Music & Audio Recording Studio

User Guide
Audio Interface | Discrete 4 Synergy Core

1. Log into the iMac computer using your Emory credentials.

2. The Antelope Launcher should start automatically (give it a few seconds). Otherwise, launch it from the Dock.

3. Once the Antelope Launcher opens, it should automatically launch the Discrete 4 Synergy Core audio interface (AI) control panel (it may take a few seconds). If it does not, click the Discrete 4 Synergy Core image in the top left area of the window:

![Antelope Launcher image](image)

**Note 1:** Do not click on the image multiple times, as each click will open a separate control panel window.

**Note 2:** If you don’t see the Discrete 4 image, check the back panel of the AI under the iMac and make sure it is powered up (its power cable is connected) and it is connected to the iMac with the USB cable.

The Discrete4 Synergy Core control panel allows adjusting microphone preamps, headphone and monitor volume controls, as well as mixing, FX, and more.

4. **Microphone/Instrument Inputs.** The PREAMPS section controls mics/instruments preamps. The four gain buttons correspond to inputs 1 and 2 on the front of the AI console and inputs 3 and 4 on the back.

Make sure that the microphone/instrument icon in the relevant input section is set correctly. Thus, use the **microphone icon** when using a microphone, the **guitar icon** when connecting an electric guitar, and the **line-in icon** when connecting synthesizers, keyboards, samplers, players, amplifiers, etc.:
The two microphones (Shure SM7B) mounted on two arms by default are connected to input 3 and input 4 on the back of the console. Set the gain of these mics at 60-65 dB:

Set the gain so that the volume level for the channel is between -20 and -5 dB (see the image below). When connecting additional mics or instruments to inputs 1 and 2, adjust their respective gain to keep the volume level in that range. Avoid the level going into the red.
Note that for the additional studio mics (Shure SM57, SM58, and Beta58A), the gain level of about 45 dB is sufficient.

5. **Headphone Outputs.** Four headphone outputs are located on the front panel of Discrete 4 AI. Their volume controls can be accessed the corresponding section of the control panel (see the pic on the right) and adjusted with the corresponding dial:

The output volume to the headphones and to the monitors can be also adjusted by vertical sliders in each corresponding audio channel:

6. **Monitor Outputs.** Two monitors are connected to the back of Descrete4 AI. If they are not on, reach up in the back of each monitor for the power switch. The monitors’ volume can be adjusted by the MONITOR dial on the control panel in the MONITOR/HP1 section.

   *To avoid unwanted feedback, mute the monitors during the recording, mute the mics during the playback, or move the mics further away.*

7. **Front Panel Controls.** The physical controls on the front panel of the Discrete 4 AI can also be used to adjust output volumes. Use the top small button to cycle through monitor, headphones 1-4, and line out volumes. Use the large dial to adjust the volume of the selected output. Press the dial to mute/unmute the selected output.
### Microphones

1. **Shure SM7B** is a dynamic unidirectional cardioid microphone with a smooth, flat, wide-range frequency response and is an industry standard mic for *podcasting*, *voice over*, and other *vocal* recordings. It can also be used for *musical instruments* recordings. Two Shure SM7B mics are mounted on broadcast arms on the studio desk and are connected to inputs 3 and 4 on the back panel of the Discreete4 Synergy Core AI.

2. **Shure SM58** and **Shure Beta58A** are unidirectional cardioid dynamic industry-standard mics for *vocal* recording. The mics can also be used to record *instruments*.

3. **Shure SM57** is a dynamic unidirectional cardioid microphone for recording *musical instruments*, such as drums, guitar, and woodwinds. The mic can also be used to record *voices*. The studio has two such mics.

<table>
<thead>
<tr>
<th>Application</th>
<th>Suggested Mic Placement</th>
<th>Tone Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocals</td>
<td>0-6 in away from mouth, on axis to mic.</td>
<td>Robust sound, emphasized bass, maximum isolation from other sources.</td>
</tr>
<tr>
<td></td>
<td>6 in – 2 ft away from mouth, just above nose height.</td>
<td>Natural sound, reduced bass.</td>
</tr>
<tr>
<td></td>
<td>8 in – 2 ft way from mouth, slightly off to one side.</td>
<td>Natural sound, reduced bass, minimal “s” sounds.</td>
</tr>
<tr>
<td></td>
<td>3 – 6 ft away.</td>
<td>Thinner, distant sound; noticeable levels of ambient noise.</td>
</tr>
<tr>
<td>Guitar and Bass Amplifiers</td>
<td>1 in from speaker, on axis with center.</td>
<td>Sharp attack; emphasized bass.</td>
</tr>
<tr>
<td></td>
<td>1 in from speaker, at edge.</td>
<td>Sharp attack; higher frequency sound.</td>
</tr>
<tr>
<td></td>
<td>6-12 in from speaker, on axis with center.</td>
<td>Medium attack; full, balanced sound.</td>
</tr>
<tr>
<td></td>
<td>2-3 ft from speaker, on axis with center.</td>
<td>Softer attack; reduced bass.</td>
</tr>
<tr>
<td>Tom-Toms</td>
<td>One mic on each tom or between each pair of toms, 1-3 in above drum heads aimed at their tops.</td>
<td>Medium attack; full, balanced sound.</td>
</tr>
<tr>
<td>Snare Drum</td>
<td>1-3 in above rim of top head of drum, aimed at drum head.</td>
<td>Most “snap” from drumsticks. More “snare” sound.</td>
</tr>
</tbody>
</table>
Best Practices

- Aim the mic toward the desired sound source and away from unwanted sources to take advantage of the cardioid pickup pattern, which isolates the main sound source in front of the mic while minimizing background noise.
- Place the mic as close as practical to the desired sound source.
- Work close to the mic for extra bass response.
- Use only one mic to pick up a single sound source.
- Use the fewest number of mics as practical.
- Keep the distance between the mics at least 3 times the distance form each mic to its source.
- Place mics as far as possible from reflective surfaces.
- Do not cover any part of the mic grille with your hand.
AKAI MPK249 Musical Keyboard Controller

- Turn on the keyboard by pressing a small power knob on the back of the keyboard (to the right of the cable when facing the keyboard).

- If you see a Keyboard Setup Assistant message on the computer display saying that your keyboard cannot be identified, do not click Continue. Simply close the window. If you see another window asking you to select your type of keyboard, select ANSI (US and others) and click Done.

- Launch the sound editing application of your choosing. The keyboard is pre-set for Logic Pro X, but you can select a different preset or set the keyboard as you like.
**Logic X Pro Basics**

1. Launch Logic Pro X from the dock.

2. Choose the Empty Project option:

3. For voice recording, click the **Microphone** icon. Select **Input 3** for the left (Shure SM7B) microphone mounted on the arm. Choose **Output 1+2** for stereo playback or **Mono > Output 1** for the left channel only. You can change these setting later. Press **Create**.
4. Press ‘I’ on the keyboard to show Inspector:

5. To add another track for another mic, click the “+” above the first track, and repeat step 3 now selecting Input 4 for the right podcasting microphone mounted on the arm. Choose Output 1+2 for stereo playback or Mono->Output 2 for the right channel only:
6. To enable recording on a mic, press the **Record Enable** and the **Input Monitoring** buttons. To enable both mics to be recorded simultaneously, click the Record Enable and the Input Monitoring buttons for both tracks:

7. To start recording, press the letter ‘R’ on the keyboard.

8. To stop your recording, press the **Spacebar** (use the Spacebar to play/stop a recording.)

9. Press the **Return** key to bring the cursor back to the start of the project, then press the **Spacebar** for playback.

10. Using zoom buttons and sliders in the top right corner, adjust the zoom of the tracks as needed.

11. To split an audio region, highlight the section you’d like to split, move the cursor to the preferred mark, and press **Command + T** to split the region.
12. Click **Audo FX** under Input on the left to add any audio effects, if needed:

13. Press the letter ‘Y’ on the keyboard to open Logic’s sound **Library**.
You can find different vocal presets under **Voice** in the library window:

14. Press **Command + S** to save your project.

15. To export your project into an audio file, press **Command + A** to highlight all regions. Then, press **Command + B** to bounce your project (convert it to one audio file.)

16. Choose the desired format:

   ![Screenshot of Logic Pro X showing bounce settings]

Some other useful key commands/shortcuts for Logic Pro X can be found at this link:

[https://whylogicprorules.com/logic-pro-x-key-commands/](https://whylogicprorules.com/logic-pro-x-key-commands/)