix knob must be set below 100%.</p> <p>Each panner has a dynamics processor, and if both panners assign their dynamics to the direct path, double processing can occur. While this can be interesting, you may want to reduce the dynamics processing of one of the panners by turning it off.</p>
Output	<p>Dynamic processing is applied to the entire output signal.</p> <p>Range: On or Off Default: Off Reset: Off</p>

Drive

Increases the input to the dynamics processor and decreases inversely its output. Using this control, you can achieve more processing without changing the loudness of the signal.

Range: 0–100

Default: 0

Reset: 0

Drive Gain Reduction LED

This LED displays when gain reduction is being applied to the signal, and indicates how much is being applied:

- Green indicates gain reduction of 0.1 to 3 dB
- Yellow indicates gain reduction of 3.1 to 9 dB
- Red indicates gain reduction of 9.1 to 20 dB



Ratio

Determines the *type* of dynamic process that will be applied, ranging from “**Comp**” to “**Dirt**.” When Ratio is set to 0, the Comp mode is used: a tight compressor with an attack of approximately 5 ms and a release of about 100 ms. When Ratio is set to 100, Dirt mode is used: a clipper with no attack or release times.

Range: 0 (Comp) to 100 (Dirt)

Default: 0 (Comp)

Reset: 0 (Comp)

HP

Determines the cutoff frequency of a High Pass filter applied to the processed signal that leaves the dynamics section.

Range: Off (16 Hz)–2000 Hz, clockwise

Default: 23 Hz

Reset: Off

LP

Determines the cutoff frequency of a Low Pass filter applied to the processed signal that leaves the dynamics section.

Range: Off (22000 Hz)–1000 Hz, counterclockwise

Default: 18000 Hz

Reset: Off



Motion Filter



This section applies a high shelf filter to the moving signal. You can define how the filter changes dynamically as the signal moves along the selected path and emphasize the movement to produce a better perception of distance and movement.

Motion Filter On/Off

Turns the dynamic filter on or off.

Range: On or Off

Default: Off

Reset: Off

Shelf Freq

Defines the cutoff frequency of the dynamic high shelf filter.

Range: 100 Hz–18000 Hz.

Default: 1000 Hz

Reset: 1000 Hz

Center/Close

- In **Classic** Mode this control is named **Center** and it sets the amount of gain boost/attenuation that the shelf applies to the signal when it reaches the center of the sphere.
- In **Circle** and **Circle Phase** modes, the control is named **Close**, and it sets the amount of gain boost/attenuation that the shelf applies to the signal when it reaches the point closest to you in the sphere.
- This control is not active in the **X Lights** Mode.

Range: +/- 24 dB

Default: 0 dB

Reset: 0 dB



Sides/Far

- In **Classic** and **X Lights** Modes this control is named **Sides** and it sets the amount of gain boost/attenuation that the shelf applies to the signal when it reaches either side of the sphere.
- In **Circle** and **Circle Phase** modes, this control is named **Far**. It sets the amount of gain boost/attenuation that the shelf applies to the signal when it reaches the point farthest from you in the sphere.

Range: +/- 24 dB.

Default: 0 dB

Reset: 0 dB

Mixer Section



Input

Sets the level of the input signal.

Range: Off (-48 dB) to +18 dB

Default: 0 dB

Reset: 0 dB

Panner Level Controls

Panner 1 / Panner 2

Controls the level of the processed signals in the output mix. In the Mono-to-Stereo component there is one Path control and in the Stereo component there are separate controls for "Path 1" and "Path 2."

Range: Off (-48 dB) to +18 dB

Default: 0 dB

Reset: 0 dB



Mute Controls

Mute 1 / Mute 2 (Stereo component only)

Engaging a Mute control for one path will mute that path.

Output

Determines the level of the mixed signal leaving the process.

Range: Off (-48 dB) to +18 dB

Default: 0 dB

Reset: 0 dB

Mix

Sets a balance level between the direct signal and the processed path(s). As the Mix setting is decreased, more of the direct signal is present in the plugin's output. This is visualized with the yellow funnel that represents the Direct signal level in the sphere.

Range: 0 (direct only, not processed in the mix)–100 (processed only, no direct signal in the mix).

Default: 100

Reset: 100

Start/Stop Controls

Start/Stop 1 & Start/Stop 2

Starts and Stops movement of the panner(s). If Trigger is engaged and you have stopped the panner, it will start again when the trigger's sensitivity threshold is exceeded.

Range: Start or Stop

Default: Started (control displays Stop)

Reset: Stopped (control displays Start)



Global Section



Auto Reset

When this control is engaged, panner movement will be reset each time a control that affects the speed or path of the Panner is adjusted (reset = jump to the start point or the calculated position in path when in motion). When Auto Reset is disengaged, the panner will continue its movement from its current position when any control that affects the speed or path of the panner is adjusted.

Range: On or Off

Default: On

Reset: On

Ext. S.C.

Switches the signal fed to Input Mode and the Trigger mechanism from the channel's input signal to the side chain signal you have assigned in the plugin header (DAW dependent). In the Mono-to-Stereo component, this is a single control. In the Stereo component, the "1" and "2" buttons activate the side chain on Panner 1 or Panner 2 respectively.

Range: On or Off

Default: Off

Reset: Off

Side Chain Monitor

Engage this control to listen to the side chain signal being fed to the plugin.

Range: On or Off

Default: Off

Reset: Off

BPM (Sync mode only)

When in Sync mode, this value box displays the tempo (including tempo changes) from your session, and will always maintain a 4/4 measurement. You can change the tempo manually to override the session's tempo, which will activate the manual BPM control.

Range: 30 BPM–240 BPM

Default: Defined by DAW session.

Reset: 120 BPM



Manual BPM (Sync mode only)

Determines if Brauer Motion is synced to your session or overridden by the BPM value you have entered manually. When you change the tempo manually, the Manual BPM box is automatically switched on. Uncheck the Manual BPM checkbox to revert to your session's BPM.

Range: On or Off

Default: Off

Reset: Off

Display Legend



Panner (in Mono-to-Stereo component)

Panner 1 / **Panner 2** (in Stereo component)

Displays or hides the visualizations representing the paths on the sphere.

Range: On or Off

Default: On

Reset: On

Direct

Displays or hides the yellow visualization representing the level of the direct signal in the sphere.

Range: On or Off

Default: On

Reset: On

WaveSystem Toolbar



Use the bar at the top of the plugin to save and load presets, compare settings, undo and redo steps, and resize the plugin. To learn more, click the icon at the upper-right corner of the window and open the WaveSystem Guide.

