ZERODEBUG

STUDIOMUX MANUAL

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Contents

Introduction

Welcome to the studiomux manual

Studiomux is an App capable of transferring MIDI, OSC and Audio between your iOS devices and Mac or PC, all with ultra low latency. This manual provides extensive instructions for the integration of studiomux in your studio setup. It will Guide you from the first installation to more complex tasks, like syncing your Apps and recording Audio into a various of Digital Audio Workstations. The integration of studiomux into your DAW will take a big part of this manual. We hope that you will find all needed information about the usage of studiomux in this guide. If you have any further questions, please contact us via our forum or visit our homepage.

Server Installation

To connect studiomux to your Mac or Windows PC, you'll need to download the latest installer package from our website The package includes the server application and the audio plugins:

1. **Studiomux Server**: handles communication between iDevices and desktop, installs the audio plugins.

2. **Audio Plugins**: handles communication between DAW and the Studiomux server.

⚠ On Windows make sure to download and install iTunes.

Server Mac

Download and install the App and Server from our website. The servers context menu displays the current available and connected Midi- and Audio compatible iOS devices. It also displays the current version of the server. All VSTs and AUs are installed by default on install.

Server Win

Before installing the Studiomux server make sure, that you have installed the latest Version of iTunes. Download the server from our website and install it. Once the server is installed the Studiomux server icon appears in the system tray. The studiomux VSTs are copied to windows default VST directory. Thereafter, please point your DAW to this folder. Studiomux does not claim any ports by default, due to the Windows MIDI ports administration. If you want to control an App with an external MIDI controller connected to you PC you have to claim these ports via the Studiomux context menu. Once claimed, they will appear in the Studiomux GUI. Also be aware, that DAWs on windows cannot detect MIDI ports on the fly, so you have to set up your MIDI ports first and then start your DAW. For that purpose the studiomux server remembers all your created MIDI ports, so they will still be available, when you unplug your iPad and plug it in again.

User Interface

The following sections will guide you through the use of the studiomux App. If you just want to use the MIDI functionalities please jump to the next chapter Midimux App.

Taskbar, Mixer and Options

Use the taskbar to navigate through Studiomuxes Main Windows, Audio, MIDI and OSC. The top corner displays the MIDI connection status, the bottom corner displays the audio connection status. Open the Mixer to adjust the volume of each In- or Out Channel, activate or deactivate muting and monitoring. Via the Audiobus button you can jump to the Audiobus App. Disable Global Monitoring, if you don't want your iOS device to play the Audio Apps Sound. The settings let you do the following tasks: • S save a current set. • L load a former saved set. • B select a buffersize from 128 to 1024. • Book open the manual in your browser. • W enable/disable the drawing of the waveforms • Flip invert all colors • Rocket launch IAA Apps, when loaded
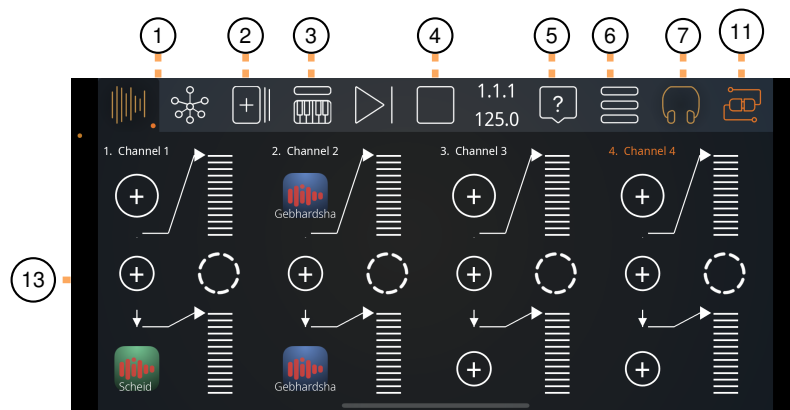

Figure 1: touchAble Pro Split Screen
1) Main Bar for General Controls and Views
2) Top Module Content View
3) Bottom Module Content View
4) Top Module Selection/Navigation
5) Top Module Controls
6) Bottom Module Selection/Navigation
7) Bottom Module Controls

Audio

The following sections will guide you through the use of the studiomux App. If you just want to use the MIDI functionalities please jump to the next chapter Midimux App.

Audio Routing

The audio main window contains all features you need to send and receive audio to your desktop and the other way around Each Channel can act like a Sender, Receiver or Effect Channel. Tap on the **Audiomux** ② button to display the audiomux GUI. Tap on it again to create or delete Channels. Each Channel has an Input, Effect and Output Slot. Open the Browser by tapping on an empty **Channel Slot** ⑤ or the **Browser** ② button. Via the Browser one can load Instruments Effects as well as Network Ports Plugins Audio Devices Audiobus IAA Channels. To delete a Port drag an plugin out of the slot.

The **Input** ⑥ can load IAA/AUv3 Instruments, as well as IAA Audiobus Sender and Plugin Sender. If you want to send audio from a Audio Plugin to studiomux. If you want so send an IAA Instruments Audio to your DAW

The **Effect** ⑦ can load IAA and AUv3 Effects.

The **Output** ⑥ cann load Network and AUDIOBUS outputs.

Each Channel has two volume faders, to control the volume between input and effect and effect an ouptut.

A **MIDI Indicator** ⑥ displays incomming MIDI.

Devcativating **Global Monitor** ⑥ will mute studiomux's output while audio is still send through.

Figure 2: touchAble Pro Split Screen
1) Audio
2) Browser
3) Keyboard
4) Transport
5) Monitor
6) Input
7) Effect
8) Output

Syncing Apps with IAA/AUv3 Sync

Studiomux supports several ways to sync your Apps via Apples IAA sync. To activate or change the sync method tap on the button **tempo playing position** ③. You can choose between four syncing Methods, the use is described in the following sections. By default **internal sync** ⑤ is used.
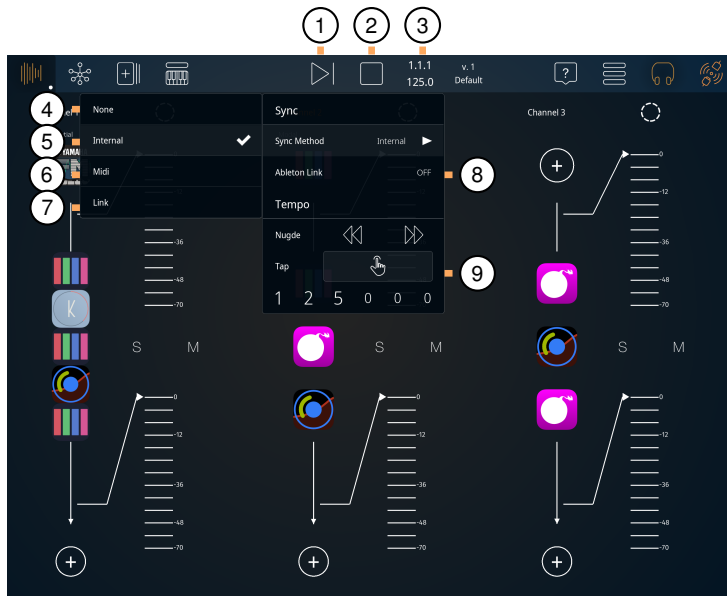

Figure 3: touchAble Pro Split
Screen
1) Play/Pause
2) Stop
3) Transport Menu
4) No Syncing
5) Internal Syncing
6) External/MIDI Syncing
7) Ableton Link Syncing
8) Ableton Link
9) Tempo Menu

Internal Sync

Studiomux comes with a build in transport. If you want to sync your Apps via Studiomux only use this method **internal sync** ④. You can start your Apps transport, by tapping the play button **internal sync** ①, set a retrigger signal by tapping the retrigger button. Adjust the Tempo by using one of the provided Methods the BPM display button **internal sync** ②.

External MIDI Sync

Studiomux creates and mirrors a Studiomux MIDI port on start up. This port is mirrored to your desktop. Use this port to receive a MIDI clock Signal. If you want to have further Informations about the usage of this port in your specific DAW please check the DAWs chapters. Your apps will now follow the transport Method of your Remote. With this method a tempo adjustment is not possible.

Ableton Link Sync

Syncing your Apps via Ableton Link is recommended if you want to play with multiple iOS devices, that are not connected with a PC or Mac. For further informations about Ableton Link please visit the Ableton Link website. To send Ableton Link sync to IAA compatible Apps, they do not have to support Ableton Link. TO Activate or deactivate Ableton Link please tap on the

button **internal sync** ↻ to the sync Method selector. Also Make sure that
internal sync ↻ is chosen, if you want to delegate Links transport to the
loaded Instruents. If these Apps support Ableton link itself, and its activated,
please selecte no sync method.

Audiobus and Studiomux

If you like to use Audiobus, please start Audiobus before starting studiomux!
starting studiomux before starting Audiobus may and will cause issues.
Audiobus instruments and effects can only be loaded via the Audiobus
GUI. Studiomux provides 8 Audiobus/IAA outputs, that can be selected via
Browser.. If you like to use the studiomux sender inside Audiobus please
load the receiver first. this ensures that the right icon is received from Au-
diobus and it guarantees a stable connection- and disconnection process.
the same is true, if you want to use the studiomux receiver, always make
sure to load the counterside first.

MIDI and OSC

The following sections will guide you through the basic use of the Midimux App, it is also valid for the MIDI and OSC part of Studiomux. If you want to use Audio and MIDI please do only use the Studiomux App.

Open the midimux GUI by tapping the **midimux** ⑥ button. Tap it again to create MIDI or OSC ports. Alternatively tap **midimux** ⑥ to create MIDI or OSC ports.

Local MIDI ports are displayed to left. These can either be ports that have been created or ports of Other Apps. The ports are mirrored to the desktop and can be used to send MIDI to your mobile device.

Remote ports can either be virtual ports ord Hardware ports that have ben mirrored from the desktop to your mobile device.

Figure 4: touchAble Pro Split Screen
1) Main Bar for General Controls and Views
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4) Top Module Selection/Navigation
5) Top Module Controls
6) Bottom Module Selection/Navigation
7) Bottom Module Controls

MIDI

Launch the app you want to use with midimux. If your desired app doesn?t show up: don?t worry, not all iOS Apps that are capable of talking MIDI offer a virtual port. Please read the next section, if your App doesn't create a MIDI port itself. All available destidion and source ports are enabled by default, so they transfer MIDI to that ports via midimux. If you don't want midimux to route MIDI, please tap on the source destination icon to disable it.

Lemur USB MIDI Setup

Some Apps like Lemur do not create their own MIDI port. You have to create a port with Midimux, to access transfer MIDI data to or from Lemur. Tap the (+) button and enter a name to create a new virtual port (here: lemur test). the new port will appear in the list of local ports to the left. if you don?t like the name you gave it, or have other reasons to delete it ? simply longtap it. this virtual port allows us to communicate MIDI via USB, even if the app in question does not offer a midi port on its own. .Start lemur and open More Settings, add a MIDI target and select the (virtual) MIDI source and destination that we just created. make sure to select the locally available port.

OSC

In its current Version Midimux mirrors OSC ports from the Ipad to the Mac/Pc. Due to the nature of UDP ports you globaaly only create one OSC 12 target in port with a specific port number. Creating a second port with the same target port in will not work.

   Create a new OSC port by tapping the empty port icon. set the ?app port in? to the Apps port (e.g. 7777) and the ?target port in? to the target port (e.g. 5555) on your mac/pc. studiomux/midimux mirrors the network ports from your iOS device to you mac. for that reason it?s obligatory that the ports differ. after creating the network port the status column indicates the status of the port. if everything is set up correctly and the port is created on mac/pc side you should see a tick. now any data can can be transmitted via standard USB cable. if an error occurred a warning icon is displayed. the issue may have several reasons: no connection between iOS device and Mac/Pc. or the ports are already in use. some ports like ?1? are reserved by the system, others may be used by other applications.

Touch OSC Integration

the following ports are recommended but not obligatory. please make sure that the in- and out port differ from each other. set the host ip to the local host (127.0.0.1), so the studiomux/midimux app can receive the OSC data.

Lemur Integration

create a new OSC target, set the host ip to 127.0.0.1 and the port to a one that differs from lemurs fixed App in port, for example 9000.

Sending and Receiving Audio

The VSTs and Audio Units on Mac provide functionalties like receiving Audio from your iOS device and sending Audio to your iOS device. You can also use them to send audio to an effect App and receive Audio from the same. The VSTs and the AUs GUIs all have the same structure. The audiomux icon in the right top corner display the connection status between VST/AU and server. The first pop up menu (displaying the ipads name), lets you select your iOS device. The second Pop up (here: Elastic Drums) lets you select the Channel.

Receive Audio from Desktop

Receiving Audio in your DAW can be done with the studiomux generator. In most DAWs the generator can be selected as Instrument in an Software Instrument Track. In most DAWs it cannot be dropped onto an audio Track.

Send Audio to Desktop

Audiomux Generator Receiving Audio can be done with the studiomux generator. In most DAWs the generator can be selected as Instrument in an Software Instrument Track.

Using iOS Apps as Audio Effects

One common use case is If you want to use your iOS Apps as external audio effects, please use the audiomux effect plug in. You can drop it onto your Audio or Instrument Tracks like any other effect Plug In. First load your desired App in the studiomux App, then open the audiomux effect plugin and select the Effect App as Receiver and Sender. The checkbox replace input samples, makes sure, that the Signal is 100 percent wet, so you will only hear the sound from the effect, if it is unchecked you will also hear the sound of your former placed Instrument or audio.

MIDI trough VST/AU

The Studiomux VST sends MIDI directly to the connected App via IAA MIDI. But only a few Apps on the market support IAA MIDI. In the Appendix we present a List of IAA MIDI compatible Apps. Although it is possible to send

15 MIDI directly to these Apps and receive the Audio produced by the App, it is not possible to offline Render, respectively Bounce the VST sound.

MIDI trough VST/AU

Audiomux Audio Device The Audiomux audio device is currently available on Mac OSX 10.8+ only. Instead of using the VSTs or Audio Units, you can use it to transfer Audio from your Mac to your iOS device or the other way around. The audio device can be used like any other external audio device. If you want to use it alongside your default audio device you have to create an aggregated device. The Audiomux audio device, has nine stereo Channels sending audio from your iOS device to your Mac. The first stereo Channel is a stereo mixdown of all eight Channels. The remaining channels, sending the audio from the eight channels. To receive audio via the audio device please go to your DAWs preferences and select your iOS device as audio input. If you want to send audio to your iOS devices, select your iOS device as audio output. Creating and Aggregated Device To create an aggregated device please go to Applications -> Utilities -> Audio MIDI Setup and klick on the plus button on the right bottom of the Audio Devices Window. No select the audio devices you want to combine. For more Informations please read the following article.

Ableton Live

The following instructions base on Ableton Live Version 9, the instructions are also valid for other versions of Ableton Live. If you use an older Version and the instructions did not work for you, please contact us via email. Record Audio in Ableton

Recording Audio in Ableton is straight forward. Just drop the VST onto a MIDI Track and Route the Audio to an Audio Track via the "Audio To" Menu. Make sure to activate Input Monitoring to listen and record the VSTs sound.
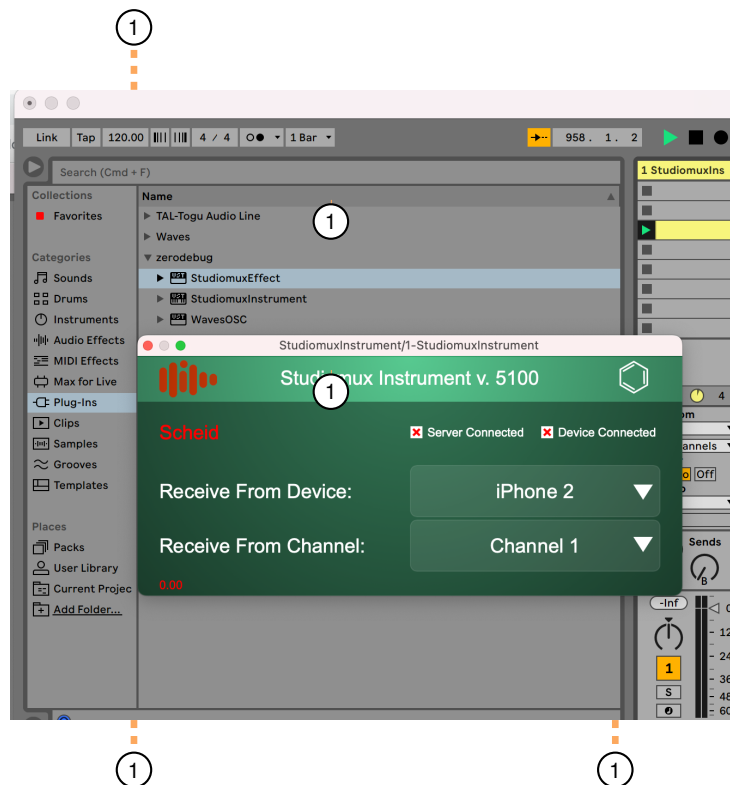

Figure 5: touchAble Pro Split Screen
1) Main Bar for General Controls and Views
2) Top Module Content View
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5) Top Module Controls
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7) Bottom Module Controls

MIDI Configurations and Synchronisation in Ableton

On the left you see Ableton Lives MIDI setup. All MIDI in and MIDI out ports are displayed here. If you want to send any MIDI data to an App or want to receive any MIDI data from an App you have to activate the related option of the port. Activate Track, if you want to send/receive MIDI notes, activate Sync if you want to send/receive MIDI clock data and activate Remote, if you want to send/receive MIDI Control Data
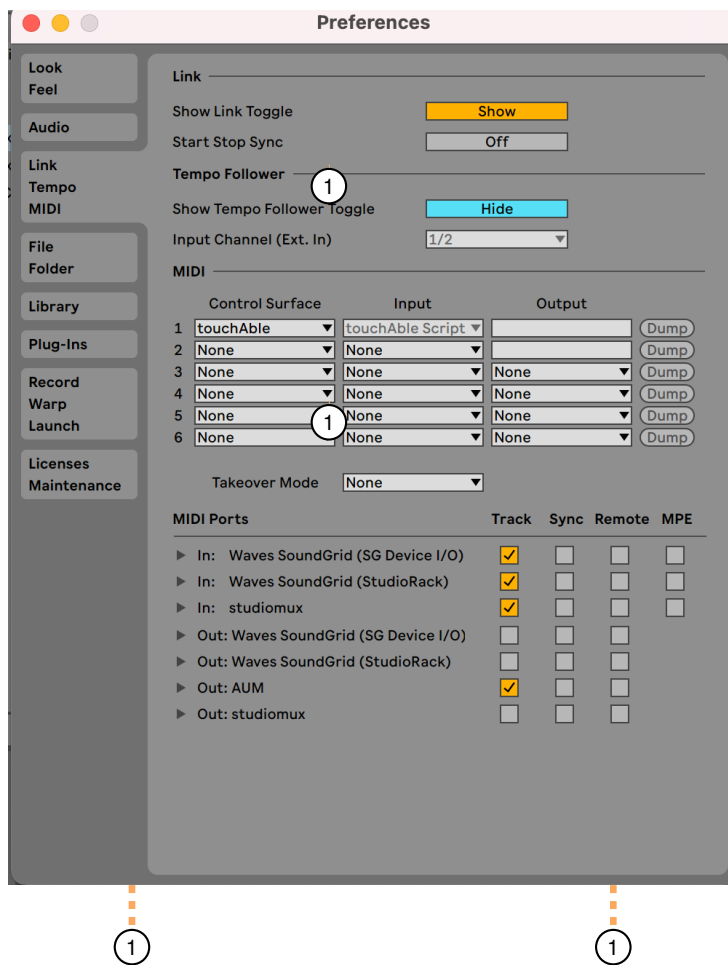
Figure 6: touchAble Pro Split Screen

1) Main Bar for General Controls and Views

2) Top Module Content View

3) Bottom Module Content View

4) Top Module Selection/Navigation

5) Top Module Controls

6) Bottom Module Selection/Navigation

7) Bottom Module Controls

MReceive MIDI in Ableton

If you want to play an Instrument in Ableton Live with an iOS App, create a MIDI Track, load an Instrument and select the Apps MIDI port - in MIDI From - you want to use to play the Instrument with.

Send MIDI from Ableton If you want to play an Instrument in Ableton Live with an iOS App, create a MIDI Track, select the Apps MIDI port - in MIDI TO - you want to use to play the Instrument with.

Synchronisation with Ableton Ableton is one of few DAWs that can sync external devices and can by synced from external devices. To sync Ableton with an iOS App, please select Sync from the iOS Apps in port in Lives MIDI preferences. No please activate external syncing, you will find the button in the top left corner in Lives main GUI. To sync an App from Ableton just activate Sync in the desired Apps MIDI out port.

Bitwig Studio

Record Audio

To record audio in Bitwig create an **Instrument Track** ①, load the studiomux instrument VST/AU and select a device and channel ②. Next create an **Audio Track** ③ and select the former created Instrument Track as **Audio Input** ④. Now **arm** ⑤ the Audio Track and you will be able to record audio.
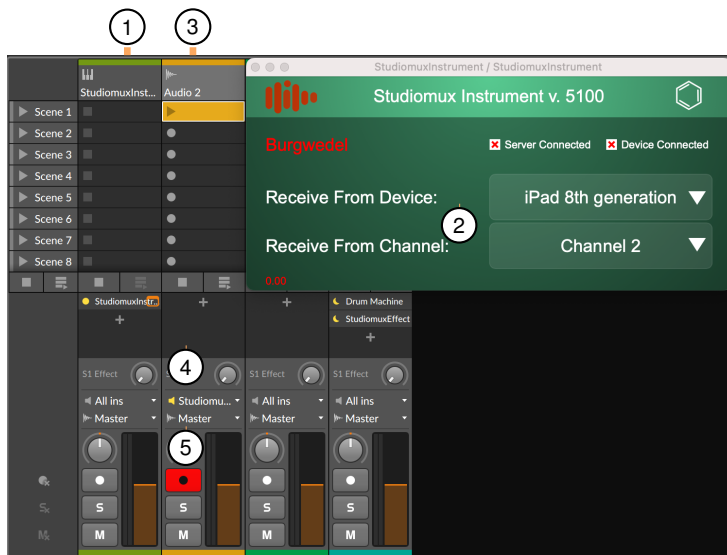
Send MIDI from Bitwig

To send MIDI from Bitwig to an iOS App, create an Instrument Track and open the Instrument Chain by double clicking the Track header. Now add a new hardware Instrument and select the desired App Port as MIDI OUT.

Receive MIDI in Bitwig

If you want to play an Instrument in Bitwig you have to create a Generic Controller first. Go to Options -> Preferences -> Controllers and add a controller manually. Now select the Apps midi port you want to send MIDI from. Finally create a new Instrument Track and select the former created MIDI Instrument as MIDI Input.

Synchronisation in Bitwig

If you want to synchronize your Apps with Bitwig, go to Options -> Prefer-
ences -> Controllers and add a new MIDI Clock Transmitter and select the
MIDI port you want to synchronise.

Studio One

Recording Audio in Studio One Recording Audio from an VST in Studio
One is pretty Simple, just create a new VST Track and a new Audio Track.
Now open the Mixer and select the Audio Input of the Audio Track to the
Instrument Track. Enable Recording and you will be able to record the In-
struments Audio. MIDI in Studio One First you have to set up a new External
Device. For that purpose go to Studio One -> Options -> External Devices
and add a new device. In the device Browser select New Keyboard, if you
want to play Studio One Instruments or New Instrument if you want to play
iOS Apps from Studio One. Now select the appropriate MIDI Ports from the
Pop up Receive From and/or Sent To. 23 Synchronisation in Studio One
If you want to sync an App with Studio One please create an external de-
vice, like mentioned in the sections above. Activate the syncing options, and
select the App you want to send the clock to

Garage Band

The following instructions base on GarageBand Version 10.1.0, if the instructions do not work for you please contact us. Receive MIDI in Garageband MIDI Receiving via MIDI Ports in Garageband is not possible. To Receive MIDI you have to use Macs IAC Ports. Go to Applications -> Utilities -> Audio MIDI Setup and open the window MIDI Studio, click on IAC Driver to open the IAC Driver setup. Now create a new IAC Port (e.g. Garageband). Once created and activated this port will appear on your iPad and you can select it from your Apps port list Record Audio in Garageband Since Garageband does not support Audio Unit Instruments by default, audio can only be received via the Audiomux Audio Device by default. Please select your iOS device as audio input or create an aggregated device, if you want to use the audiomux audio device alongside with your default audio device. Using Audio Units in Garageband Before using Audio Units in Garageband please make sure to enable this option (Preferences -> Audio/MIDI -> Effects). Using the Audiomux Generator Create a new Instrument Track and double click on the Piano Symbol in the Track header. No click on the Info Button in the Track Menu. Now you could select the audiomux generator fro the Plug In Menu. 25 Using the Audiomux Generator Create a new Instrument Track and double click on the Piano Symbol in the Track header. No click on the Info Button in the Track Menu. Now you could select the audiomux generator fro the Plug In Menu.

Main Stage

MIDI Integrating midimux into Main Stage is a bit more tricky. First open the MIDI Manager on your Mac. (Applications/Utilities/Audio MIDI Manager) Open the IAC device by double clicking it. Then activate the checkbox next to ?Device is online?. the IAC device is able to send and receive MIDI now. The IAC ports will soon appear in the remote port list of midimux and you can use them like any other ports. Add new ports with your desired names (here: port1: guybrush, port2: threepwood) if necessary. (Applications/Utilities/Audio MIDI Manager/IAC Driver Properties/Add and Remove Ports) Mac Audio MIDI Setup and Main Stage Audio Since Main Stage does not the support of AU Instruments, audio transfer is only possible via the Audiomux audio device or Effect Audio Unit. Select your iOS device as audio input or audio output to achieve the desired tasks.

Logic Pro X

The following instructions base in Logic Pro X 10.1.1, please contact us, if the instructions do not work for you. Record Audio in Logic Pro . 1. Create a Software Instrument Track and load the audiomux generator Audio Unit via the Softwares Track Menu. Activate a new Bus in the Tracks Settings, e.g. Bus 3. Set the gain to 0db via the gain wheel

  2. Create an Audio Track and Select the former created Output Bus as Input. Make sure to enable recording in the Audio Track. Also make sure, to set an active Audio Input in Logics Audio Preferences, otherwise you won't be able to Record any sound in the Audio Track

  Receive MIDI in Logic Pro If you want to play an Software Instrument in Logic Pro X with your iPad, create a Software Instrument Track and load the desired Instrument. Logic Pro X receives MIDI from all connected MIDI Instruments or mirrored iOS MIDI ports.

  Send MIDI from Logic Pro If you want to play an iOS Instrument with Logic, create an External MIDI Track and select the iOS MIDI port you want to control or play Synchronisation with Logic Pro X Logic Pro X can only be used as Master, when it comes to MIDI clock Synchronisation, means that you can sync external gears or iOS Apps with Logic but not the other way around. To sync an App with Logic Pro, go to Preferences -> MIDI -> Sync and open the MIDI Synch Project Settings. Now activate and Select the Destination you want to Sync

Cubase

The following instructions base on Cubase Version 5, but for the desired tasks they should be suffcient for all Versions of Cubase. Record Audio in Cubase Cubase allows several ways to record the incoming audio into an audio track. This sections presents three possible ways to record audio. The third and easies example will be explained via a step by step guide. Route Audio via a Group Channel First create an Instrument Track and load the Studiomux VST and select the desired iOS device and Channel. Then create a Group Channel Track and an Audio Track. Open the VSTs Edit Section and Send the audio to the formerly created Group Channel, then select the Audio Track and select the Group as Input. Finally enable the monitoring of the Audio Track, and you will be able to record the VSTs incoming audio into an Audio Track. Route Audio via a Effect Channel Alternatively you can create Route the audio through an Effect Track. The process of routing is similar to the one shown in the example above. First create an Instrument Track and load the Studiomux VST and select the desired iOS Device and Channel. Then create an Effect Track and an Audio Track. Open the VSTs Edit Section and Send the audio to the formerly created Effect Track, then select the Audio Track and select the Effect Track as Input. Finally enable the monitoring of the Audio Track, and you will be able to record the VSTs incoming audio into an Audio Track. Route Audio via VST Bus The easiest way to record your Apps audio into Cubase is to create an VST Bus. The following steps will guide your through the routing process.

1. Create an Instrument Track and load the Studiomux VST. Select the desired iOS device and channel, to get more Informations about the usage of the VST please have a look at Chapter 1 2. Go to Devices->VST Connections and add a new Bus, give the new Bus a meaningful name e.g "VST Bus". This Bus will route the audio to the Audio Track 3. Klick on the VST Track and select the Tab Channel, klick on the Edit Button "e" and select the former created Bus "VST Bus" as output. 1. Last But not least create an Audio Track and select the "VST Bus" as output. Also make sure that the tracks monitoring is activated. To enable monitoring klick on the speaker symbol on the Audio Track, the color will turn yellow if enabled.

Receive MIDI in Cubase If you want to use an App like Lemur or Touch OSC to control and play a VST in Cubase load Studiomux and the desired App on your iOS device. The Apps MIDI port will be mirrored to your PC/Mac and your have access to them. On Windows make sure to start your DAW after launching the Apps and connecting your iPad to your PC. DAWs on Windows are not capable of detecting new MIDI ports on the fly.

After setting up the connection and all Apps, create a MIDI or Instrument Track and select the desired App as MIDI Input. The MIDI - or Instrument will now receive MIDI. Select the desired Apps MIDI port inside Cubase Send MIDI from Cubase If you want to play or control an App from Cubase create a MIDI Track and select the App mirrored by studiomux as MIDI output. Synchronisation with Cubase Cubase Synchronisation Setup On the left you see the Project Synchronisation Setup. Open it via Transport -> Project Synchronisation Setup. With the help of this Setup you can Sync your Apps with Cubase or the other way around. If you want to synchronise Cubase with an App you have to activate "MIDI Timecode" from the "MIDI Timecode" area. Select an App from "MIDI Timecode Source" and Cubase will be act as an Slave to your App, make sure that the App sends a MIDI clock. To set Cubase so that the App acts like a slave, select the Internal Timecode. Next select an App you want to send the MIDI clock to, make sure to activate the desired options in the list below the MIDI Clock destinations

Reaper

The following instructions base on Reaper Version 5.01, if the instructions do not work for you, please contact us. Recording Audio in Reaper Since Tracks in Reaper support both MIDI and audio it is very easy to record audio from a VST in Reaper. Create an Instrument Track and load the audiomux VST, then right click on the red record button an select Record: output Record: output (stereo). Now click on the re button to arm the track. If you press the global record button you record the audio automatically Receive MIDI in Reaper Reaper MIDI Setup To Receive MIDI Input in Reaper, you have to activate the MIDI ports first. Go to Options -> Preferences -> Audio -> MIDI Devices and enable the ports you u

Traktor DJ with Mac OS

The following instructions base on Traktor DJ Version 2.0.3, if the instructions do not work for you, please contact us via our forum. Receiving and Sending Audio in Traktor is only possible, if you are on Mac OSX 10.8+, since it requires the use of the studiomux audio device. Receive Audio in Traktor Trakto Setup Before setting up Traktor please create an aggregated device (see chapter: aggregated devices for more information about audio devices and aggregated devices). After creating an aggregated device, please select this device as Audio Device in Traktor. Next go to Decks and set one of your Decks to Live Input, then go to input routing and select the appropriate Channels. Send Audio in Traktor