



**JAX KEY RECORDER  
(AudioUnit)**

**PREVIEW MANUAL**

## **JAX KEY RECORDER**

The JAX KEY RECORDER provides 16 independent slots for audio recording and loading inside AudioUnit environments and allows instant playing recorded or imported audio files via MIDI triggers.

It extends our comprehensive JAX SAMPLER SERIES and can share audio files and presets for the JAX Loop Recorder and others. The playback of the recorded audio files is performed by integrated sampler units with compressed file support (fixed bit rate) and disk streaming capabilities.

The unit is implemented as an audio EFFECT with additional MIDI connectivity. Per default, the white keys C-2 (MIDI key 36) to key 60 are mapped to the 16 audio slots and the play back volume for each slot is additionally dependent from the triggered MIDI key velocity.

JAX KEY RECORDER will operate in OMNI ON mode, meaning the MIDI channel information for each key is consequently routed to one of the 16 corresponding slots. You should use a host application, which allows to route correctly to MIDI channels, as there is usually only one MIDI in port

available, which can handle up to 16 MIDI channels simultaneously.

JAX KEY RECORDER is polyphonic, so all 16 mapped audio files can be played together sample accurately by MIDI triggers (pressing the keys on a connected MIDI keyboard or using an external sequencer) and they also can overlap to achieve complete arrangements. The user can load audio files from disk, not using any realtime recordings at all but externally prepared audio content.

Note: The playback timing is controlled by the MIDI key triggers exclusively, which may require an external sequencer-like environment. There is intentionally no internal synchronisation between the loaded samples (like for instance with our JAX Loop Recorder). The samples just play as triggered and can have any time relation between them. The length of the playback per sample is controlled with correctly timed note off messages.

All channels of the playback will be mixed to a single stereo output internally (bus 1). We did not implement multi output bus features yet, because only few hosts currently will actively support this special feature.

## Recording Audio

If an audio slot (or key) is armed, the recorder can be started for that selected slot and will override the eventually currently mapped audio file and record new audio data into the selected slot.

The maximum length of a recorded audio file is limited to 60 seconds per key. The file will be automatically stored to disk after successful recording. Direct disk recording inside audio unit environments is highly risky, as AudioUnits are not allowed to break the processing flow with disk operations and similar tasks while operation.

While recording, the audio stream is forwarded to the output (passed thru), along with eventually triggered playing keys synchronously. But the recorder is completely isolated from the playback. If a recording has finished, the preset will be recompiled and reloaded into the corresponding underlying sampler instance, which is then able to perform instantly with the new sample.

JAX KEY RECORDER should be inserted as the last audio unit effect into a chain of recordable audio, which also can include any effect routings prior. Further audio effects can be connected after the

output of the unit too, which will not be recorded, of course, but forwarded to the hosts output or bus mixers as usually. With using multiple instances, some creativity can be reached by resampling with ease.

The last used audio files for the keys will be remembered with the audio units state and also can be stored as presets for loading and playback on demand. The resulting audio files are in Apples native AIF and sampler AUPRESET file formats and can be shared with some of our other samplers and recording tools.

JAX Key Recorder uses internally 16 independent sampler units, which all have their own set of parameters. This way it is possible to adjust speed, pitch, volume, pan and so on independently for each sample in memory.

The following independent realtime parameters are available per mapped audio slot (key):

- Gain (MIDI Controller 007 supported)
- Pan (MIDI Controller 010 supported)
- Cutoff (MIDI Controller 074 supported)
  
- Peak
- Speed (MIDI Pitch bend supported)

- Stretch
- Attack (MIDI Controller 072 supported)
- Release (MIDI Controller 073 supported)
- Sample Start (MIDI Controller 014 supported)
- Sample End (MIDI Controller 015 supported)

Pitch and Speed have special meaning and can be applied independently or connected (Linked or Stretch Mode).

Linked (stretch) mode allows to automatically time-stretch the loaded sample per key by applying an inverse combination of pitch and speed. This means, while the sampler play back speed is altered, for instance lowered, a connected pitch shifter will operate in inverse direction (pitching up this way)with the same ratio), giving the tonal expression of a realtime stretched sample. This process is dynamically controllable via MIDI and audio unit parameters and also may be dependent of the hosts tempo information.

Independent adjustment of pitch and speed is also possible and allows individual values for speed and pitch, which may change the playback speed in relation to the original tempo of the recording and current host tempo. So it is for instance possible to raise the pitch while slowing down the tempo to a

certain amount and vice versa. This can be applied to each audio slot independently and in realtime via MIDI controllers or AudioUnit parameter automation.

Remarks: If you record audio, this is done with a certain fixed tempo and pitch. Changing the arrangement afterwards (transposing or speed changes) will cause several problems with the recorded audio parts, which are usually fixed at certain pitch and tempo by nature.

The independent control of speed and pitch allows manually adjusting of recorded audio slots to adopt the current state and it allows to apply creative effects in realtime.

Please note, that pitch and time modifications are applied merely with the realtime processing kernel of the JAX KEY RECORDER. The recorded files always will keep the original pitch and tempo of the initial recording. This is important to know if you want to load the samples with other sampler tools afterwards. The recorded tempo and musical pitch should be remembered for each recorded or imported sample, as other sampling tools may not apply time stretching or pitch shifting automatically.

Users may also re-record the output of the JAX Key Recorder multiple times (using multiple instances)

and so create new source files from it, with even other additional effects applied - everything with realtime control. The possibilities of such chained sound modifications are endless but may require careful planning and some experimenting.

JAX KEY RECORDER will not be implemented as an instrument ever, because it needs audio input, which is not available with AudioUnit instruments.

The unit will also not generate any MIDI out signals but may receive certain MIDI controllers, next to MIDI note and controller messages.

We even implemented an internal MIDI sequencer, which is able to load MIDI files, specifically created for this unit. The demo songs of the JAX Key Recorder demonstrate such cases, where complete arrangements made out of a bunch of looped samples and performed in realtime.