PangoBeats Documentation

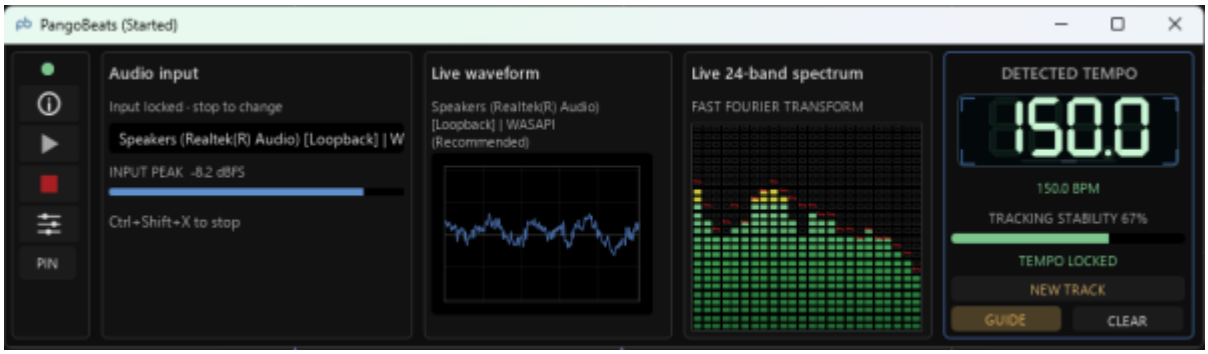
__DRAFT Document, things subject to change__

PangoBeats 1.1 for BEYOND 5.8 Release

For the BEYOND 5.8 Release, PangoBeats received a large update that improved detection, UI, and integrates the tool directly into the BEYOND installer and Directly in the BEYOND System BPM Dropdown. Document written for PangoBeats 1.1 September 16 2026

What is PangoBeats?

PangoBeats is a companion app for our BEYOND software designed to automatically detect the BPM of incoming audio and direct the system BPM of BEYOND to that bpm. It can be used as a BPM input option in BEYOND and is installed as part of the full release installer starting with the BEYOND 5.8 Release.



You can use either internal audio with a built-in loopback, external microphones, or line inputs to detect the BPM from. The cleaner the audio input the better PangoBeats will be able to detect the input.

Using many detection methods, PangoBeats will analyze the incoming audio to determine BPM. Once a BPM is confidently detected, PangoBeats will lock onto that BPM and give the user a confidence level and broadcast that tempo to BEYOND.

PangoBeats will maintain the BPM as long as confidence is high and automatically update downbeat timing to BEYOND. As confidence is lowered, PangoBeats will “Coast” along until confidence is restored. BEYOND will hold the last known value even if PangoBeats loses confidence in its detection.



Users can help PangoBeats along by letting it know if the track has changed or giving it a guiding tap to give it more confidence in its detection. It can even be minimized and then left on top, allowing the user to keep the main window visible over their BEYOND software and integrate it into their live shows.



Getting Started with PangoBeats

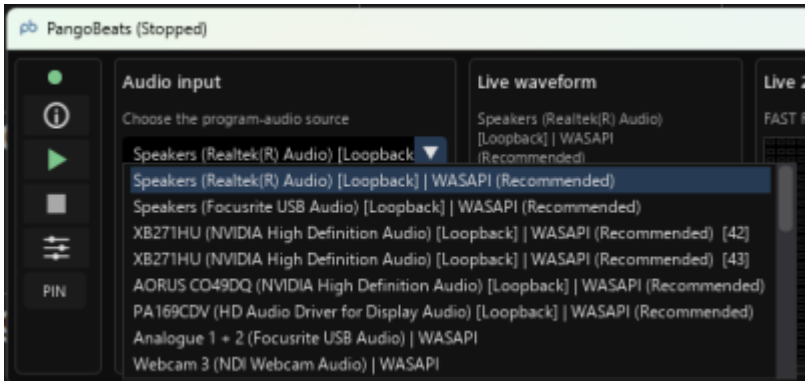


PangoBeats was first fully integrated into BEYOND during the 5.8 release. For the following guide to be accurate be sure you have downloaded the full 5.8 release or higher. As PangoBeats is now delivered inside the BEYOND installer, that will be the only thing you need to install.

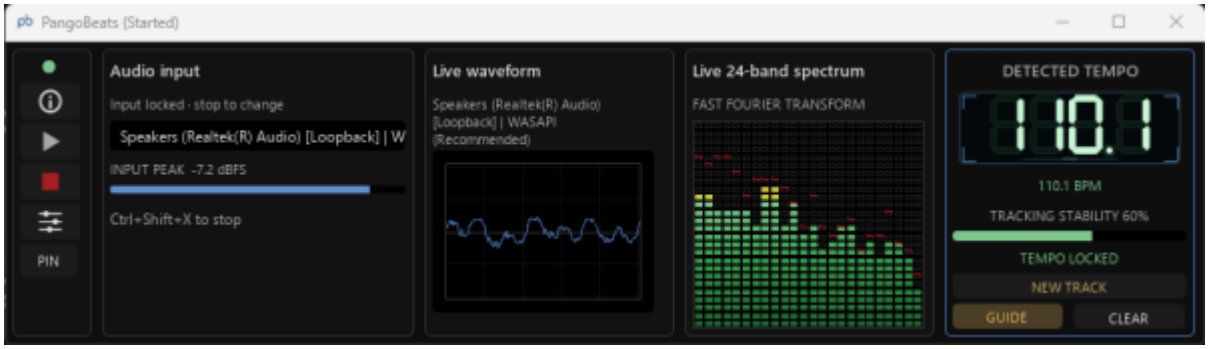
Once in BEYOND, right click on the System BPM button. There you will have all of your system BPM options. There you will be able to select which kind of BPM input you would like. By default, Manual Tempo will be selected, change this to PangoBeats.

After PangoBeats is selected in the System BPM Dropdown, it will automatically open the PangoBeats application from your installed BEYOND folder.

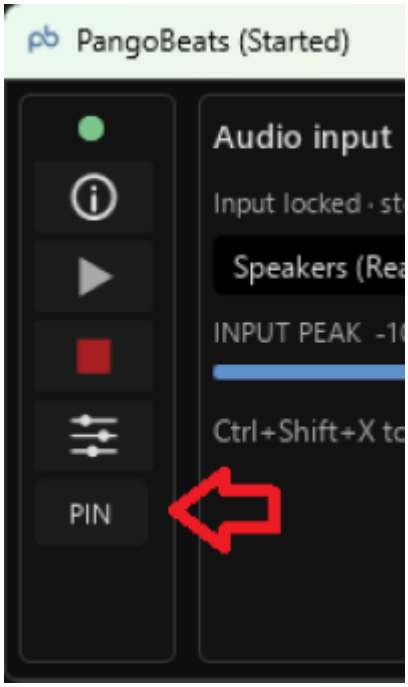
Once it has loaded, you will select your input device, if you want to detect audio from the same PC, look for one that says “Loopback” in the name. If you are trying to sense audio from the room, look for your devices microphone, and if you are using a live input from a venue mix, you can use a line input.



Once your input has been selected, press the Play button to begin detection. You will know it is sensing the right audio if the live waveform and 24 band spectrum play back accurately to what you are also hearing.



You can click the Pin button, or double click anywhere on the tool that isn't a button and it will turn the PangoBeats window into a smaller always on top preview you can leave on top of your BEYOND window to monitor its detection over time.





Understanding PangoBeats Detection Status

The main window once PangoBeats has audio you will be interested in is the BPM Detection window. This is where the status of detection is presented to the user. It also is the only window shown when you pin the app on top of other windows.

Here you will see the current status of the detected BPM, What the app is currently doing, Information about the last detected values, as well as the user input options to assist the tool.

Some of the states you might see are the following:

Status Signifier	**What PangoBeats is Doing**	**Operation Action**
Verifying Beat Level	A bpm is detected, but confidence is not high enough to trigger an Update.	Wait for more structure in the music, or use the temp guide to tap and add your own evidence to the tool.
Tempo Locked	PangoBeats has high confidence in detection and is actively locked and updating BEYOND to that BPM.	BPM updated in BEYOND, no action required. Monitor status to validate tempo is correct, guide if off.
Holding Last Tempo/ Coasting	Evidence for the locked in tempo is lowering, Last BPM no longer updating BEYOND but holding that value.	Let PangoBeats coast, BPM is likely still accurate, but a verse or bridge in the song lowers confidence. Unless a new track has started, click new track and guide.
Guided Tempo	Low confidence by the algorithm backed up by user input resulting in a Locked State.	Your tapped value was in line with the detection leading to overall high confidence. No action needed.
Input Stalled	PangoBeats is no longer detecting an audio input.	Check input device, ensure waveform and spectrum analyzer are reading input.



Three Simple User Inputs

While PangoBeats normally can run happily on its own without any user input, some tracks including acoustic, tracks over 200bpm or unusual time signatures can be harder to get a high confidence value in the algorithm.



In the case of these kinds of tracks, PangoBeats offers 3 user inputs.

- New Track: Click this to throw out previous BPM detection data and start detection from scratch. This can be useful if the music rapidly changed BPM and Style, but is unlikely to be needed when a DJ is playing similar tracks at similar BPM. Use this mainly for large differences in track style, and tempo. This button can be pressed with the hot key Ctrl + Shift + R
- Guide: This acts as a tap function like you might in BEYOND's manual mode. However, instead of setting the value, it adds evidence to the confidence level of detection. Don't expect exact tapped value to be set the moment you finish tapping. It uses your tap to build evidence and confidence in its detected BPM. This button must be clicked 5 times to close standard 4 beat bar of music. This can also be tapped with F9 on your keyboard.
- Clear: This clears your tapped value in case you tapped incorrectly, this does not clear all evidence gathered just your user inputted evidence. Use New Track if you want the detection to begin from scratch.



In most cases, PangoBeats won't need user input, especially if most of what you are detecting is what most music is played at clubs and events in the modern era. But if you need to give it a little help for more unpredictable music then these tools are provided.

Setting the Detection Up For The Best Result

The best results will always come with the cleanest audio. And while internal audio loopback will be the

cleanest, it isn't realistic outside of DJ's who are also running their own lasers.

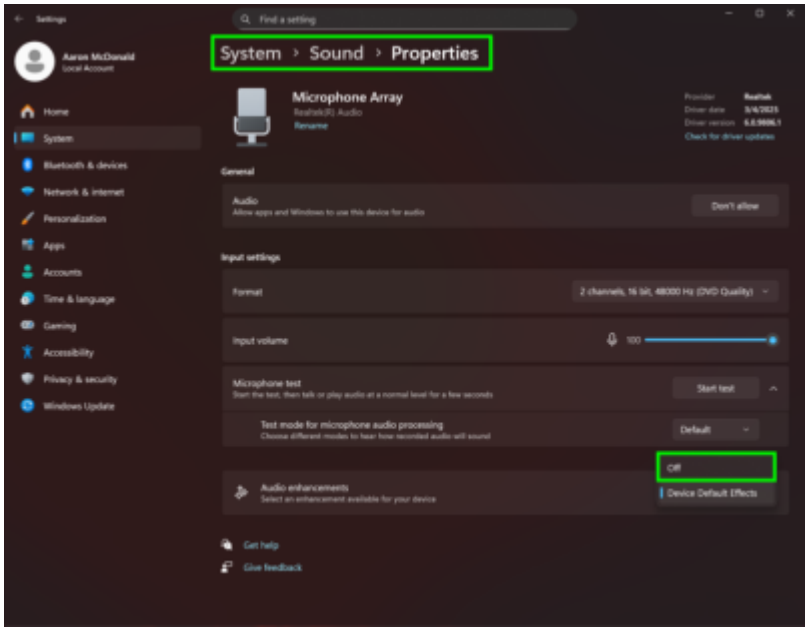
The second-best way is to bring an XLR based audio device like a Scarlett solo, or similar. When you use a device like this, you will need to request a "Venue mix" or "Live feed" from the audio engineer. On a separate AUX output and deliver that to your audio device. Bring an XLR cable, be kind and they will probably give it to you.



If you already have a Scarlett style device but you are unable to get a live feed from the audio engineer, you can also use your own microphone like a shotgun or pencil microphone, plug it into your audio device, and aim that mic at the venue's speakers. Its best to avoid dynamic and handheld microphones for this purpose like a Sure sm57/58 and condenser microphones.



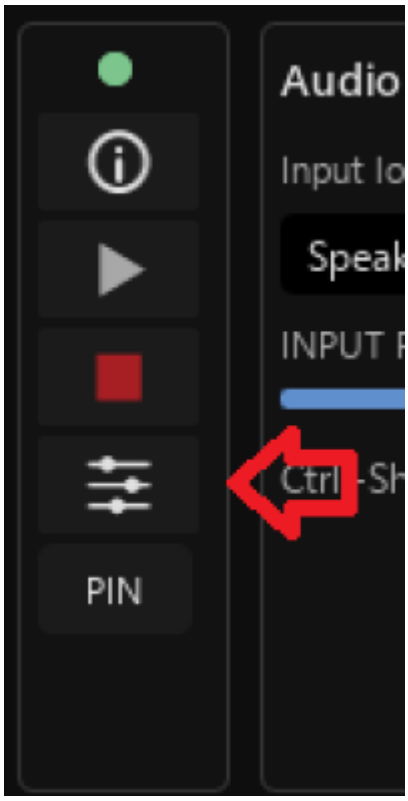
And finally, you can use the built-in microphone on your computer, but results will vary. One important aspect of those microphones is they are often designed to remove background noise and find voices. These are often called "Audio Enhancements" and can usually be disabled. But its important to know that microphones are designed for filtering everything but your voice for meetings won't be the best at collecting the full spectrum of audio for music. Check windows settings suggested in the picture to disable windows version of this, but other PC manufacturers may have their own tools that will be specific to each model of device.



For all these devices, its important that the microphone level is at the proper volume, you want to keep the input peak between -25 and 0 dBFS during chorus sections of the music as detected by PangoBeats.

PangoBeats Settings

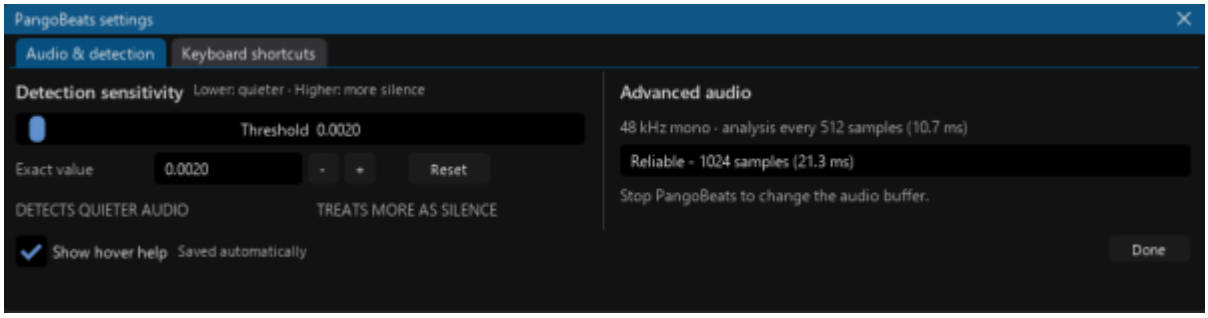
PangoBeats have a few user options in the settings window. To access the settings, click on the three horizontal fader icon.



Audio & Detection

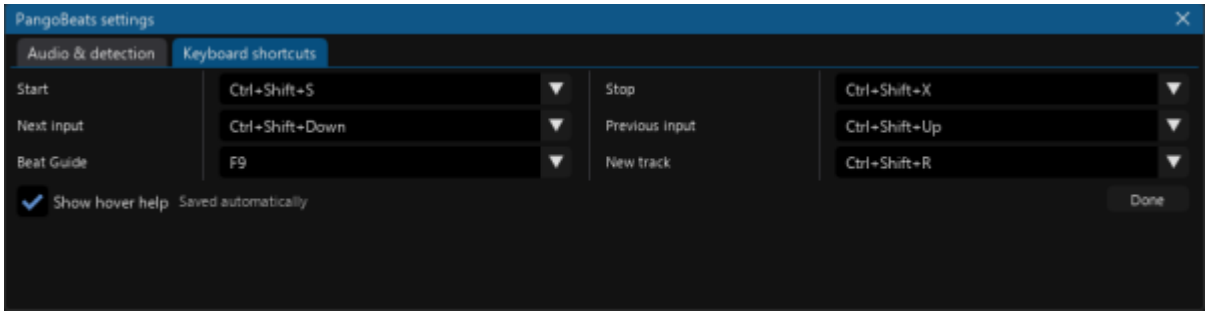
The audio and detection panel in the settings window is where you have some controls over the audio input.

- Detection sensitivity: Here you can change the threshold for background noise, if the audio is more clean then this value should be lower, if you are using a laptop built in mic in a loud club, this should be higher. What exact value is best depends dramatically on what your microphone setup is and the rooms noise and loudness.
- Show Hover Help: Here you can enable and disable the hover tips which show you what a button or feature does when you hover your mouse over it. Disable it once you learn all the functions to reduce clutter.
- Advanced Audio: Here you can determine what level of detection is used, Higher detection samples are more accurate, but slower and lower detection samples are less accurate but very fast. If you feel PangoBeats is always a little late on what beat its locking to, you can reduce samples. If you feel PangoBeats struggles to get your beat accurately often, you can increase the sample value.



Keyboard Shortcuts

PangoBeats have a number of buttons and options, and all are mapped to keyboard shortcuts by default. Here you can change which button is assigned to what keyboard shortcut. It is saved to this specific install of PangoBeats within this specific BEYOND folder. Click Done to save your changes.



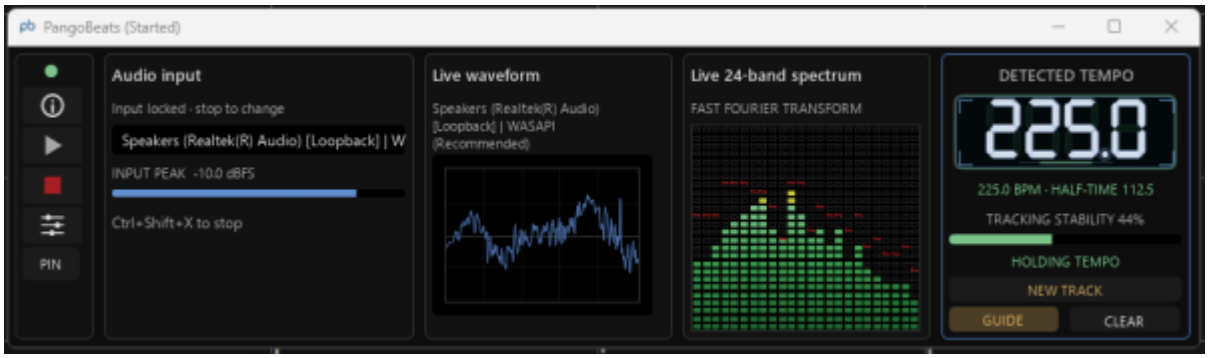
How Does PangoBeats Detect BPM

It’s important to note that PangoBeats does a lot more interesting things when detecting BPM then just sensing a kick drum or doing a shazam style lookup.

PangoBeats searches not only for kicks, but also claps, kick snare patterns, looks in higher sounds like high hats, and is counting bars. PangoBeats even considers half time and double time in its detection.

PangoBeats also requires quite high confidence in its detection before it locks on and sends a new BPM to BEYOND, since that takes a very visual effect on your show, it utilizes all of these factors to build evidence for its guessed BPM, and then locks in and sends that BPM and Resync to BEYOND.

PangoBeats utilizes a fully in-house detection model without the need for third party tools or large training data set, allowing it to be a lightweight companion app to BEYOND, without internet connection, and without utilizing much CPU performance at all.



Intellectual Property Notice and Credits

PangoBeats is a product of Pangolin Laser Systems, LLC.

The PangoBeats software was developed by Suhas Holla Karkada Chandrashekar, and William R. Benner, Jr.

Product Boundary

PangoBeats runs as a separate Windows process and communicates with separately running BEYOND or QuickShow software through standard Windows messaging.

Older Version Documentation

For PangoBeats 1.0, see the PangoBeats 1.0 legacy documentation, including its source availability and third-party license information.

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