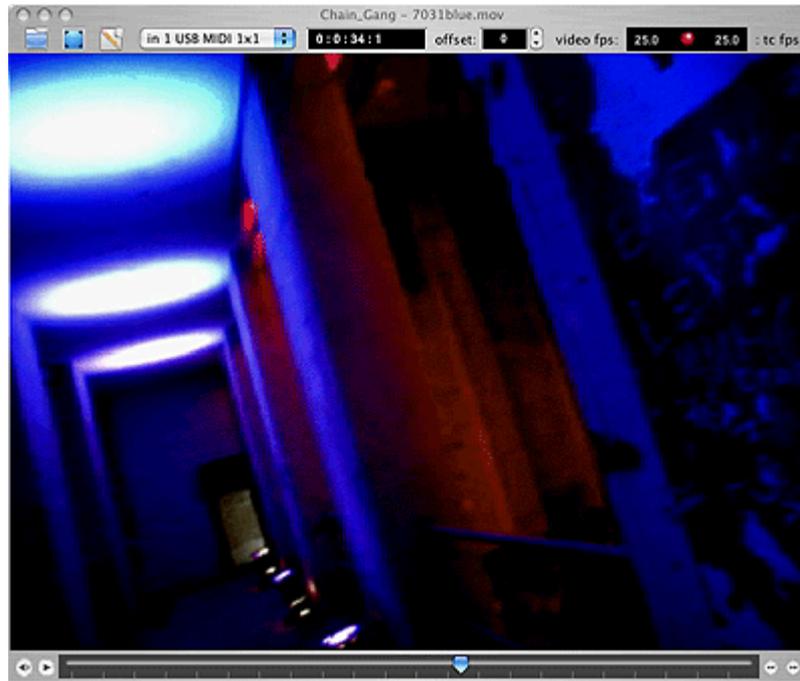


## ChainGang



### Installation:

Please refer to the the separate document named „ReadMe\_Installation.pdf“ in the download.

### Contents

1. Operation
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  - Recent file history
4. Video formats
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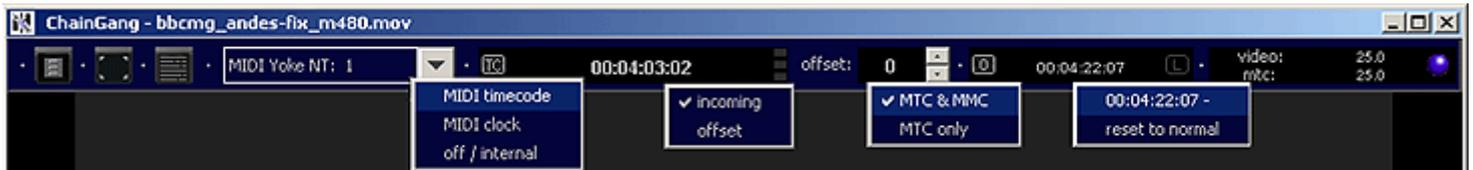
## Operation:

ChainGang's purpose is plain and simple: play Quicktime movies synchronous to incoming MIDI timecode (MTC) and there is not much to be done to achieve it: When first run, ChainGang will pop up a file dialog and prompt you for a Quicktime movie file prior to showing any windows. When the movie is loaded, the application's main window as shown above will open. After selecting a MIDI input port from the popup ChainGang is ready to operate. Send it MIDI Timecode and the movie will follow.

Besides MIDI timecode ChainGang can also work with MIDI Clock. This is not really recommended as it is by far less accurate and especially problematic on loops as most sequencers do not send any SongPositionPointers or the like on loop points when outputting MIDI Clock. This option is basically just here, because a popular sequencer that also comes from Berlin does not offer MIDI Timecode output.

ChainGang will store all its parameters internally and restart in the way it was last shut down. If you want to put setups aside, you can save and load them from the configuration dialog.

## Interface:



Most things that one will need direct access to on normal operation are available on ChainGang's upper toolbar:

The three buttons on the window's top left are the main operating handles:

The first one opens a filebrowser to select a new movie, the second starts fullscreen mode (double-clicking into the video and ctrl-F do the same) and the third pops up a dialog, that allows to edit program parameters in depth (see below).

Besides those buttons the upper toolbar lets you select the program's Midi input port, holds a timecode display that also informs you about the current sync mode and incoming special MIDI data (see tooltips), a spinner box to set frameoffset a display to set and select virtual 0 frames plus another display field that shows the movie's framerate and the framerate of the incoming timecode. The red light next to those will turn green / blue when these rates match.

Some of the elements in the toolbar have additional popup menus, that show when you click the component:

The sync-mode icon lets you select whether ChainGang syncs to Midi Timecode, Midi Clock or no external source at all.

The timecode display can be set to show either incoming timecode or the current movie's position. This option is also – though separately - available for the optional bigger onscreen timecode displays. By default the upper time display shows incoming timecode, while the onscreen displays show movie position.

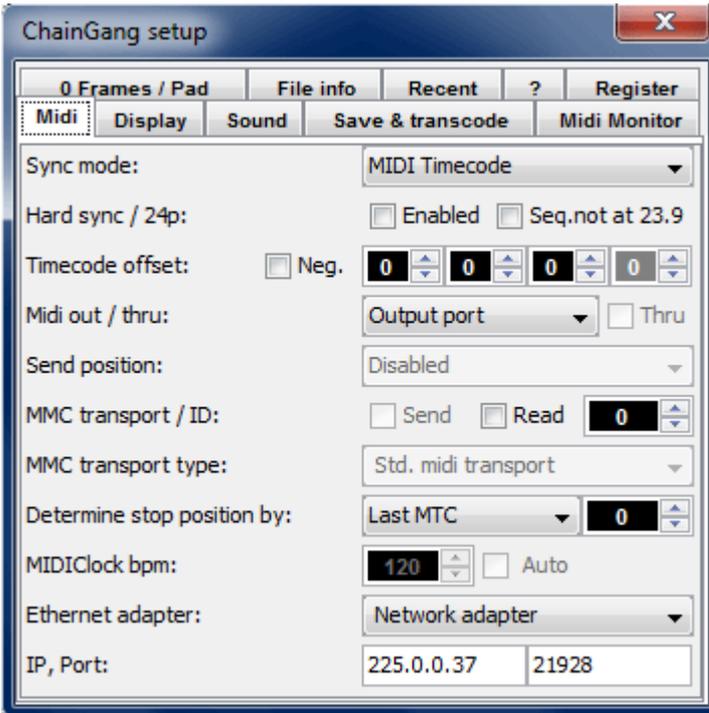
The frameoffset spinner box's popup let's you route frameoffset to either both MidiTimecode and MidiMachineControl scrubbing commands or to Timecode only.

Finally the 0 frame display will bring up a popup that holds all stored 0 frames and lets you activate them.

Underneath the movie, you will find some standard movie controls. These are deactivated when the program receives MTC or MIDI Clock. When no timecode is received you can use these to just watch the movie or to search to certain frames. ChainGang can optionally output MIDI reflecting manual operations on these elements to control the master sequencer - in MIDI timecode mode, the seekbar and stepbuttons send SysEx FullFrame or MMC positioning messages. In MIDI Clock mode they send Song Position Pointers.

## Options:

To set additional parameters click the third button on the upper toolbar and edit the program's preferences:



**Sync mode:** Select between MTC and MIDIClock syncmodes. Can also be done from main window's timecode display.

**Hard sync:** Enable framestepping mode for MTC sync. Slightly more responsive, but may result in weaker video performance and image jitter and limits ChainGang to 1 audiotrack.

**Seq. not at 23.9:** When working with 24p movies and a sequencer that does not have a 23.976fps option check this.

**Timecode offset:** Offset the time ChainGang refers to as zero by hours, minutes and seconds. Frames may also be set in main window.

**Midi out / thru:** Select MIDI out port and enable MIDI through.

**Send position:** Make manual seeks on the control bar output the movie's time value as a standard FullFrame or MMC positioning SysEx message to eventually reposition the sequencer from the video slave.

**MMC transport / ID:** Send and/or read MMC transport commands and set MMC ID.

**MMC transport type:** Select between std. start/stop/continue or SysEx messages. Transport type also allows to setup for MMC loop operation. See \*.

**Determine stop position:** Sets which MIDI message ChainGang will use to calculate the stop position when the sequencer stops. See \*\*

**MIDIClock bpm:** When working with MidiClock you may tell ChainGang about your sequencer's tempo or have it calculate it from incoming clock signals

**Ethernet adapter / IP, Port:** Configures the generic ethernet MIDI receiver. The default settings should meet ipMIDI line 1, but you need to select the interface hardware via which the computer is physically connected to the network.

\* In an MMC loop setup, the sequencer sends start & stop commands and ChainGang returns timecode, which the sequencer then synchronizes to. A detailed setup instruction can be found at the end of this document.

\*\* As all Sequencers behave different when pausing or stopping playback, you may need to tune ChainGang to your setup. This is discussed in more detail on page 5 ff.



Enable onscreen timecode and choose between java and Quicktime mode. See \*\*\*. Optionally force dropframe display for 29.97 fps files.

Fontsize of the timecode

-Timecode display options (keying is only available for in picture (QT) timecode).

-Select the display for fullscreen mode. The default setting will make ChainGang go fullscreen on the screen it is currently placed on. Also see \*\*\*\*\*

-Make Chaingang automatically start in fullscreen mode.

Enable free scaling to fill screen. This may degrate performance, so you can reject it here.

Show video in a minimal always-on-top window. See\*\*\*\*\*

-loop movie when ChainGang acts as player (no effect in slave mode)

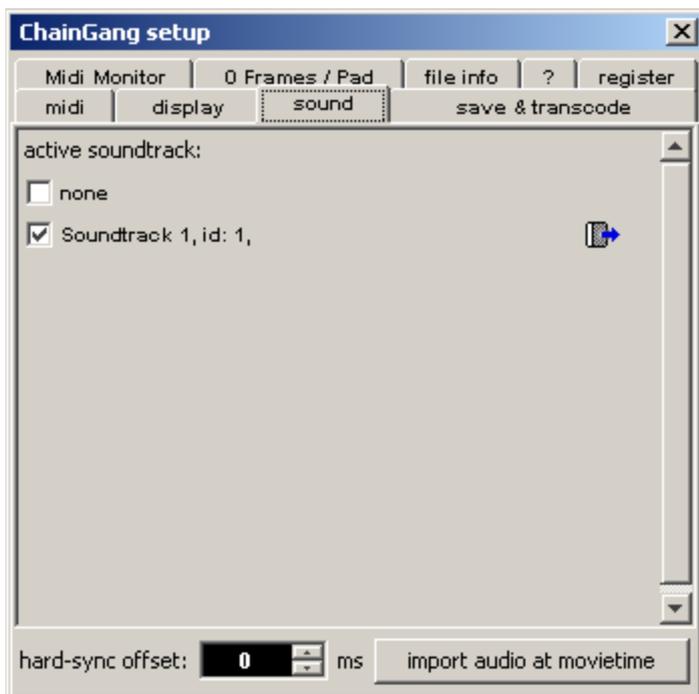
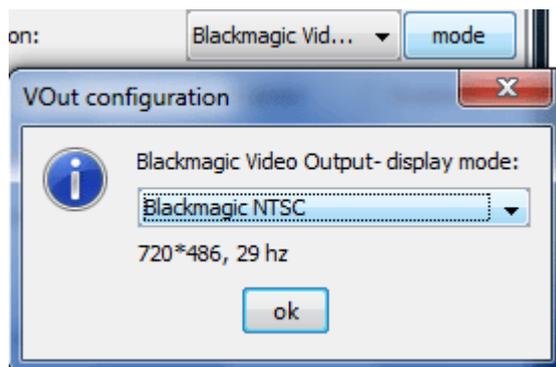
- amount of dynamical framedropping when scrubbing backwards. You may want to raise this for mp4 codecs like h264 etc.

\*\*\* Java timecode is displayed underneath the video. It may not be possible to do so in fullscreen mode, depending on screen resolution and video aspect ratio.

Quicktime timecode is „in picture“. It uses Quicktime Timecode Media, builds an additional movie track and in consequence forces Quicktime to do realtime compositing into the display space. This may have a serious performance hit, depending on video size and format .

\*\*\*\* This is mainly thought for cases where ChainGang and the Sequencer are both running on the same machine. The video window will remain on top even if keyboard and mouse focus are on the sequencer.

\*\*\*\*\* ChainGang supports output to Quicktime video output components on all Windows versions now. Blackmagic Design is probably the only company that ever made such components for their hardware. To play out to a Decklink board the „BlackmagicCodec.qtx“ file must be inside the QuickTime/QTSystem folder, the board must be selected for fullscreen display and set to the correct mode matching movie characteristics (Output settings in the card's control panel also effect this). When you enter Fullscreen mode, video will then be passed to the Decklink board.



ChainGang can optionally play sound with the synchronized video. By default this is disabled, assuming that the program will in first hand be used to display movies whose sound is being created on the master sequencer. If you need to hear a video's soundtrack enable it here.

Hard-sync offset: in hard-sync mode ChainGang does not „play“ the movie, but rather performs framestepping along with incoming timecode. Regular Quicktime soundplayback is disabled in that case and ChainGang has to continously sample and replay parts of the selected soundtrack. This may – largely depending on hardware – affect the AV Sync, so you can offset the audio to video here.

On Mac OS X there is an additional samplerate adjustment control, as sampling a movie's audio at its original rate offen leads to sync loss over time there. After adjusting this, you need to restart the audio scrubber – toggle hard-sync off/on using the numpad \* key.

In general you might be better off extracting a movie's audio and running it in your sequencer, rather than letting ChainGang play it in hard-sync mode.

Import audio at movietime: This lets you import any Quicktime compatible audio file at the current playback position. Together with the save & export functionality described below, you can thus quickly combine finished soundtracks and the movie to a single file in a multitude of formats.

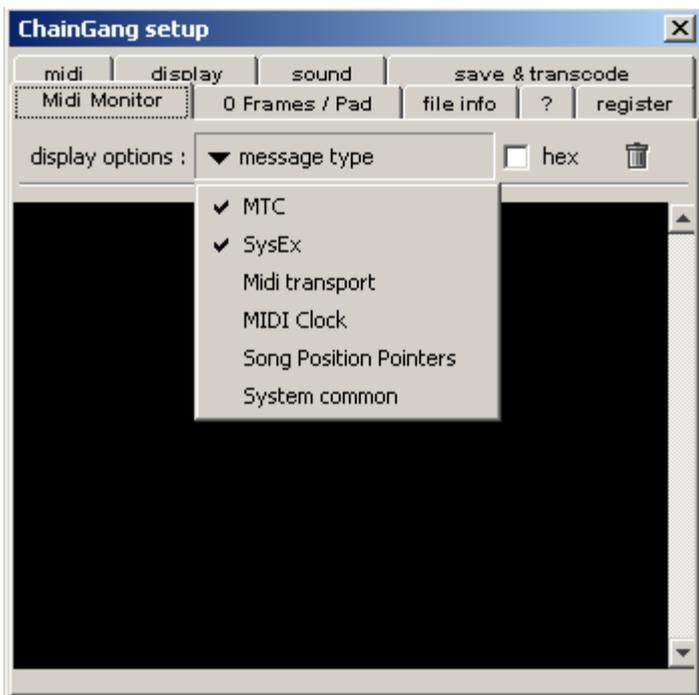


Save and restore ChainGang's current settings including loaded movie, MIDI port, zeroframes, offsets etc. The last state of the program will always be automatically saved and restored on startup without the need for user interaction.

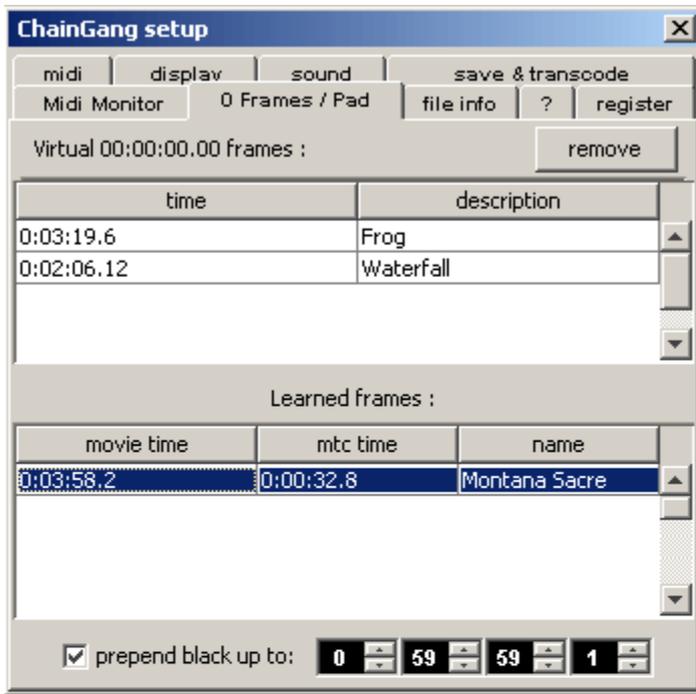
Saves the loaded movie and all changes made to it (like importing sound). Self-contained means: all data will be copied to the selected .mov file. If this is off, ChainGang will save a reference movie, that only holds links to the media it assembles.

This lets you format convert the loaded movie. You will be prompted with a standard Quicktime export dialog, giving you all the options Quicktime has to offer on export.

When QT-onscreen timecode is active, ChainGang will burn in the timecode on transcoding. (also see notes on timecode below).

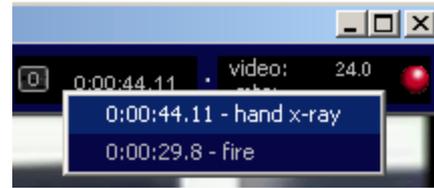


The MIDI monitor page allows you to inspect incoming MIDI data in either decimal or hexadecimal format. The drop down menu can be used to define what message types will be displayed.



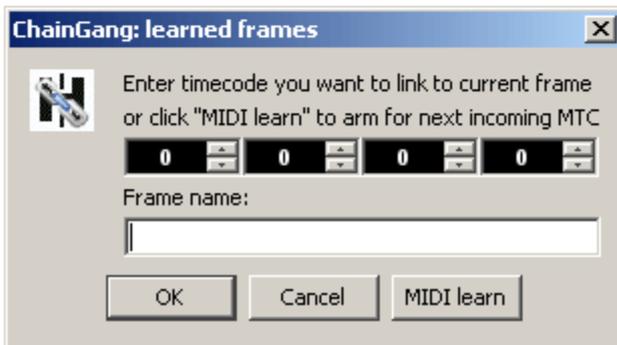
Virtual zero frames let you split your audio-work into multiple smaller projects by simply specifying any video frame as corresponding to the sequencers timecode value of 00:00:00.00.

You can set new frames by clicking onto the 0 icon in ChainGang's upper toolbar (if it is greyed out you are in learn mode - see below - In that case the first click on the 0 icon will switch modes and another click will set the zeroframe).



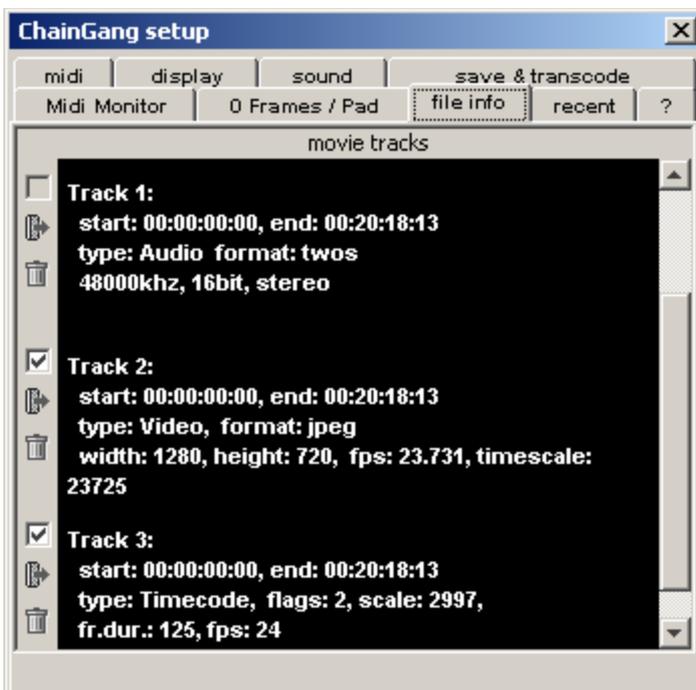
After assembling frames you select the one to be used from the popup, that shows when you click into the time display next to the 0 icon.

Learned frames on the other hand allow to map any video frame to any incoming or defineable timecode value. Activate Learn mode by clicking the greyed out L icon on the right hand side of the toolbar's zero frame display. Once in Learn mode ,another click on the L will bring up a dialog as shown on the left. Position your sequencer to any desired time, click OK on the dialog and start the sequencer. The first incoming MTC value will be stored along with the current movieFrame. Alternatively you can manually enter a TC value to link to the current frame.



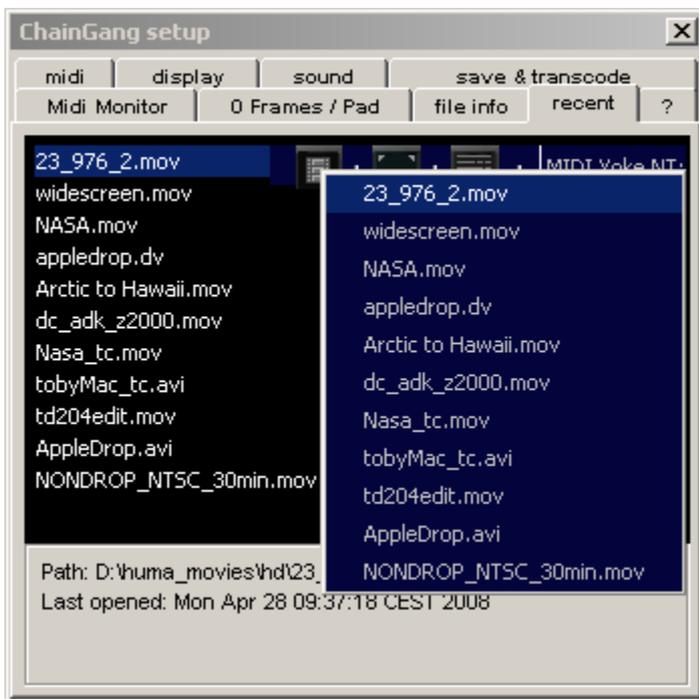
In the setup window you can name assembled learned & zero frames by double clicking into the description column and entering text. Any change in the selection will also make the movie jump to the corresponding time.

The „prepend black” option is an alternative way of offsetting. When ChainGang loads a movie with timecode track and can determine the original frametime of that movie's first frame, it will automatically pad the movie up to that frame, so that burned in timecode matches actual movietime. If necessary you can tune it here or apply the same to timecodeless movies.



The „file info” tab displays information such as compression format, framerates, dimensions etc. for a movie and its tracks.

The little icons on the left hand side are buttons, providing some „Quicktime Pro” functionality, such as extracting and deleting tracks or making timecode tracks visible in case they are authored to be invisible.



The recent file history stores the moviefles last opened including all settings made. It is accessible from either the setup window's „recent“ tab or by right clicking the „open movie“ button in the main window.

## Video Formats

Be aware that there is a close relation between your computer hardware and the maximum quality and resolution of video, that ChainGang will be able to smoothly play. If playback is jerky, you may need to transcode the video. ChainGang offers full Quicktime export functionality from the settings dialog.

An important factor for overall performance quality and frame-accuracy is the compression format of the videofile. In general it is recommendable to use compressors that do not work with intra-frame compression techniques or at least encode the video with high keyframe rates. This is especially important when you need to do a lot of scrubbing. Amongst the intraframe compressors Xvid, DivX and some other mpeg4 codecs from the avi world may be especially problematic on backwards scrubbing, mpeg 2 usually works ok, but requires a lot of horsepower. H264 HD videos may play fine, but do not expect great scrubbing performance with them.

Recommendable formats are (amongst others):

DV,  
 MotionJPEG,  
 Sorenson3,  
 Intel Indeo,  
 Apple's "Video" compressor,  
 PhotoJPEG  
 or even uncompressed video if you have the disc space and bus speed.

Formats explicitly **not** recommended:

Apple's MPEG4 codec (OK on Mac, no go on Windows)

Before transcoding, try how it goes first. Everything may just work fine with the h264 file or 3ivX mp4 or whatever else you may have.

## Timecode and frame accuracy

ChainGang will try to (longterm) sync on any MTC it receives. However to achieve frame exact sync, **you must make sure that your sequencer sends timecode with the same framerate as the video to be slaved**. See your sequencer's synchronization instructions on how to change between 24, 25, 30 and 30 dropframe timecode formats. Basic setup instructions for some popular sequencers can be found below. Also be aware that MTC can only carry those 4 framerates, you can not achieve frame exact sync for a 15fps web video. In such cases set your sequencer's framerate to an even multiple of the videoframerate if possible (like 30fps for 15fps video, 24 for a 12fps video).

Frame accuracy, especially when stopping playback, also depends on the sync mode, video codec, sequencer behaviour and the very nature of midi timecode itself.

MTC is transmitted in single byte MIDI messages, that carry fragments of a complete time value (plus SMPTE type information). It takes 8 such messages to piece together a full hh:mm:ss:ff information. Four of these single byte messages are sent per frame (that's why MTC is also referred to as „quarterframe message“). In consequence it takes two complete videoframes to update the time on the MIDI line. Given that pro audio these days works with 96+khz this

app. 100 – 120 hz system is very coarse and inaccurate in itself. Imagine now, that you hit stop somewhere roughly in the middle of such an eight message sequence...You end up with two programs estimating, what would be the time to show on displays, send to the MIDI line, etc. Naturally all programs do that a little different and there seem to be significant differences even between versions of the same sequencer. Also, some Sequencers send a clearly defined position when stopping, others do not, but just let timecode stop (or sometimes rather „roll out“). Plus it is not always guaranteed, that what a sequencer shows on its timecode displays is in sync with what went out via Midi. Add other factors like heavy non timecode Midi traffic and you get the picture...

In practise you will not get around investigating the communication between ChainGang and your sequencer a little closer on your setup and tune all parts of your system in order to get the most out of it. ChainGang 1.3 offers a number of options to adjust to sequencer behavior: In first hand you can select between the last received MTC time („last MTC“- with an adjustable „stop offset“ in videoframes ) or a SysEx message („SysEx Position“ - with an adjustable number of MTC frames to ignore after that was received) to determine the stop position.

All this may best be illustrated along some observations:

```

241 118 _____ MIDI Timecode
241 2 _____ MIDI Timecode
241 16 _____ MIDI Timecode
241 32 _____ MIDI Timecode
241 51 _____ MIDI Timecode
241 64 _____ MIDI Timecode
241 80 _____ MIDI Timecode
241 96 _____ MIDI Timecode
240 127 127 1 1 96 0 48 3 247 SysEx: std. full frame

```

**Cubase Studio 4** sends a SysEx full-frame message on stop and is in the vast majority of cases perfectly in sync with what it shows on its time displays and sends out to the MIDI line. Same goes for MTC. All in all Studio 4 is pretty accurate in sync terms and when using SysEx to determine the stop position, ChainGang and Studio 4 are perfectly frame-accurate without further adjustments. With MTC there still is a little „interpretation tolerance“.

```

zeitanzeige
00:00:14:13
241 112 _____ MIDI Timecode
241 13 _____ MIDI Timecode
241 16 _____ MIDI Timecode
241 46 _____ MIDI Timecode
241 48 _____ MIDI Timecode
240 127 127 1 1 0 0 14 14 247 SysEx: std. full frame

```

**Cubase SL 3** behaves much like Studio 4, with the exception that scrubbing resolution on the transport bar is higher and in 40-50 % of cases the SysEx command sent out to the midi line is one frame ahead of what is shown in the sequencer's time display.

In the example shown, ChainGang would be one frame ahead of Cubase when relying on SysEx and likely also with MTC, as 4 nibbles of timecode (equivalent to 1 frame) have passed since the frame field has been updated to „13“.

This can be worked against by selecting „last MTC“ and a stop offset of -1 to determine the stop position. Unfortunately SL3 does not always behave the same. So the -1 offset may sometimes also lead to ChainGang being „late“, i.e „off“ into negative.

```

241 64 _____ MIDI Timecode
241 80 _____ MIDI Timecode
241 97 _____ MIDI Timecode
241 112 _____ MIDI Timecode
241 8 _____ MIDI Timecode
241 16 _____ MIDI Timecode
240 127 127 1 1 1 0 16 8 247 SysEx: std. full frame
241 32 _____ MIDI Timecode
241 49 _____ MIDI Timecode
241 64 _____ MIDI Timecode
241 80 _____ MIDI Timecode
241 97 _____ MIDI Timecode
241 112 _____ MIDI Timecode
241 10 _____ MIDI Timecode

```

**Nuendo 3** for Windows behaves accurate like Cubase 4. **Nuendo 3.2. for Mac OS X** on the other hand sends a full-frame message on stop plus some additional freewheeling quarterframe messages, resulting in the last time „visible“ to ChainGang being at least one frame ahead of what Nuendo shows on its time display.

In the example shown Nuendo / Mac displays 1:00:16:08 (the time of the SysEx command) while ChainGang – without tuneing - already is at 1:00:16:09. Note that Nuendo already sent the first quarterframe message for the next full time (241 10).

In this case one should use „SysEx position“ for the stop determinator and adjust the number of quarterframe spill to ignore to at least 2 (2 videoframes -> 8 quarterframe messages).

**Cubase SX 2** acts pretty much similiar to Nuendo 3 for Mac, with the difference that it sends 2 SysEx messages that are sometimes 1, mostly 2 frames off from SX's display plus it sends even more additional freewheeling MTC (at leasttwo, mostly four full frames, i.e. 8-16 quarterframe messages) after the SysEx commands. Also SX 2's timecode is often not fully in sync with its display. This sequencer may not be the best of choices for a sync master.

```

241 64 _____MIDI Timecode
241 80 _____MIDI Timecode
241 97 _____MIDI Timecode
241 112 _____MIDI Timecode
241 4 _____MIDI Timecode
241 16 _____MIDI Timecode
241 32 _____MIDI Timecode
241 49 _____MIDI Timecode
241 64 _____MIDI Timecode
241 80 _____MIDI Timecode

```

**Logic Pro 7** does not send any additional SysEx on stop and it tends to increase the displayed time earlier than the time sent out via midi (i.e. resulting in ChainGang eventually being 1 frame late). The example shown has Logic displaying 01:00:16:06 while ChainGang still is at 01:00:16:05. Using „last MTC“ and a +1 stop offset may help. Logic Express 7 may additionally send some freewheeling mtc after it has stopped.

What does this all mean? Well, as there is no fix connection between the two machines, one has to live with a little tolerance in interpreting timecode when using a sequencer that does not send a clear signal as a stop indicator or obscures the clear signal by freewheeling MTC that is send after it. In the end, being one frame off must not be ChainGang's fault alone. At least things seem to be improving with rising version numbers in all programs involved.

If you do not trust ChainGang's MidiMonitor, you may want to verify the above observations with a utility like MidiOX.

### Sync Modes

ChainGang's sync modes have an additional – though mostly cosmetic – influence: When hardsync mode is disabled, ChainGang may seemingly „keep playing for a while“ when you stop the sequencer. This is because it will need a moment (roughly 100ms) to be sure that no more timecode is coming in (unless you also send MMC Stop - 0xF0 0x7F 0x7 0x06 0x01 0xF7 - or Midi Stop– Midi status byte 0xFC / 252 - commands). In consequence you will see it reset a couple of frames to the last received timecode value (or SysEx position) after that. In hard-sync mode this does not happen, but you still have to take the interpretation tolerances described above into account.

### Sync and video codecs

Video codecs may influence frame accuracy by the way they reduce data on compression. MPEG codecs use Keyframes, Intermediate frames (that only store differences to previous pictures) and possibly P-Frames that allow to do certain predictions on following images. Additionally more and more video codecs work with frame reordering and / or variable framerates, so that no extra frame is encoded, when the visual information does not change. In consequence it may be very hard, sometimes impossible for a video engine to show a certain picture without the information from a keyframe that may be located several seconds in the past. So to make sure every frame is immediately accessible, use keyframe only formats. Also beware of the onscreen QT Timecode with MPEG formats. If you want timecode in picture and still need mpeg for reasons of filesize <> image quality ratio, ask the videohouse to burn in timecode BEFORE compressing.

### ChainGang keyboard commands: (replace „Ctrl“ by „Apple“ key on the Mac)

Ctrl + O: open new movie  
 Ctrl + F: toggle fullscreen  
 Ctrl + , : open setup window  
 Ctrl + L: enter offset learn mode  
 Ctrl + M: mute / unmute enabled audio tracks.  
 Shift + Ctrl + M: toggle midi active  
 Ctrl + B: toggle minimalGUI, (Ctrl. + Alt + B for half size)  
 Ctrl + T: toggle timecode display visibility  
 Ctrl + I : show file information  
 Ctrl + Q: quit

ESC: exit fullscreen; close setup window

Spacebar: start / stop  
 left / right arrow keys: framestep  
 Alt + left / right arrow keys: go ot beginning / end  
 Ctrl + left / right arrow keys: fast bwd / fwd (while pressed)  
 up / down arrow keys: volume

Numpad Enter: play  
 Numpad 0: stop  
 Numpad 1: go to zeroframe  
 Numpad 2: go to movie end  
 Numpad , : go to 0  
 Numpad +: play fast forward (press again to proceed at normal rate)  
 Numpad - : play fast backward ( " )

Numpad / : toggle loop (player only)  
Numpad \*: toggle hard-sync  
1 - 0 : locate zeroframes 1 - 10 (alt & 1 -10 activates selected zeroframe)  
(Image) up / down : fast step through movie by percent

## Other

Some media formats require that ChainGang builds intermediate files in order to sync them to MTC. You may therefore notice some additional movie & sound files in your working directory (the one you opened a movie from) while ChainGang is up. These files will be deleted when ChainGang shuts down. Do not remove them while the program is running. File formats that require said operations include raw DV Streams and any compressed audio format that is set to be the active sound track in hard-sync mode. While DV is just wrapped into a temporary Quicktime movie, compressed audio will be reexported to uncompressed PCM data. While this export is underway a standard progress display is shown. ChainGang 1.3 will no longer delete those PCM sound files on exit, but reuse them on the next run. It will however delete them when you disable audio by setting the active sound track to „none“ or load a new movie.

## Known issues

h264 video and onscreen QT timecode may freeze ChainGang after a while on Windows and non-Intel Macs. ChainGang will warn about that before activating QT timecode tracks for avc movies.

On Windows Vista, moving ChainGang offscreen while it is playing will crash the app with Quicktime versions < 7.3. This remains to be an issue with avc video on Vista and Windows7 and later Quicktime versions. Quicktime for java has serious problems with h264 not fitting or leaving the screen.

Using ipMidi as a MIDI input on Windows may lead to ChainGang hanging on shutdown. As a workaround, do not install ipMidi on the ChainGang machine, but use ChainGang's „Generic ethernet“ input instead. With the default IP and port settings this should directly work with Sequencers sending to „Ethernet Midi 1“ after you selected the ethernet interface on the „Midi“ tab of ChainGang's setup window.

Mac OS X: - trying to export to DivX will crash ChainGang.  
- mouse-wheel scrubbing does not work on the movie display.  
- The display will occasionally go grey after the setup dialog has been shown or hidden.  
- Quicktime for Java appears to be incompatible with „Spaces“, leading to crashes when leaving fullscreen mode on secondary displays.

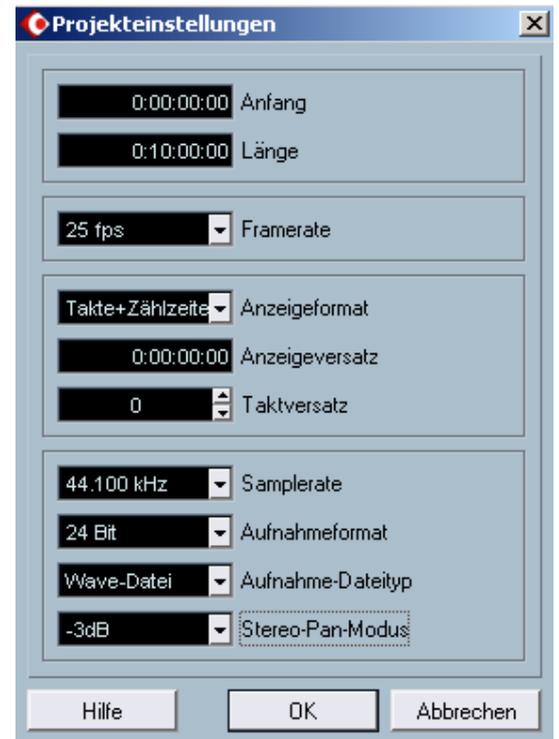
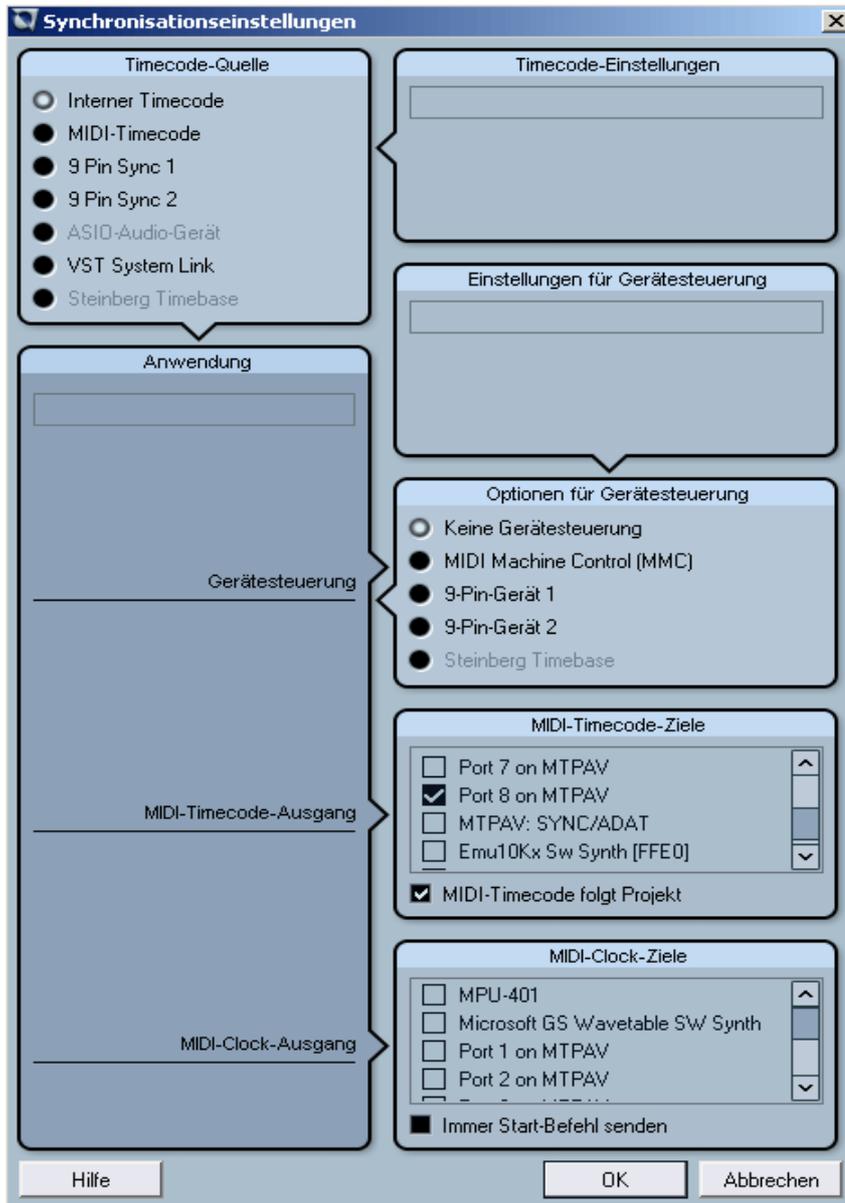
## Links

ipMidi & loopBe - <http://www.nerds.de>  
MidiYoke & MidiOX - <http://www.midiox.com>  
MidiOverLan - [http://www.musiclab.com/products/rpl\\_info.htm](http://www.musiclab.com/products/rpl_info.htm)  
Midi2Net - [http://www.tobybear.de/p\\_midibag.html](http://www.tobybear.de/p_midibag.html)

Java - <http://www.java.com/en/download/manual.jsp>  
Quicktime - <http://www.apple.com/quicktime/download/> (We strongly recommend to use the standalone installer w/o iTunes)

## Sequencer settings:

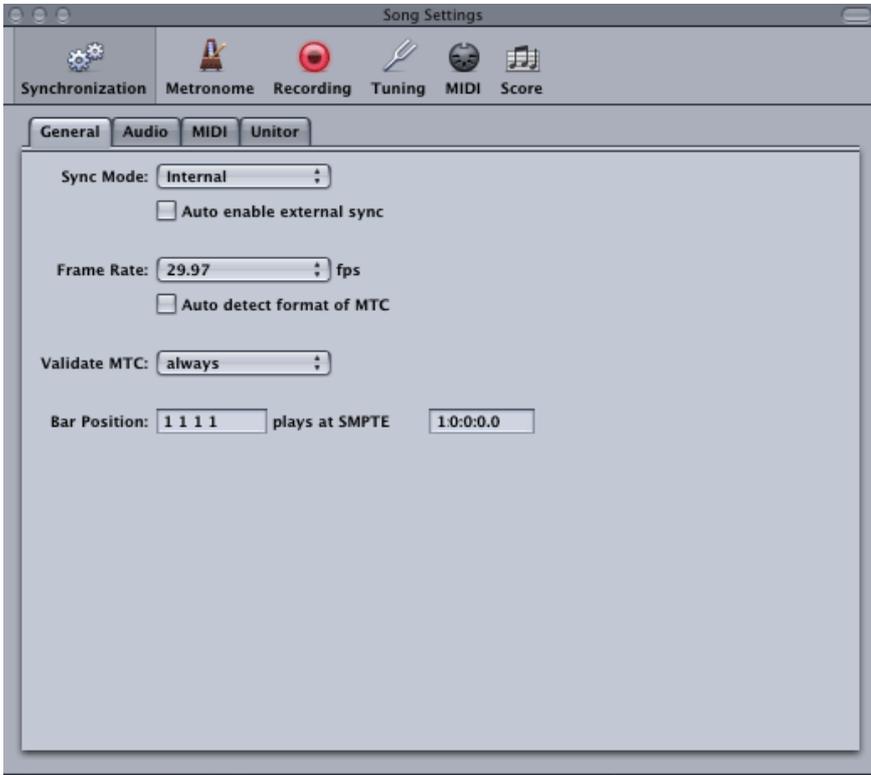
## Nuendo / Cubase SX, SL, Studio:



First: go to "Transport / Synchronization", select a MIDI out port for Midi Timecode transmission as shown on the left. Also make sure, that the "MIDI Timecode follows project" checkbox is checked (This is only available in versions 3 & greater, all previous versions will not reset MTC on loop points but send continuous values)

You do not need to send ChainGang MIDI Machine Control. If you need it for other devices unselect the "read MMC" checkbox in ChainGang's setup dialog. Second: Go to "Project / Projectsettings" and make sure that the values for SMPTE start and length lie within the length of the movie you want to sync. Alternatively you can adjust ChainGang's absolute offset to meet the settings made here. Also make sure that the project's SMPTE framerate matches the framerate of your video in this dialog. With all these settings done, ChainGang will follow Nuendo's playback by reading MTC. Setting the playback position in Nuendo's /Cubase's Arrange window sends Standard Fullframe SysEx messages which ChainGang reads without further preparations. With Cubase SX and Nuendo ChainGang will also follow when you operate the scrubbing controls on the sequencers' transport bar

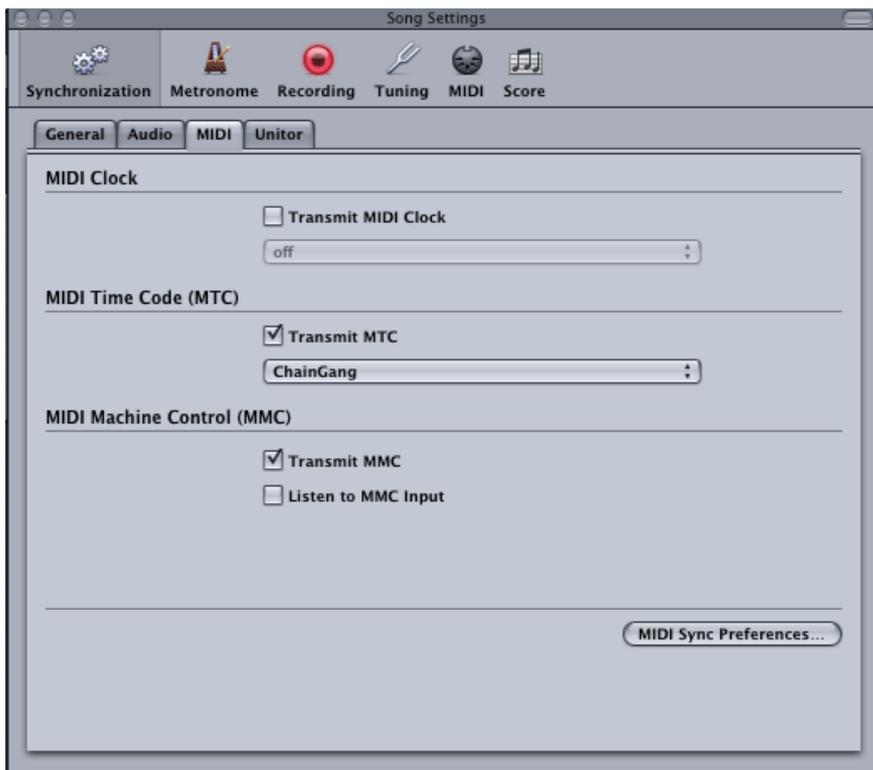
# Logic



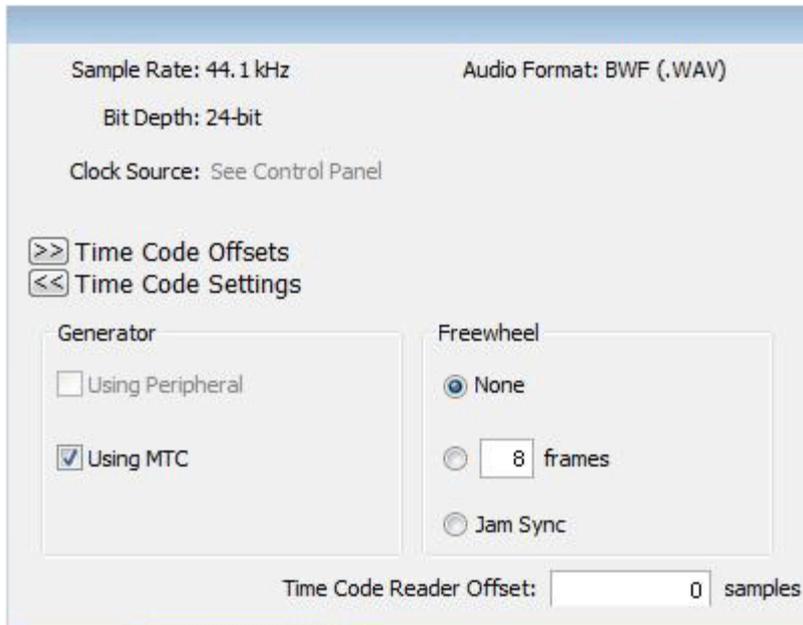
In Logic go to Song Settings / Synchronization, make sure that the "Bar Position ... plays at SMPTE ..." settings under the "General" tab fall inside your movie length (the default setting is: Bar 1.1.1.1 plays at 1 hour of timecode, which goes well with most TV work where video comes with burned in timecode mostly also offset to 1 hour, but may be confusing with other video files, take care!) . Alternatively adjust ChainGang's absolute offset in the settings window. Under the MIDI tab enable send MTC and route it to the MIDport ChainGang is connected to.

For scrubbing check the „Transmit MMC“ checkbox and make sure that „Auto enable external sync“ on the „General“ tab is switched off (You only set this active for MMC loop setups with Logic being the slave and ChainGang the master).

With these options set, Logic outputs MTC during playback (with proper loop behaviour) and ChainGang will follow. Setting the Song position in the main arrange window by clicking into the lower third of the Bar ruler will output MMC positioning commands or Song Position Pointers when „transmit Midi Clock“ is activated (which it should better be not). ChainGang reads both, but for Song Position Pointers you need to tell it, what tempo your logic project is running in (bpm).

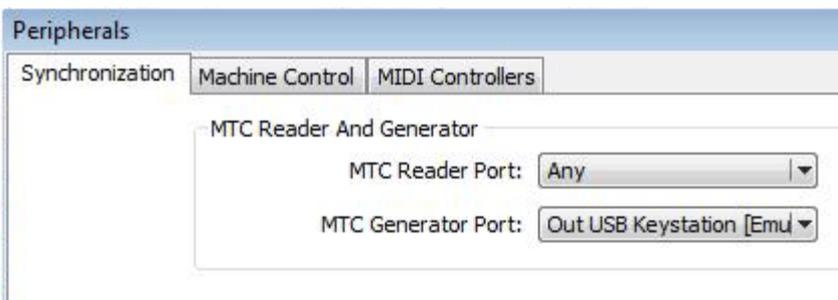


## ProTools

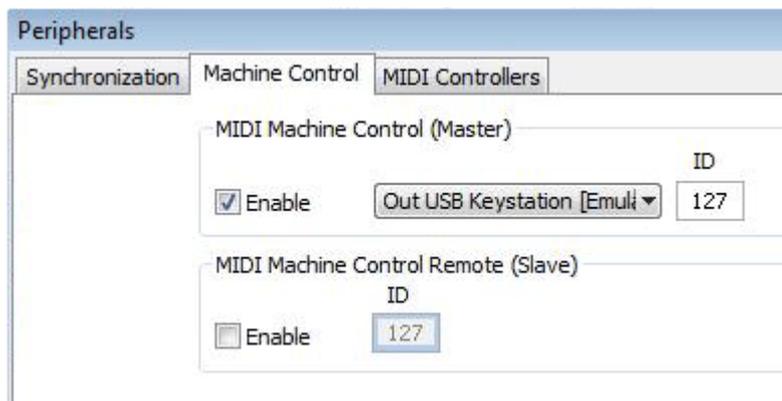


The most pro program requires the most settings to be made...

First go to Options/Session, expand the „Time Code Settings“ and check the „Using MTC“ box. „Freewheel“ settings may need some adjustments in reference to the „stop offset“ discussion from point 5 of this manual. No changes to this should be required to get things going in general.



Second: Go to "Options /Peripherals/Synchronization" and select the MIDI port ChainGang is connected to under „MTC Generator Port“

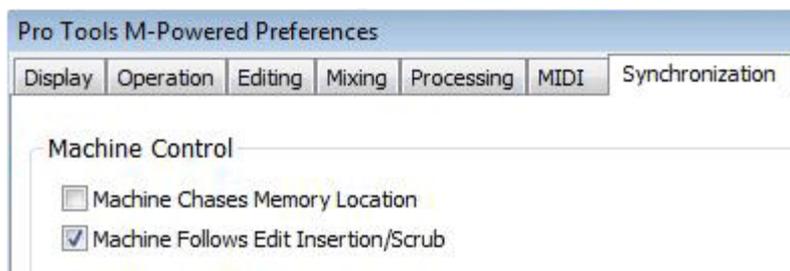


Third: Go to "Options/Peripherals/MachineControl" enable the „Midi Machine Control (Master)“ options and equally select the MIDI port that is wired up to ChainGang.

Finally go to „Options/Preferences/Synchronisation“ and check the „Machine follows Edit Insertion Scrub“ box.

With these settings made, ProTools will send regular MIDI Timecode during playback and the loudspeaker tool will send Midi Machine Control position commands when you scrub through an audio track.

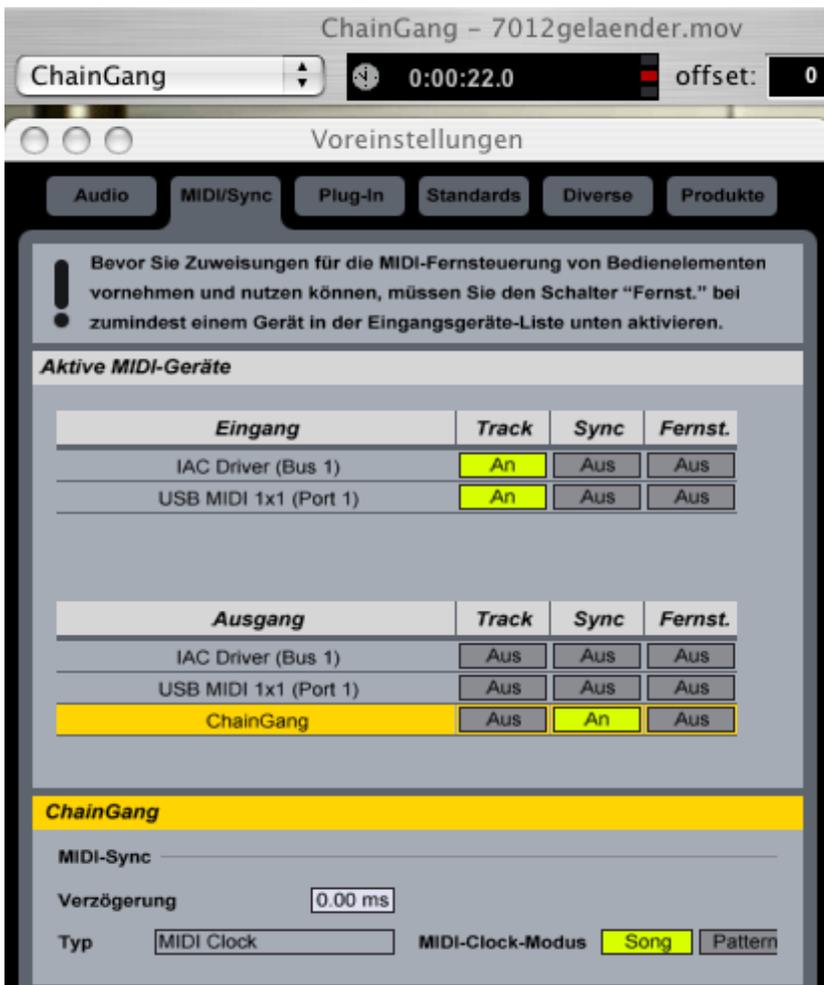
Please note, that ProTools for whatever reason does not loop MTC when playing back parts of a session in a loop, but just keeps it running. The concept behind this is not yet clear (i.e. probably too professional) to us...



## Ableton Live



Live unfortunately does not have any MIDI Timecode capabilities on the output side. So to use ChainGang with Live without involving external synchronizers you are bound to MIDI Clock mode. Go to Options / Preferences and select the MIDI/Sync tab. Select the Midi out port ChainGang is connected to. This will make the sync options change to output. There is currently no other choice then MIDI Clock here, but you should make sure that the mode switch is set to "Song", which will make Live output Song Position Pointers when you change the playback position on the timeline. Like most other sequencers Live does not send Song Position Pointers when in loop mode and jumping back to loop start. In ChainGang set the sync mode to MIDI Clock and enter the bpm speed of your Live project in the setup's "MIDI tab".

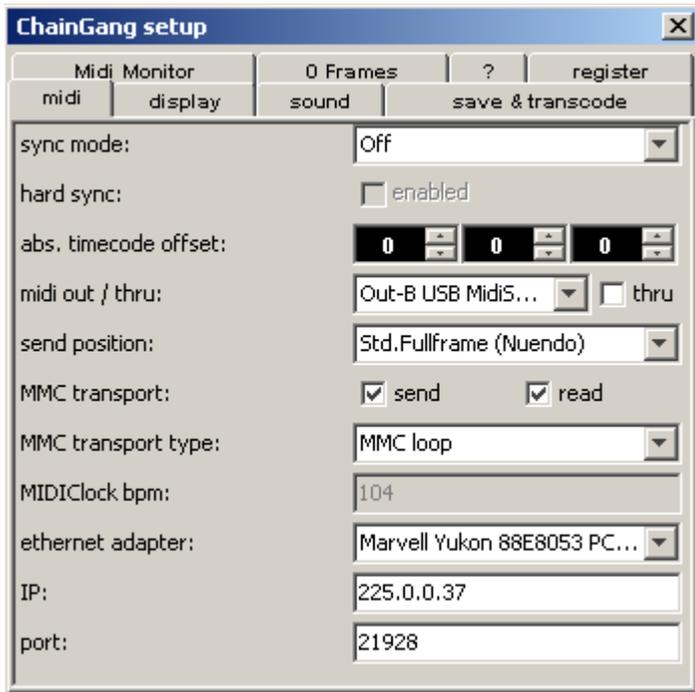


Special note concerning ChainGang Mac: When running ChainGang on the same machine as Live (or any other Sequencer, though that is unlikely as you would probably use the build in videoplayer then) you can use the virtual MIDI endpoint that ChainGang provides. Set the MIDIport popup in ChainGang to the "ChainGang" entry and activate sync for that output in Live's MIDI preferences. Remember to set ChainGang to MIDI Clock mode! ChainGang will also see virtual sources that other applications may provide. So you can also sync both Live and ChainGang to that third party application (for example that little "MIDI Clock" program). Almost similiar functionality can be achieved on Windows by using the "MIDI Yoke" or "LoopBee" virtual MIDI subsystems or one of the available MIDI over LAN solutions.

This document will never be able to cover all the sequencers out there. So, instead of trying, here's some additional sync-related links (if you have others feel free to let us know, so we can include them here):

**SONAR:** [http://www.tweakheadz.com/sync\\_mmc\\_mtc\\_smpte.htm](http://www.tweakheadz.com/sync_mmc_mtc_smpte.htm)

## MMC loop operation



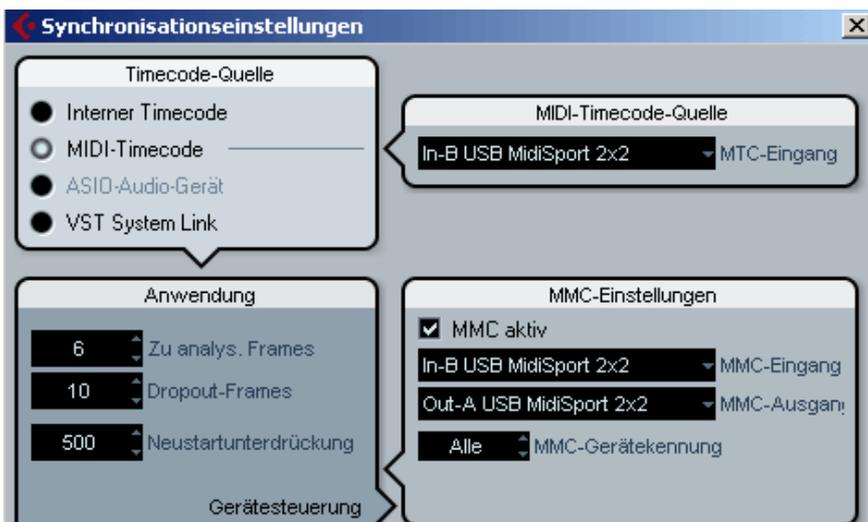
ChainGang 1.3 introduces the ability to act as a timecode master in MidiMachineControl loop setups: In this mode of operation the sequencer sends SysEx start and stop commands and then waits for incoming timecode to sync to.

ChainGang will need some additional headroom for this. On weaker machines the timecode it generates may have dropouts and other failures.

In order to enable mastermode, select both the „send“ and „read“ checkboxes in the MMC transport row and set the transport type dropdown menu to „MMC loop“. In turn ChainGang will set it's sync mode to „off / internal“, i.e.: it will no longer read incoming timecode, but start playback on a SysEx start command and will then continuously send the current movie position as MIDI timecode to the selected MIDI output.

Note that offset, zero- and learned frames have no effect in this mode of operation.

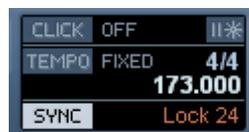
Of course, your sequencer also needs to be configured to make this work. Find in the following instructions on how to set up Cubase Studio 4. The same procedure is valid for Nuendo and other Cubase versions. Other sequencers will have equivalent options.



1. Set the timecode source to MIDI timcode
2. Select the Midi input that Chaingang sends to.
3. Activate MMC and set up Midiports for a loop (Cubase sends to ChainGang, ChainGang sends to Cubase)

4. Adjust the timecode evaluation settings. You probably need to experiment with this a bit. In general, the lower the number of frames to analyse the more „corrupt“ you allow incoming timecode to be.

5. Activate sync in Cubase's transport bar by clicking on „SYNC“ underneath the tempo display. The right hand side of this field will display „Idle“ when Cubase waits for timecode and „Lock xx“, when it has successfully synced to incoming timecode (with xx representing the framerate of the timecode, which ChainGang automatically selects according to movie framerate).



## Credits, Feedback etc.

Very special thanks to all those, who helped improving ChainGang by betatesting, requesting reasonable feature additions and pointing out how some things could be made into more of a user benefit than they might have been so far.

Please feel free to contact us if you want to comment on ChainGang in any form, report bugs, request help or whatever else. Some frequently asked questions are answered on ChainGang's FAQ website at <http://www.humatic.de/htools/ChainGang/faq.htm>

For other questions, general suggestions and comments please contact [chaingang@humatic.de](mailto:chaingang@humatic.de)

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