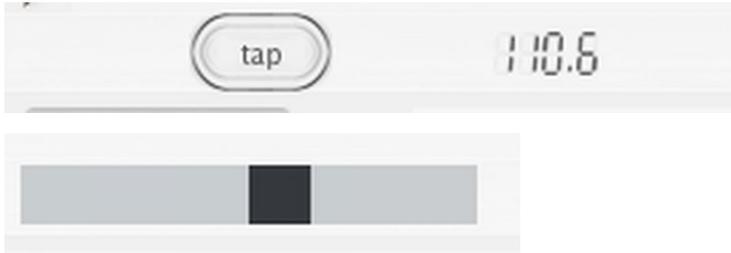# Tempo and BPM

BPM (beats per minute) can be detected by the user manually.
Select 'BPM Tap Counter' from 'Devices' menu to show up the counter.
Follow song tempo by tapping 'tap' button continuously for " about 10 seconds" or more.
Display shows how balanced (similar/accurate) your tapping is in a meter.

If you need to, you can click on the BPM value and drag up/down to alter the value, such as setting a value of 110.1 to exactly 110, or double click to enter value with keyboard.
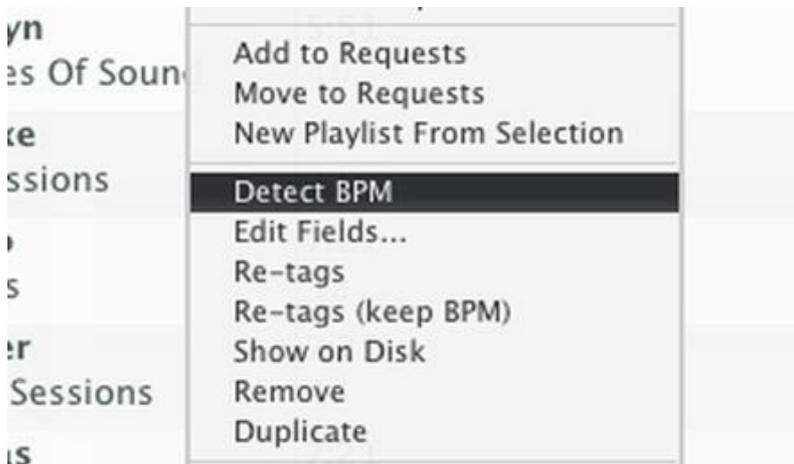
Save the BPM by clicking one of the buttons for save destination.

Keyboard shortcut for tapping can be set in Edit menu > Keyboard.

Automatic BPM detection is done when song is loaded for playback to players A–E or to the comp. This can be disabled in preferences > Tempo.

To process BPM values for several items on a list, right–click and select 'Detect BPM'.

BPM can also be detected for items by clicking the 'BPM' button in the 'Helper' buttons.

Automatic BPM detection has good accuracy for songs with clear rhythm. For songs with a lot of noise, values are less accurate or can be completely wrong.

For songs with high BPM values, auto BPM detection can give half values. For example, 190 BPM song is given as half (95 BPM). BPM values are gapped to a set minimum/maximum, set in preferences > tempo.

On the player,
Song playback tempo can be altered using 'Tempo' and 'Rate'.

Rate adjusts sampling rate (tempo and frequency).
Tempo keeps pitch (frequency) mostly unaffected.
Both can be used at the same time.
Click 'Tempo, Rate, Pitch' display to toggle slider mode for that feature.
'Pitch' alters the pitch keeping tempo unaffected.
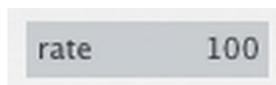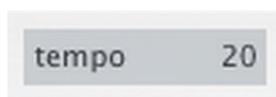
Click the right side of that display to change the range of the slider.
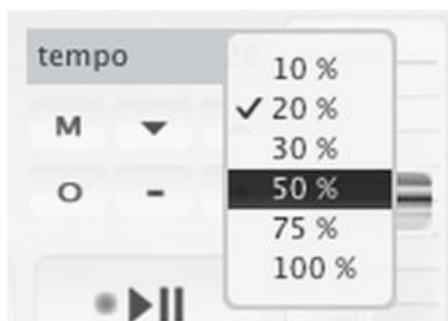
Right-click 'Tempo' to show a menu:
Different processor type can be set for slowing down and for speeding up tempo. Select 'Edit Both' to use same processor for both.
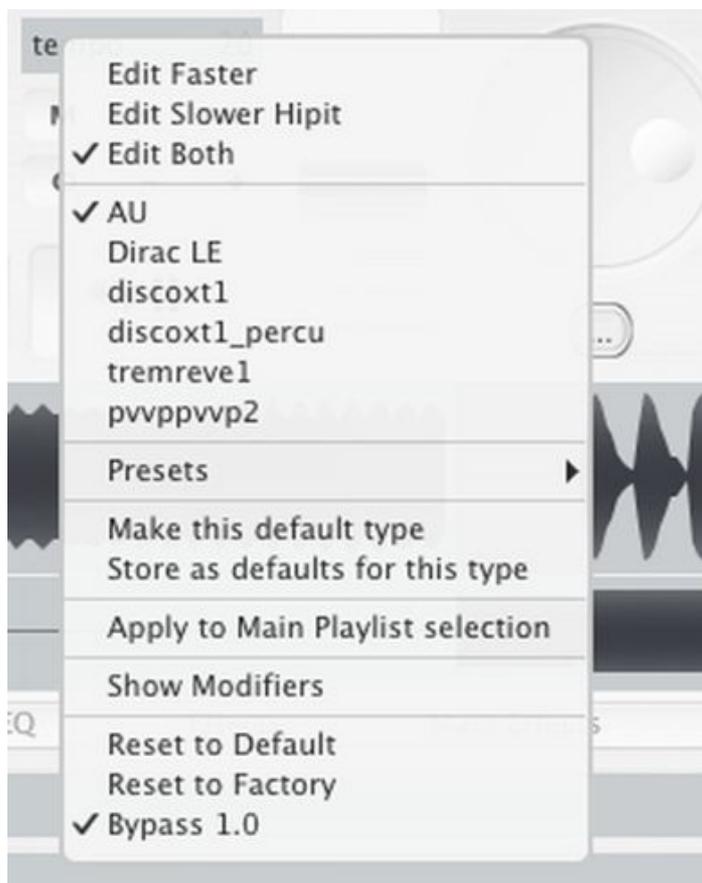
Tempo processors

'Dirac LE' uses Dirac LE library (www.dspdimension.com) with this mode, output is mono (both channels mixed together) unless tempo is set to +/- 0 % and 'Bypass 1.0' is enabled. Tempo can not be set lower than -50% with this mode.

'Disco XT1' tempo processor type with moderate quality, which should be usable for many kinds of material. Default modifier settings are for slight +/- 15 % adjust.

'AU' is Audio Unit processor included with Mac OS X (default on Mac).

'Tremreve1' is a reverb / tremolo effect type processor for some specific uses and for special effect use.

'PVVPPV2' is a frequency-domain processor for non-rhythmic material and for special effect use.

'AU' and 'pvvppvvp2' are most CPU-intensive and might cause playback interruptions if computer is not fast enough to process in realtime (such as several songs playing at the same time with these tempo processors).

'Show Modifiers' opens an editor below the player with 8 sliders and 2 buttons to alter the sound/preferences of the current tempo processor. These may be used to alter the sound of the tempo processor (such as lot of slowing down or for specific material) or for special effect parameter use in realtime.

'AU' and 'Dirac LE' have no modifiers at all.

Modifiers for tempo processor 'discoxt1'

If you have altered the modifier controls there is a preset system available in this menu:
From 'Presets' click 'Save' to save the current setup as a preset, any existing preset with the same name is replaced.

'Make this default type' sets the current tempo processor as a default, if you then load another song and adjust the tempo it uses this same processor.

'Store as defaults for this type' sets altered modifier controls as default for that tempo processor type, so selecting the processor type from this menu (such as 'Disco XT1' uses these modifiers instead of the "factory" modifiers'. The factory modifiers may be restored with 'Reset to Factory' option.

Tip: Audio output of tempo/effect processing may be recorded with 'Record' audio output function and then pasted back to the main playlist as a rendered new item.
After recording, click 'Record' to stop recording and select 'Add to Main Playlist' or select 'Add to 'Deck _____ '
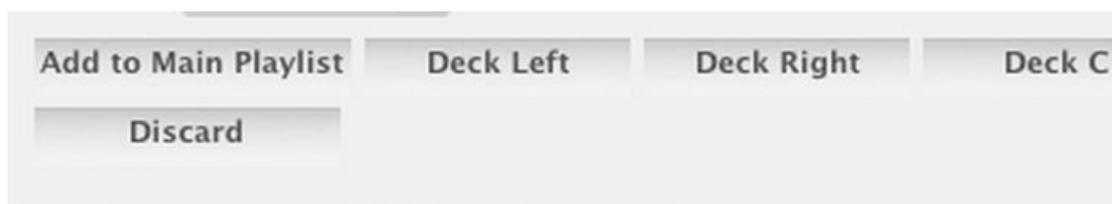
Option for recorded audio in the 'Recorded Audio' window.

Adjusting tempo, rate, pitch of multiple items on the main playlist

Adjust rate, tempo, pitch (and possibly tempo modifiers) in the player for one song.
Then select items you wish to apply for on the main playlist.
Then right click 'Tempo' and from the menu select 'Apply to Main Playlist Selection'.

If 'Apply as BPM?' question is asked, it means to whether set all songs to same BPM (such as 120) or to same percent, such as +35 %.

When 'Bypass 1.0' is checked, audio does not go through the tempo processor at idle (no change in tempo or pitch). This reduces CPU usage and does not cause any change in audio quality of the audio file, as all of the tempo processors have some amount of artifacts audible in the processed audio.

Right-click tempo slider to reset tempo to +/- 0%. (or right-click 'O' button).

'M' button matches tempo of deck A/B to the opposite B/A. Clicking this button several times allows to match the tempo with halves/doubles.
Such as BPM of 80 also matches 20, 40, 160, 320...

Right click 'M' button for more choices, such as syncing to decks C,D,E and syncing to loops.
Loop syncing only has effect when both of the decks are looped with looping controls.
Loop syncing is available as loop length 1x, looplength 2x, halve etc.
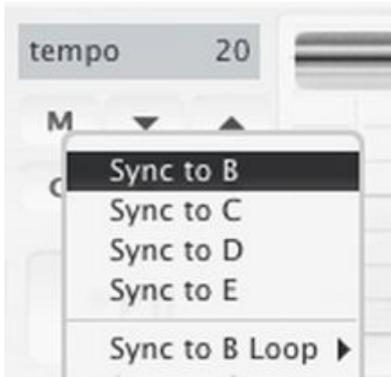
BPM values on the mixer may be clicked and dragged or up or down to alter the value, or double-clicked to enter a value with keyboard.

Percent displays on decks may be double-clicked to enter a value with keyboard.