USING THE RECORDING KIT

By hakon.kvidal@nmh.no Version: 27 March 2014

This document is a short introduction on how to use the recording kit. Reading thru this document will save you valuable time and reduce problem potential greatly! Even if you are an experienced technician it will be helpful to spend a few minutes reading this manual.

First of all: Please, be careful! This is fragile equipment!

Content

Use this list to ensure that the recording kit is complete when you pick up and deliver it.

- •   Two sE4 microphones
- •   Two shock-mounts microphone adapters on stereo bar
- •   Two microphone cables, 15 m
- •   Roland Duo-Capture EX Audio Interface
- •   Power supply for audio interface
- •   USB cable
- •   Shure SRH440 Headset
- •   Cabel reel, 5 m
- •   This manual

A successful installation and setup will provide you with the following recording system:

1 Install driver for audio interface

The audio interface can be used with Windows, OS X and iOS (iPad). If you're using it with an iPad there no need for a driver. Just move the *COMPUTER* switch on the rear panel of the audio interface to *TAB*.

Before you connect the audio interface and the computer you need to install a driver for the audio interface on your computer. The driver takes care of the communication between the computer and the audio interface. Download the driver from
http://www.roland.com/support/article/?q=downloads&p=UA-22, or google "duo-capture driver download".

Ensure you download the correct driver for your operating system and install the driver as described in the downloaded files. Windows users: Remember to unzip the downloaded files before installing: Right-click the downloaded file and choose *Unzip all…/Pakk ut alle…*.

IMPORTANT: Read the instructions on the computer screen while installing the driver and do a restart if the installation tells you to.

2 Prepare your computer

Prepare your computer for audio recording:

- Connect the external power supply. The CPU frequency is usually reduced when a computer is running on batteries, reducing the performance of the computer.
- Do a complete restart (if you didn't while installing the driver)
- Disable Wi-Fi and all other networks to avoid interrupts
- Close all programs except your audio recording program. Remember to close programs running in background such as Skype, DropBox, GoogleDrive and SkyDrive.

3 Power supply for audio interface

Connect the external power supply to the audio interface. The audio interface can be powered thru the USB cable but, the preamps of the interface perform better when powered with the external supply.

And if you haven't already done so: use the USB cable and connect the audio interface and the computer, and switch on the *POWER* on the rear panel of the audio interface.

4 Mounting and connecting the microphones

1. Mount the microphone bar with the shock-mounts on a microphone stand.
2. Squeeze the handles of the shock-mount together and slide the microphone into the shock-mount.
3. Connecting and disconnecting microphones with Phantom Power/48 volt switched on may damage the preamps of the audio interface. Therefore, ensure that the *PHANTOM + 48 V* switch at the rear panel of the audio interface are set to *OFF* before connecting the microphones.
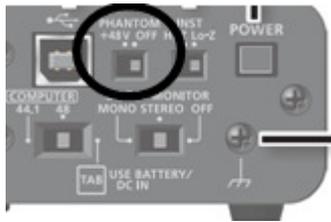
4. Use the microphone cables and connect the microphones to the inputs of the audio interface
5. Switch on *PHANTOM + 48 V*
6. Remember to switch off *PHANTOM + 48 V* before disconnecting the microphones.

5 Choosing DUO-CAPTURE EX in DAW

1. Set the COMPUTER switch on the rear panel of the audio interface to 44.1 (Sample Rate).
2. Start your audio recording program. Such a program is also called a DAW (Digital Audio Workstation).
   a. Ableton:
      i. Choose *Options – Preferences…*
      ii. Choose *Audio* in left column
      iii. Click right of *Driver type* and choose *ASIO*
      iv. Click right of *Audio Device* and choose *DUO-CAPTURE EX*
      v. Close Preference window

   b. Cubase:
      i. Choose *Device* menu and *Device Setup…*
      ii. Choose *VST Audio System* in left column
      iii. Click right of *ASIO Driver* and choose *DUO-CAPTURE EX*
      iv. Close window with *OK* button

   c. Logic
      i. Choose *GarageBand* menu , *Preferencs* and *Audio*
      ii. Choose *Devices*
      iii. For *Output Device*, choose *DUO-CAPTURE EX 44.1 kHz*
      iv. For *Audio Input*, choose *DUO-CAPTURE EX 44. kHz*

v. If you want system sound to be routed to *DUO-CAPTURE* visit *System Preferences*

If you are using none of the above programs, look for *Preferences, Audio Input* or similar, then look for *Driver, Audio Connection* or similar and choose DUO-CAPTURE EX. You may also check the operation manual for the program and look for *Driver*.

6 Setting the recording level

1. Create a new stereo audio track in your DAW
2. Ensure that INPUT 1 & 2 of the audio interface are the input source of the audio track
3. Record enable the track so that the input indicator of the track shows the level of the input signal from the microphones.
4. Start the sound source that are to be recorded (ask the musician to play some music…)
5. Observe the input indicator of the audio track while adjusting the recording level with the *SENS* controls of the audio interface. Be carefull to adjust both the SENS control to the same level to capture the correct stereo image.

7 Monitoring

1. Ensure the *OUTPUT* control of the audio interface is turned all the way down.
2. Move the *DIRECT MONITOR* switch on the rear panel of the audio interface to *OFF*
3. Ensure that the audio track in your DAW are record enabled the track so that the signal from the microphones are routed to the output of the DAW
4. Connect the headphones to the *PHONES* socket on the audio interface
5. Turn up the volume with the *OUTPUT* control on the audio interface

8 Latency, distortion and crackles

The signal in the headphones may be delayed compared with the direct sound from the sound source. In some circumstances there may also be distortion and crackles. The delay is called latency and is caused by the processing time of the recording system (audio interface, driver and computer). Reduce the Buffer Size, like explained below, to minimize the latency. Distortion and crackle are usually caused by CPU overload. Increase the Buffer size, as explained below, to avoid distortion and crackles.

Windows:

1. Hit the Windows key (at the computer keyboard) and type *Duo-Capture EX*
2. Wait while the computer locates the control panel for the audio interface and its shown at the top of the Start menu
3. Hit the Enter key (on the computer keyboard) to open the control panel

4. Move the slider left to reduce Buffer Size and reduce latency
5. Move the slider right to increase Buffer Size to avoid distortion and crackles
6. Hit *OK*

OS X:

1. Choose *System Settings* on *Dock*
2. Choose *DUO-CAPTURE EX*
3. Move slider left to reduce Buffer Size and reduce latency
4. Move slider right to increase Buffer Size to avoid distortion and crackles

9 ORTF Stereo technique

Two microphones may be configured in several ways for stereo recording. We recommend the *ORTF stereo technique.* http://en.wikipedia.org/wiki/ORTF_stereo_technique:
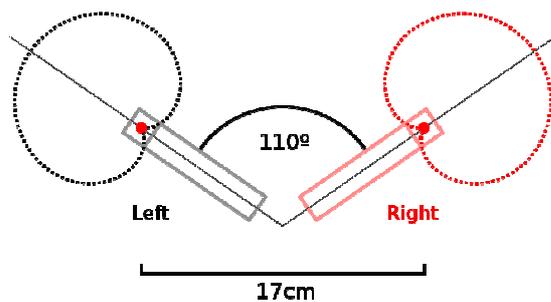
ORTF combines both the volume difference provided as sound arrives on- and off-axis at two cardioid microphones spread to a 110° angle, as well as the timing difference as sound arrives at the two microphone membranes spaced 17 cm apart.

The result is a realistic stereo field that has reasonable compatibility with mono playback. Since the cardioid polar pattern rejects off-axis sound, less of the ambient room characteristics are picked up. This means that the mics can be placed farther away from the sound sources, resulting in a blend that may be more appealing.

As with all microphone arrangements, the spacing and angle can be manually adjusted slightly by ear for the best sound, which may vary depending on room acoustics, source characteristics, and other factors. The angle between the microphones can be reduced to enhance the centre of the sound image, or increased for more width. Larger distance between microphone membranes creates a broader stereo perspective but, be aware that to large distance may create a "hole" in the middle of the sound image.

This arrangement is defined as it is because it was the result of considerable research and experimentation, and its results are predictable and repeatable.

10 Distance between sound source and microphones

Position the microphones far enough from the sound source to pick up the complete sound of the instrument or ensemble.

Adjust distance between sound source and microphone to balance direct sound (from sound source) and room reverb. Larger distance causes more reverb.

11 Microphone switches

The microphones has two switches:

Pad switch. Reduce the signal level with -10 dB or -20dB. Should only be used when the microphone is being used to record exceptionally loud sound sources that risk overloading the microphone preamplifier. Use if the signal is distorted even if the recording level are correct.

Low Cut. Activates a high-pass filter that reduces the amount of low frequencies. Low Cut may be used to reduce the amount of bass boost caused by the proximity effect when working very close to the microphone or to exclude low frequency signals, such as traffic and floor vibrations where the signal being recorded has little or no deep bass content.

12 Disassembly

Ensure that *PHANTOM POWER 48 V* or *POWER* of the audio interface is *OFF* before disconnecting the microphones.

The microphones must be dismantled from the shock-mounts and put into the small bag before they are put back into the carrying case. Leave the shock-mounts mounted on the microphone stereo bar.

Fold the headphones before you put them in the case.

Use the list to ensure that the recording kit is complete when you pick up and deliver it.

13 Help

If you need help; read this manual carefully one more time. If you still need help; ask a friend. Still got a problem? Ask another friend. If you still need help; try Google, then write a polite email to av@nmh.no explain your problem and beg for a solution.

14 Faults and irregularities

All faults and irregularities on the equipment are to be reported to av@nmh.no immediately.

15 Booking the recording kit

Visit http://nmh.no/studenter/praktisk/lyd_og_av/lydutstyr_til_arrangement to book a recording kit.

16 Omni capsules

The microphone capsules has cardiod patterns. There is a pair of omni capsules available and these have to be booked separately at the AV-department using the same booking system as mentioned above. Read more on microphone characteristics here http://en.wikipedia.org/wiki/Microphone#Microphone_polar_patterns

17 Trouble shooting

Crackles and distortion?

Increase Buffer Size, as explained under paragraph *Latency, distortion and crackles*

Delayed sound in headphones?

Reduce Buffer Size, as explained under paragraph *Latency, distortion and crackles*

No signal from microphones?

Ensure *PHANTOM POWER 48 V* on rear panel of audio interface is enabled.

ABLETON LIVE INTRO

By hakon.kvidal@nmh.no Version: January 9, 2014

Ableton Live Intro is an application for sound recording, live electronics and all kinds of music production. It's a downscaled version of *Ableton Live Standard/Suite* with fewer features than its bigger brothers, but enough knobs to keep you going for hours.

The Norwegian Academy of Music owns a site license of *Ableton Live Intro* making it possible to install the application on students and employees private computers.

SYSTEM REQUIREMENTS

What you'll need to install and run *Ableton Live 9 Intro*:

- Intel® Mac with Mac OS X 10.5 or later, or PC with Windows XP, Windows Vista, Windows 7 or Windows 8; Multicore processor; 2 GB RAM; 1024x768 display;
- 3GB free disk space

INSTALLATION

Ensure your computer has a working broadband internet connection, ex. eduroam. More info on eduroam on NMH here http://nmh.no/studenter/praktisk/it/tradlosnett

There are four different versions of the installation files (OS X/Win/32/64-bit). Ensure you download the correct version for your operating system. Download the installation files from https://drive.google.com/folderview?id=0B2t8SFP9GuBLdkoxalMtSFQtdlU&usp=sharing

Windows users: Remember to unzip the downloaded files before installing: Right-click the downloaded file and choose *Unzip all…/Pakk ut alle…*.

Install the downloaded files.

AUTHORIZING

To unlock all the features of *Ableton Live Intro* you need to authorize the software. The music technology teacher will authorize it for you next lesson. Too work with *Ableton* prior to authorization you may choose *Authorize Later.* Some features, i.e. saving are disabled until authorizing.

DEMO LIVE SET

Hopefully you'll hear the sound of the demo Live Set. You may start and stop playback with the spacebar.

LIVE 9 LESSONS

If you want to learn how to use the program, choose *Help – Help View* and choose *A tour of Live* in the right column of the program window.