

# **Ardour Reference Manual**

May 5, 2009

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# 1 Preface

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TODO

## 2 Introduction

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Thank you for using Ardour.

## 3 Ardour Basics

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## 4 GUI Reference

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### 4.1 Editor Window

#### The Editor Window

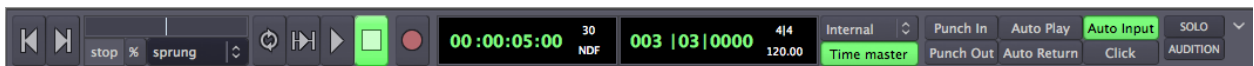
Ardour provides two ways of viewing a session: the Editor and the Mixer. The Editor shows the session by representing tracks as horizontal timeline displays, with material within the tracks (audio, MIDI, video, automation data, etc.) arranged along the horizontal (time) axis. The Mixer shows the session by representing tracks as mixer strips, with controls for gain, record enable, soloing and so forth. More abstractly, the Editor represents the time based aspects of a session, whereas the Mixer represents the signal flow.

However, it is quite possible to control the signal flow aspects from within the Editor as well, without the comprehensive overview that the Mixer provides. For some sessions, especially during the early stages of a session, the Editor may be the only window you need to use.

#### Editor Window Layout

Lets survey the basic layout of the editor window:

The transport controls are in a tearoff window at the top of the editor, and are described in the **Transport** menu.



#### Editor Controls

The editor controls are in a tearoff window, which you can use in the usual way.

#### Edit cursor clock

This clock shows the current position of the edit cursor. You can edit the position using the clock if you wish.

## Zoom buttons

The zoom buttons allow you to see more ("zoom out") or less ("zoom in") of the session timeline in the track display area. Click on the zoom out button to zoom out, and the zoom in button to zoom in.



## Zoom range clock

The zoom range clock shows the current duration of the timeline that is visible in the track display area. It does not indicate the location of the visible section of the timeline, only its length. You can zoom in and out by editing this clock directly, which may be useful if you want to see a precise duration within the editor.

## Zoom selectors

The two zoom select buttons allow you to go to the maximum and minimum zoom levels with a single button click. The "1:1" button zooms all the way into single sample level, where each pixel on the screen represents a single sample. The "whole session button" zooms out to show the entire session in the track display area.

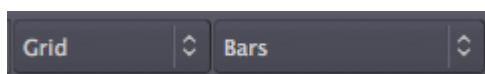
## Zoom focus control

When zooming, there is always a change in what is displayed in the track display area. However, one position in the display will continue to correspond to the same point in the timeline, and there are several choices of how to define that point. The default behaviour is to keep the left edge of the track display area constant. If it was at a position 1:12:14 into the session timeline before zooming, then it will continue to be at that position after zooming. Other points in the display that you can ensure are in the same position while zooming include the right edge of the track display, the center of the track display, the playhead and the edit cursor. Whichever of these is selected is known as the current zoom focus.

To change the current zoom focus, click on the combo box to see the list of available choices. Click on the zoom focus you wish to use. The list of choices will disappear, and the new zoom focus choice will be in effect.

## Snap control

When moving objects around in the track display area, you have the choice of moving them freely or having their positions be limited to certain points along the timeline. This applies to region, the playhead, the edit cursor, curve control points and markers, among others. If you want the positions of objects to be limited, then you can choose from several different possibilities. We call this "snap to" because when moving objects around with the mouse, they appear to "snap to" various positions.



The most obvious source of "snap to" positions is the tempo map, but ardour offers many different possibilities:

Snap Option	Action
-------------	--------

BBT	you can select 64th, 32nd, 16th, 8th, quarter and whole beat positions, as well as beat triplets and whole bars (measures).
Region beginnings	
Region ends	
Region sync points	
Region boundaries	(combines regions beginnings and ends)
Marks	
Edit Cursor	a single snap-to point. This is useful when aligning several objects at the same point. Set the edit cursor to the desired position, then select this snap setting, and then move the objects, which will immediately snap to the chosen position.

**Table 2.1. Snap Control**

#### Edit mode control

When moving regions around in a track, it is sometimes desirable to leave spaces between regions and sometimes to force regions to always be placed directly next to their neighbours. Which is more appropriate depends a lot on the nature of the project and the regions themselves.

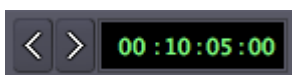


By default, Ardour uses slide mode which allows you to freely place regions in a track (subject to the current snap setting, of course). If you cut part of region, an empty space will remain where the part you removed used to be. If you move a region along the timeline, it will move independently of other regions, and will stay wherever you place it.

If you are editing a session and require behaviour where regions are forced to always to be directly adjacent, you can switch to splice maybe. In this mode, cutting part of region will cause all later regions in the track to move up (earlier) the timeline so that there is no intervening space between them. Moving a region will cause other regions to move around so that the moved region fits "between" them.

#### Nudge buttons

Sometimes when editing its nice to be able to move objects by predefined amounts rather than just positioning them freely or using snap-to. This kind of motion is called nudging. At the present time, only the playhead, playlists and regions can be nudged. The distance an object is nudged is set by the nudge clock (see below).



To nudge one or more regions forward by 1 second, first edit the nudge clock so that it specifies that time. Then select the region(s) by clicking on them, and finally click the nudge forward button.

Nudging backwards is identical to nudging forwards, except that you should click on the nudge backwards button.

To nudge a playlist forward or backwards, first set the nudge clock to the desired nudge distance. Then in the track that is using the playlist. Choose Nudge Nudge entire track fwd or Nudge nudge entire track bwd as desired.

You can also nudge all regions in the playlist positioned after (later than) the edit cursor. To do this, follow the steps for nudging the playlist, but choose Nudge nudge track after edit cursor fwd or Nudge nudge track after edit cursor bwd, as appropriate.

Nudge clock

You can edit the clock value to alter the distance that regions/playlists will be nudged.

Tool Selector

The editor tool selector is in a tearoff window, and contains a series of buttons used to select what the mouse (and often the keyboard) will do when editing tracks.



The tools include:

Mouse Mode	Description
object	Left-clicking Object will place the mouse in object mode. When in object mode, the mouse pointer appears as a hand whenever it is over the track canvas or the rulers. The mouse can now be used to select and perform operations on objects such as regions, markers etc.
range	Left-clicking Range will place the mouse in range mode. When in range mode, the mouse pointer appears as a vertical line whenever it is over the track canvas or the rulers. The mouse will now be able to select a point or range of time. Time ranges can be selected over one or several tracks.
gain	
zoom	Left-clicking Zoom will place the mouse in zoom mode. When in zoom mode, the mouse pointer appears as a magnifying glass whenever it is over the track canvas or the rulers. This mode is used to zoom the display to any range that is subsequently set using the mouse.
timefx	Left-clicking Timefx will place the mouse in timefx mode. When in timefx mode, the mouse pointer appears as a distinctive 'expanding' illustration whenever it is over the track canvas or the rulers. This mode is used to resize regions using a timestretch algorithm.

**Table 2.2. Snap Control**

## The Track List

The Track List displays a list of all the tracks in a session and provides the ability to show or hide tracks as well as reorder them in the .

### Track Visibility

The visibility of a track can be modified by clicking on the checkbox next its name in the track list. If a track is visible then the box will be checked, if it is unchecked then the track will be hidden and clicking on the checkbox will make it visible in the



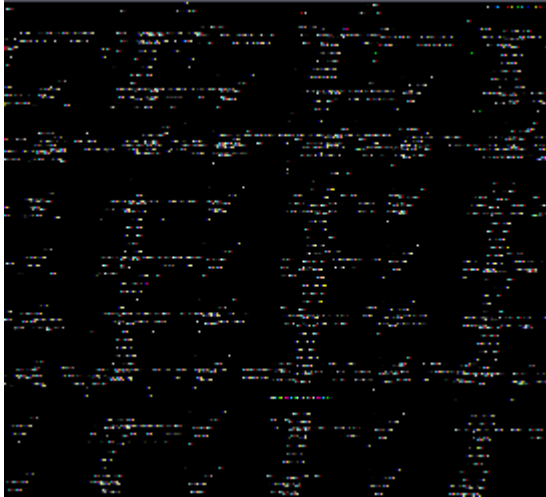
To show or hide all tracks or only tracks of a specific type right-click within the track list to bring up a pop-up menu.

### Note

The visibility of a track in the has no effect on the visibility of the for that track in the which can be modified from the , also hiding a track does not affect its playback which can be controlled by either [muting](#)<sup>1</sup> or [deactivating](#)<sup>2</sup> it.

### Track Order

Tracks may be reordered in the by rearranging them in the Track List. To rearrange the list click on a track name and drag it up or down to a new position.



Pressing the **ESC** key while rearranging the Track List will cancel the move.

### Note

The order of tracks in the is independent of their order in the .

### Edit Group List

Below the track list is the edit group list, which lists all edit groups for the session, including a default group called “all”. To the left of each group name is a checkbox which indicates whether or not the group is active (a checkmark means its active). Click on the checkbox to change the active status of an edit group.

The edit group list can also be used to toggle the visibility of all members of the group. Visible edit groups are displayed in cyan, hidden ones in orange. Click on the name of the edit group to toggle its visibility. Note that an edit group can be visible and yet have hidden member tracks, and vice versa.

### Region List

To the right of the track display is the region list, which uses a tree display to show all regions in the session. There are sections in the region list, “Captured” and “External”. “Captured” contains all regions that were either recorded by Ardour or imported as native audio files.

“External” contains regions created using audio files external to Ardour (from a sample library, for example).

### Organization of the region list

In both sections of the region list, any regions containing multiple channels will have its name followed by “[N]” where N is a number indicating the number of channels. Any region that ends in “-N”, where N is a number, is a region that describes an entire audio file. Any region that ends in “.N” is a region that describes part of an audio file. Any subtree within the region list can be hidden or displayed by clicking on the box left of its name.

Within the Captured part of the tree, each track is represented by its own subtree (strictly speaking, its not each track but each playlist that is represented). Within that subtree is an entry for each take recorded for that track. Remember that each take is stored as one and audio files (strictly, one per channel). Within the take tree is an entry for each region created from that take.

Within the External part of the tree, there is a subtree for each audio file embedded into the session. Within that subtree are entries for each region created from that audio file.

#### Region list operations

Click on the box to the left of the name of part of the tree to hide/show that part of the subtree.

Click the name of a region and then drag it to the track display area to insert a region into a track.

Click on the title bar of the region list to display a menu allowing you to

Menu Item	Description
Find	
Show/Hide All	fully expand or collapse the region list
Sort	
Display Automatic Regions normally,	Ardour does not display regions created as a result of a side effect of user actions. If this option is selected, all regions will be included in the region list.
Import audio files	copy (and if necessary convert) audio files into the session. See Importing for more details.
Embed audio file	embed external audio files into the session. No new files are created, and no format conversion is done. See [[editing:Embedding]] for more details.

**Table 2.3. Region List Context Menu**

#### Chunk List

Below the region list is the Chunk List, which provides a visual list of all "chunks". Chunks are collections (possibly discontinuous) of sections.

#### Track Display

This is the main area within the editor. Each track or bus is represented by a horizontal "stripe", with a set of controls on the left side, with the timeline above them all.

#### Timeline

At the top of the track display area is the timeline display. This consists of a number of rulers, a meter track, a tempo track and the marker display.

The available rulers include:

Ruler Type	Description
Frames	this ruler measures audio frames. The number of audio frames per second depends on the sample rate in use.

SMPTE	this ruler displays SMPTE timecode. The SMPTE format (25fps, 30fps, drop frame etc) is selected in the Options Editor option_editor.
Min:Sec	this ruler displays time in minutes+seconds, measured since the start of the session.
BBT	(Bars,Beats,Ticks) this ruler displays positions based on the tempo map.

**Table 2.4. Ruler Types**

To show or hide one or more of the rulers, click on the area to the left of their names. A menu will popup that has a check item for each available ruler. Click on the name of the ruler to toggle its visibility.

The tempo and meter tracks display the tempo map for the session. The tempo track contains 1 or more tempo change points, with a default tempo of 120 beats per minute. The meter track contains 1 or more meter change points, with an initial default meter of 4/4.

on a tempo/meter change point to edit it. Click in the tempo/meter track to add a new change point. Click and drag on a change point to move it. on a tempo/meter change point to remove it.

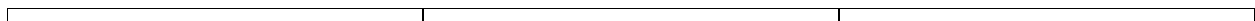
There is more information on using the timeline in editing\_basics.

### Track Controls

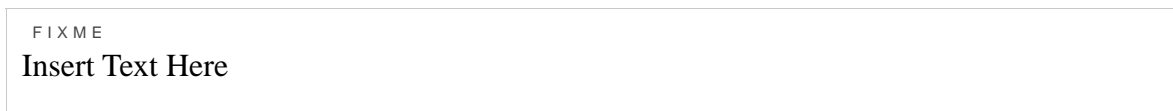
Each track has a set of controls on its left side. Which controls are present varies depending on the type of track (audio, bus, automation, MIDI, etc.). Every track type has a "hide" button marked with a cross. Click on this to hide the track.

### Track Views

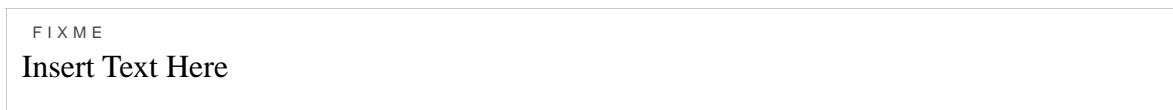
This is where all editing takes place. The track views contain region objects, curve control points, lines and other items that can be added, removed, copied, cut and pasted. See editing\_basics for more information on editing.



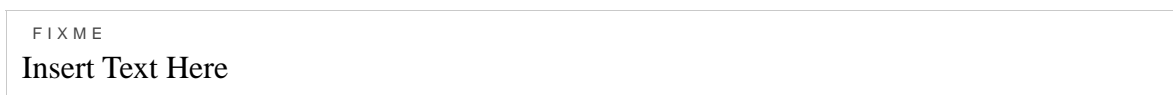
## 4.1.1 Tracks and Busses



### 4.1.1.1 Audio Tracks



### 4.1.1.2 Audio Busses



#### 4.1.1.3 Automation Tracks

FIXME  
Insert Text Here

#### 4.1.2 Regions

FIXME  
Insert Text Here

##### 4.1.2.1 Region List

FIXME  
Insert Text Here

##### 4.1.2.2 Region Context Menu

FIXME  
Insert Text Here

#### 4.1.3 Edit Modes

FIXME  
Insert Text Here

##### 4.1.3.1 Slide Mode

FIXME  
Insert Text Here

##### 4.1.3.2 Splice Mode

FIXME  
Insert Text Here

##### 4.1.3.3 Lock Mode

FIXME  
Insert Text Here

## 4.1.4 Editing Tools

FIXME  
Insert Text Here

### 4.1.4.1 Object Tool

FIXME  
Insert Text Here

### 4.1.4.2 Range Tool

FIXME  
Insert Text Here

### 4.1.4.3 Zoom Tool

FIXME  
Insert Text Here

### 4.1.4.4 Region Gain Tool

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Insert Text Here

### 4.1.4.5 Time Stretch Tool

FIXME  
Insert Text Here

### 4.1.4.6 Audition Tool

FIXME  
Insert Text Here

## 4.2 Mixer Window

FIXME  
Insert Text Here

## Notes

1. <http://ardour.org/files/manual/sn-tracks-and-busses.html#sn-muting-tracks>
2. <http://ardour.org/files/manual/sn-tracks-and-busses.html#sn-deactivating-tracks>

## 5 Audio

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TODO

## 6 MIDI

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Although at this time Ardour does not support MIDI sequencing, it does support a fairly rich set of interactions via MIDI with other devices, in particular:

- Ardour can function as MIDI Time Code (MTC) master or slave. MTC is used to transfer the actual time location, so the connected MIDI devices will stay in sync (even when using fast forward and such).
- Ardour can control or be controlled by other devices using MIDI Machine Control (MMC). MMC commands include start, stop, punch in, punch out and others.
- In Ardour, virtually any parameter can be controlled by MIDI Continuous Controller (CC) messages (which is called MIDI Parameter Control). In addition, Ardour can send MIDI "feedback" so that external motorized control surfaces can reflect parameter changes caused by automation etc.

This section describes how to configure Midi in Ardour and how to use Ardours Midi features.

### 6.1 Configuration

#### 6.1.1 Midi Ports

Ardour does not attempt to discover what MIDI ports exist on your system. This is a complex issue, and on systems like Linux and OS X that permit virtual ports to be created at any time, it is not trivial to get right (although future versions of Ardour may try).

Instead, some ports are defined which can be connected to any other MIDI port. These port definitions are not session specific, on the assumption that your system's MIDI hardware probably doesn't change much from session to session. In many cases, you will not need to change them.

#### 6.1.2 Configuring MIDI ports

When you first use Ardour, three MIDI ports will be available which are almost guaranteed to be usable on your system (Linux/ALSA users may need to ensure that the `snd-seq` kernel module gets loaded - many distributions do not do this by default). These are "virtual ports" which are not actually related to any hardware MIDI port. They can be connected to other software ports or to whatever hardware MIDI ports you have.

You can modify existing ports in the "Preferences" Window. Choose EditPreferences to show that window, then go to the <guilabel>MIDI</guilabel> tab. You should see at least the ports "control", "mcu" and "seq". For each port you can configure the following options:

#### Online

Setting a port to offline will not cause a port to disappear; rather Ardour will simply no longer send any data on it, nor will it process data received on it. Online ports work normally.

#### Trace Input, Trace Output

When one of these buttons is checked for a port, the sent (Output) respective received (Input) MIDI data will be displayed on the console. Note that you need to run Ardour from a console to see that output. This can be useful to check your MIDI connections.

#### MTC, MMC, MIDI Parameter Control

You can choose which port is used for which kind of MIDI information. For each kind - MTC, MMC and MIDI Parameter Control - one MIDI port have to be assigned. The same MIDI port can be used for several kinds of information.

### 6.1.2.1 Defining additional MIDI ports

You can easily define additional midi ports. Choose **Edit @ Preferences** to show the "Preferences" window, then go to the **MIDI** tab. Click on the **Add new MIDI port** button to add a new port. Provide a name and choose one of the following options:

#### input

The new port will be an input port. This is rarely used.

#### output

The new port will be an output port. This is rarely used.

#### duplex

The new port will be an input and output port. This is what is normally needed.

Click on the **Add** button to create the new port.

### 6.1.2.2 Removing MIDI Ports

To remove a MIDI port, click on the **Remove** button right of the port.



You can not remove a port if it is configured to transfer MTC, MMC or MIDI Parameter Control data. That also means that the last port cannot be removed as it will necessarily be configured to transfer all kind of MIDI data.



If you remove one of the default MIDI ports (control, seq, mcu), it will automatically be recreated next time you start Ardour. This is because these default ports are saved in /etc/ardour2/ardour\_system.rc where you can't remove them. Your MIDI configuration is saved in \$HOME/.ardour2/ardour.rc.

### 6.1.3 Additional Configuration

Ardour allows some more MIDI configuration:

#### Inbound MMC Device ID

Each MMC command includes a device ID. Ardour listens only for MMC commands with a specific device ID. You can configure for which device ID Ardour listens. The default of 0 should be safe.

#### Outbound MMC Device ID

Each MMC command includes a device ID. You can configure which Device ID Ardour uses when it sends MMC commands. The default of 127 should be safe.

#### Startup program change

On startup, Ardour sends a Program Change (PC) command. A PC command includes a program number (a value between 0 and 127). You can choose which program number is sent by Ardour. A value of -1 will send 127. The default is 127.

The PC command is sent on the MIDI port which is configured to handle MIDI parameter control. It is sent right after you start a session (either a new one or an existing one). The command is also sent if you choose to load another session without closing Ardour.

#### 6.1.3.1 Making Connections

If you use actual physical hardware MIDI ports, then establishing connections to other MIDI equipment is simply a matter of connecting cables correctly. However, if you use "virtual ports", as Ardour does, making connections is slightly more involved.

Ardour does not come with any way of establishing MIDI connections from/to other software MIDI ports. This is a difficult task to get right, and Ardour may offer something in the future. For now, you need to use an external tool that is dedicated to this purpose, much the same way you would use a patchbay (audio/MIDI) with physical equipment.

#### 6.1.3.2 Linux/ALSA

**qjackctl** (the same program that is recommended for controlling JACK) also includes an excellent MIDI connection manager. You could also use command line tools such as **aconnect**.

If you use the program **qjackctl** to control JACK, there's an easy way to connect Ardour to other MIDI ports. Run **qjackctl**, and click on the **Connect** button in the main **qjackctl** window. This will bring up the Connection window. Go to the ALSA tab (don't use the MIDI tab!) and connect the MIDI ports as needed.

#### 6.1.3.3 OSX/CoreMIDI

On OSX/CoreMIDI you need to connect the MIDI ports with a patchbay tool such as the excellent [MIDI Patchbay](#)<sup>1</sup> from Pete Yandell .

## 6.2 Using Control Surfaces

Ardour supports several control surfaces: generic MIDI control surfaces, MCU surfaces, the Frontier Tranzport device and others. Generic MIDI control can be used with any MIDI controller capable to send CC (Control Change) and/or MMC commands, such as the Behringer

BCF2000/BCR2000. The MCU protocol can be used with controllers supporting the Mackie MCU protocol, but the MCU protocol is not yet fully implemented and configuring an MCU device is a challenging task. Setting up the Tranzport device is also tricky.

This chapter describes how to use generic MIDI control, MCU and Tranzport surfaces. Additionally, some short tutorials are included. Other Surfaces are experimental and are not described in this chapter.

## 6.2.1 Using a Generic MIDI control surface

FIX ME

All the references in this section point to an external site, obviously we need to create documents and have them point internally to fix this issue.

Ardour can utilize generic MIDI control surfaces to control various aspects of its GUI.

### 6.2.1.1 Connecting the MIDI control surface

In Ardour, all gain faders, panners, mute/solo/rec-enable buttons and all plugin parameters can be controlled by MIDI Continuous Controller (CC) (which is called MIDI Parameter Control in Ardour). Ardour can also send MIDI "feedback" whenever gain, pan or plugin state changes, so that external motorized control surfaces can reflect parameter changes caused by automation etc. In addition, MMC commands are supported. Generic MIDI control surfaces do not use the MCU protocol.

You need to have a MIDI port set up to deal with MMC and/or MIDI Parameter control as described in [Section 2.2, "MIDI Configuration"](#)<sup>2</sup>. Your control surface (e.g. a Behringer BCF2000) has to be connected to the correct Ardour MIDI port.

### 6.2.1.2 Setting up the MIDI control surface

To use a generic MIDI control surface in Ardour, choose the "Options" menu, then choose the "Control Surfaces" submenu, then select "Generic Midi".

Ardour can send feedback to the control surface, allowing it to reflect changes caused by automation or by mouse interaction. You can enable feedback by choosing the "Options" menu, the "Control Surfaces" submenu, the "Controls" submenu, then selecting "Feedback".

To control e.g. a gain fader, use **Ctrl+Button2** on the fader. The message "operate controller now" should appear. Move the desired fader or knob on your control surface. The fader on the screen should start to move as you move the slider on your control surface. If you activated MIDI feedback and your control surface supports it, it should reflect changes you do with the mouse.

You can configure MIDI control for virtually all faders, plugin parameters and switches by using **Ctrl+Button2** on it, then moving the desired control on the control surface a bit.



The assignments of the MIDI controls are saved with the Ardour project. For each new project, you have to assign every control manually. To avoid this, you can use a template, see [Section 2.3.5, "Session Templates"](#)<sup>3</sup>.

### 6.2.1.3 MIDI commands used to control Ardour

Controls in Ardour are controlled with Change Control (CC) MIDI commands. Those commands can be sent on arbitrary MIDI channels. Faders and other continuously moved controls are controlled with CC commands with a range of 0-127. Buttons (e.g. Mute buttons) are also controlled with CC commands, where a value of 0-63 switches the button off and a value of 64-127 switches the button on.

Ardour also receives and sends some MMC commands, such as play, stop, locate, punch in and punch out. Make sure you configured Ardour to listen for MMC commands as described in [Section 2.2, "MIDI Configuration"](#)<sup>4</sup>.

### 6.2.2 Using a Frontier Design Tranzport

FIXME

This is just copied over from the old manual. It needs to be vastly revised and updated I am sure. But this will give you an example on how to break things down in Daisy. Pretty much wherever you would use a header to identify a section, for right now use that as an indicator to write a separate article describing just that section with the header as the title of the document. The end result will mean that we can move these around as we organize and write, and the headers will all correct themselves to the right size. We can also import documents as needed into other documents if we decide later it should be a single document for some reason. At any rate, see an example of how to break things down.

Ardour 2.0 can currently use a single Tranzport controller. Ensure that the device is plugged into a functional USB port. On Linux you will need to [take steps](#)<sup>5</sup> to ensure that non-administrative users can access the device. Note that this feature is *not* available in Ardour 0.99.x.

In the Options menu, navigate into the Control Surfaces submenu. Click on the "Tranzport" option to enable use of the control surface within Ardour. To disable it, click on this item a second time.

#### 6.2.2.1 Tranzport Buttons and Datawheel functions

Key	Normal Click	Shift Click
REW	Rewind	Go to start
FFWD	Fast forward	Go to end
STOP	Stop	Enter *
PLAY	Play	Save
RECORD	Record	
PREV	Go to previous marker	Zoom full
ADD	Add marker at current location	
NEXT	Go to next marker	Select normal, scrub or shuttle mode
IN		Zoom In

OUT		Zoom Out
PUNCH		
LOOP		Select gain/pan/master level mode
< TRACK	Previous track	
TRACK >	Next track	
REC	Toggle track's record enable on/off	Clear all track record arming
MUTE	Toggle track's mute status on/off	Clear all mutes
SOLO	Toggle track's solo status on/off	Clear all solos
UNDO	Undo	Redo
DATA WHEEL	scroll timeline, scrub or shuttle	adjust track gain, track pan or master gain
FOOTSWITCH		

### 6.2.2.2 Tranzport Modes of Operation

In Ardour, the Tranzport in has 3 different modes of operation termed "timeline", "scrub" and "shuttle".

#### 6.2.2.2.1 Tranzport Timeline Mode

The data wheel scrolls the timeline in the editor window back and forth.

#### 6.2.2.2.2 Tranzport Scrub Mode

The data wheel is used to scrub audio data back and forth.

#### 6.2.2.2.3 Tranzport Shuttle Mode

The data wheel is used to control varispeed playback. Turning the data wheel clockwise increases the playback speed in a forward direction. Counter-clockwise decreases the speed and will reverse playback. Shuttle mode as several important features:

- While in Shuttle mode the actual playback speed will be displayed in the top right corner of the LCD as a percentage of real-time, ie. +100% is normal playback speed.
- Press STOP to automatically set the Shuttle speed to 0%.
- Press PLAY to automatically set the Shuttle speed to +100%.
- Press and hold SHIFT to momentarily toggle the TranzPort into Scrub mode. Releasing the SHIFT button will return to Shuttle mode at 0% speed. This combination of functions is very useful for quickly moving through an audio track and accurately locating points hit points.
- Pressing ADD will drop a marker at the current location and exit Shuttle mode

## Notes

1. <http://www.macmusic.org/software/view.php/lang/en/id/592/>
2. [http://www.ccmz.de/%7Etanjeff/ardour\\_manual/sn-midi-configuration.html](http://www.ccmz.de/%7Etanjeff/ardour_manual/sn-midi-configuration.html)
3. [http://www.ccmz.de/%7Etanjeff/ardour\\_manual/sn-sessions.html#sn-templates](http://www.ccmz.de/%7Etanjeff/ardour_manual/sn-sessions.html#sn-templates)
4. [http://www.ccmz.de/%7Etanjeff/ardour\\_manual/sn-midi-configuration.html](http://www.ccmz.de/%7Etanjeff/ardour_manual/sn-midi-configuration.html)
5. <http://ardour.org/files/manual/sn-configuring-usb-device-access.html>

## 7 Sessions and Snapshots

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TODO

## 8 Time and Synchronziation

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TODO

## 9 Automation

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TODO

## 10 Appearance

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TODO

## 11 Exporting

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TODO