

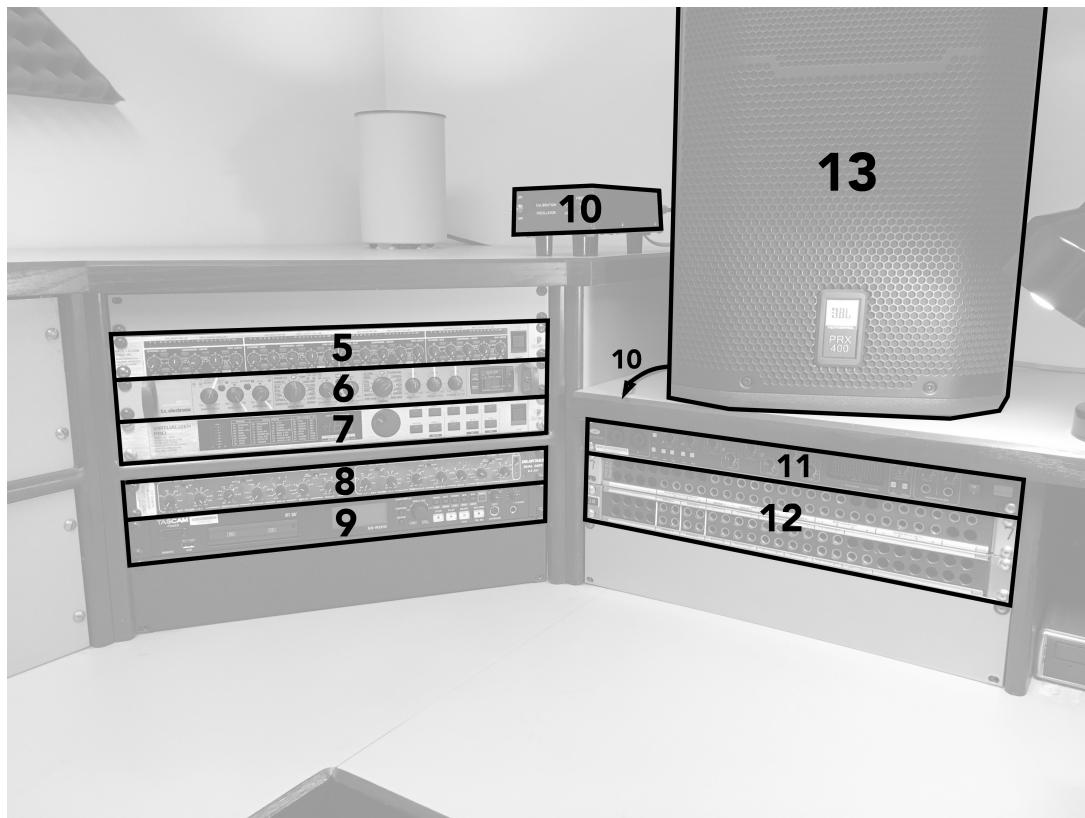
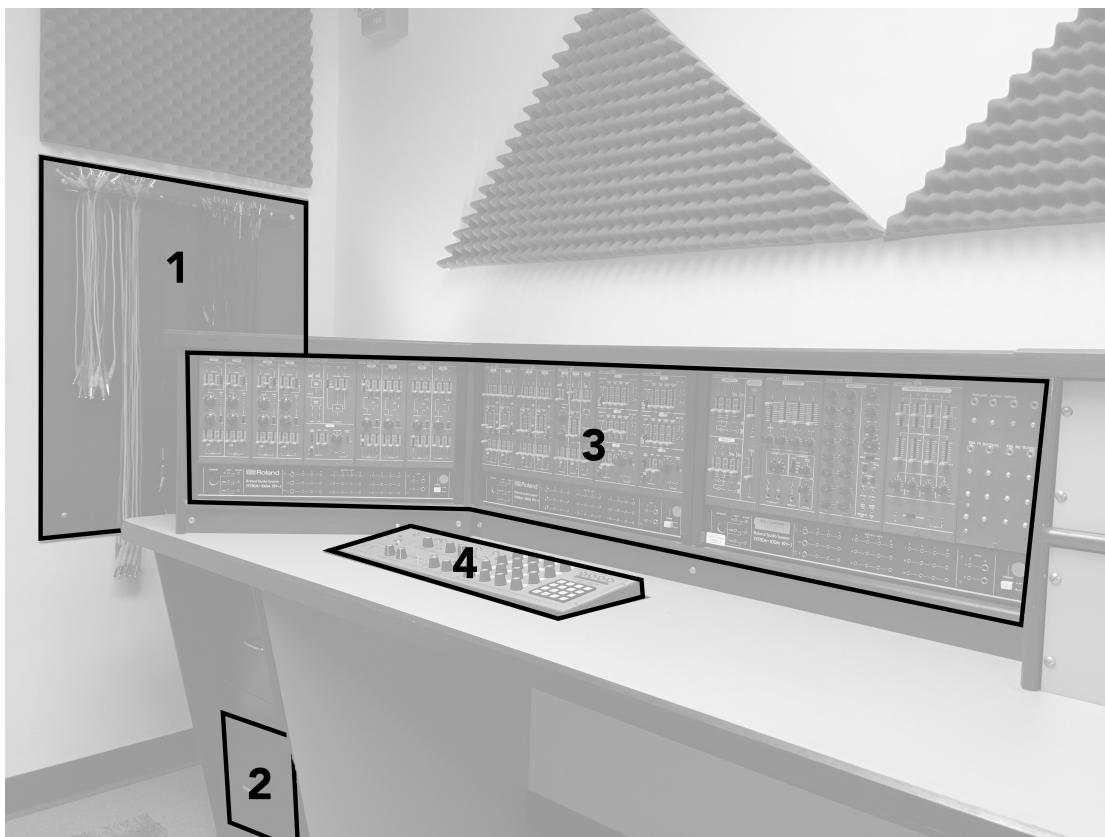
# **STUDIO B**

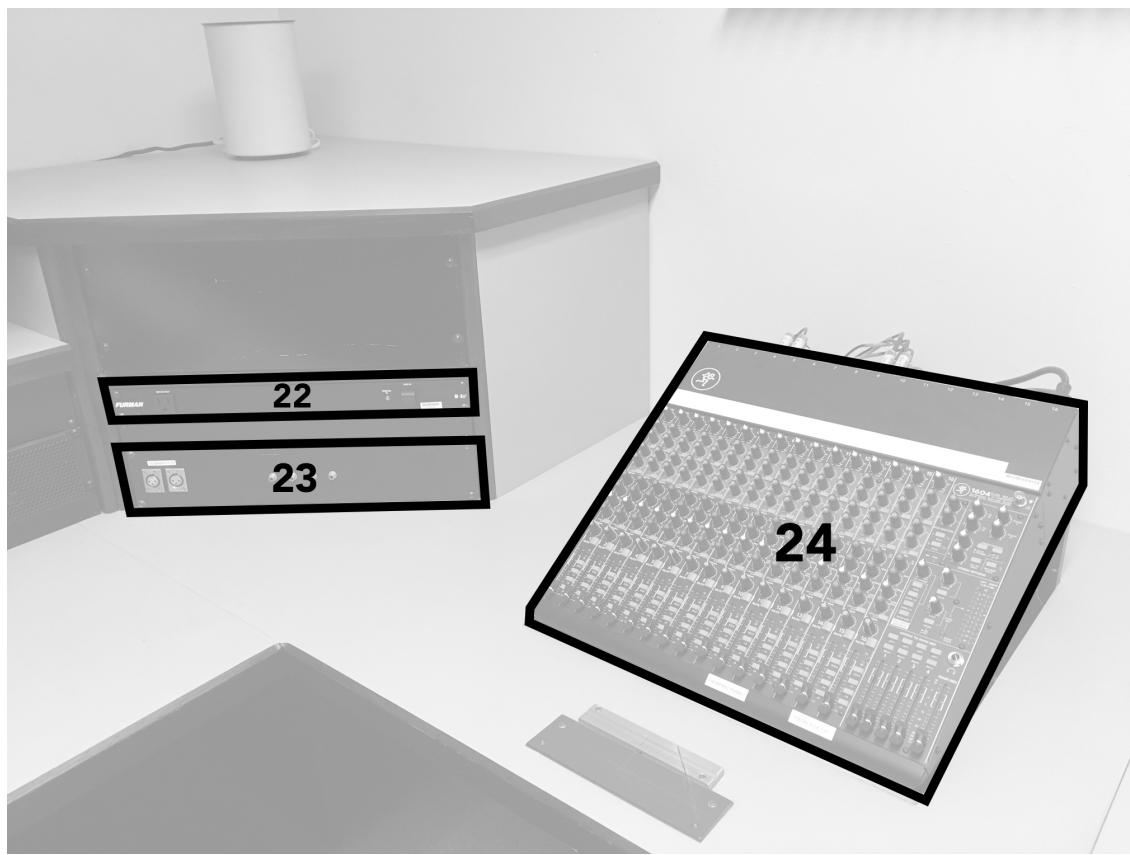
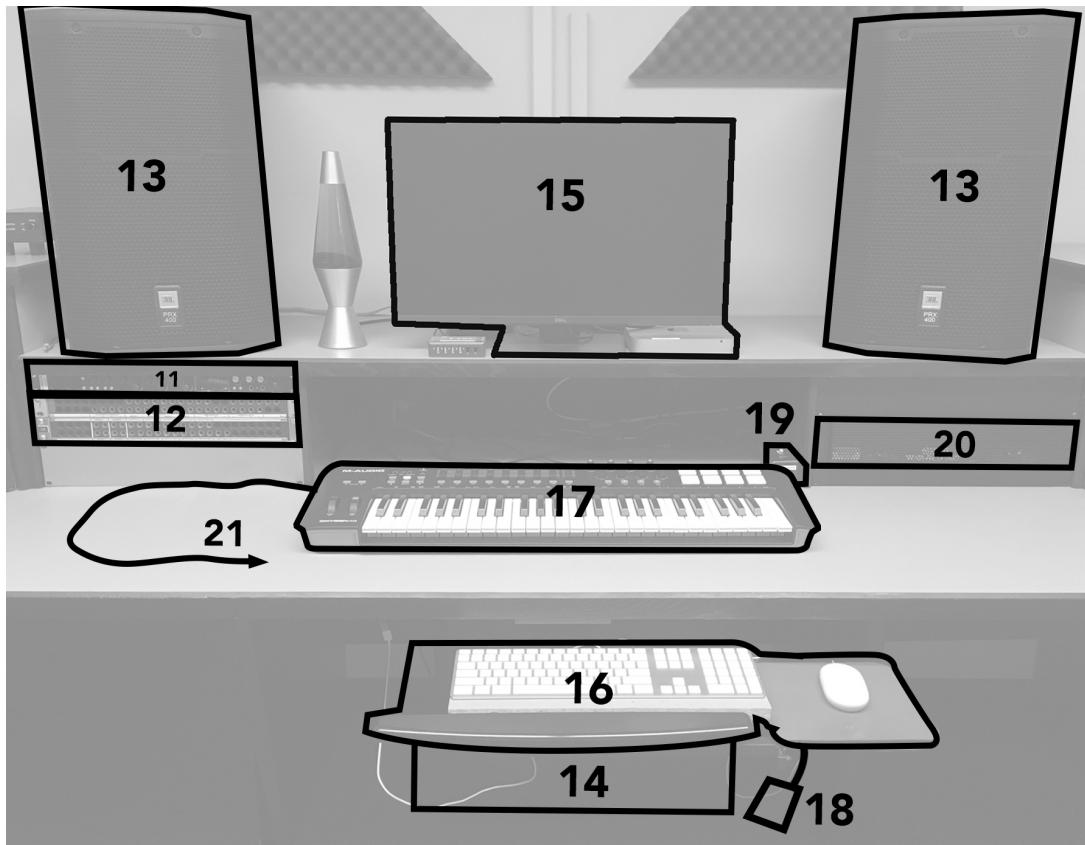
# **MANUAL**

## **EMS Studio B Equipment List**

1. Patch cable rack
2. Microphone drawer
3. Roland System 100M analog modular synthesizer
4. EML voltage controller
5. Multicom dynamics processor
6. T.C. Electronic M350 effects unit
7. Virtualizer Pro effects unit
8. Drawmer noise gate
9. Tascam solid state recorder
10. Calibration oscillator and output plug
11. Focusrite Scarlett 18i20 digital audio interface
12. Patchbay
13. Studio monitors
14. Subwoofer
15. Mac Mini computer and monitor
16. Computer keyboard and mouse
17. M-Audio Oxygen 49 MKIV MIDI keyboard controller
18. MIDI foot pedal
19. Mood lighting power switch
20. Loudspeaker amplifier
21. 1/8" auxiliary cable
22. Main power switch and auxiliary power supply
23. XLR panel
24. Mixer

## Studio B Equipment Diagrams





## Equipment List in Detail

### 1. Patch cable rack

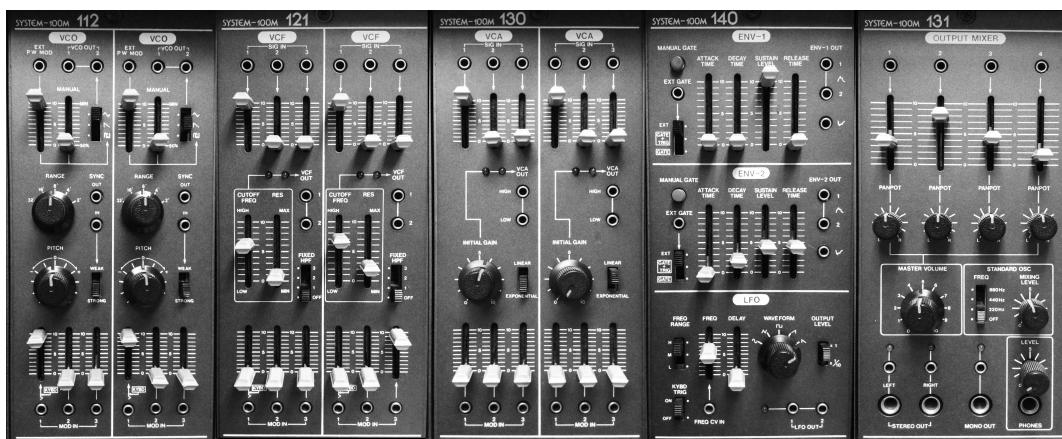
Patch cables enable arbitrary connections between audio devices in order to create a custom signal path. The multi-colored 1/4" TRS cables are used for making connections at the patchbay (12), while the black 1/8" TS cables are used with the Roland modular synthesizer (3).

### 2. Microphone drawer

This drawer contains two Shure SM137 condenser microphones, two XLR cables, and a pair of headphones. Always use caution when handling condenser microphones, as they are fragile. Microphone stands are located in the corner of the studio near the patch cables.

Microphones can be connected via XLR cable to either the input jacks on the front of the Focusrite interface (11) or the XLR panel (23). Connections made at the XLR panel will appear on input channels 11 and 12 at the mixer (24).

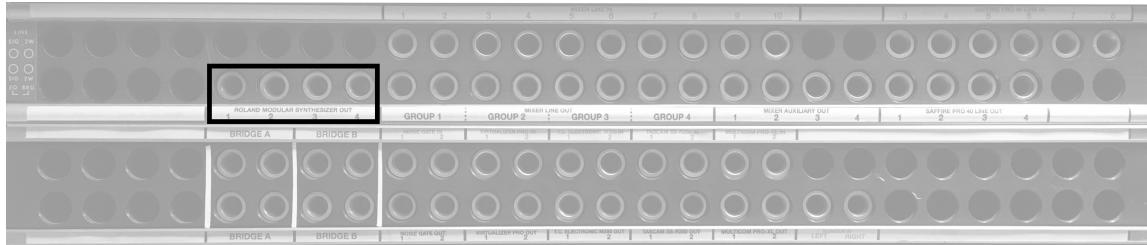
### 3. Roland System 100M modular voltage-controlled synthesizer



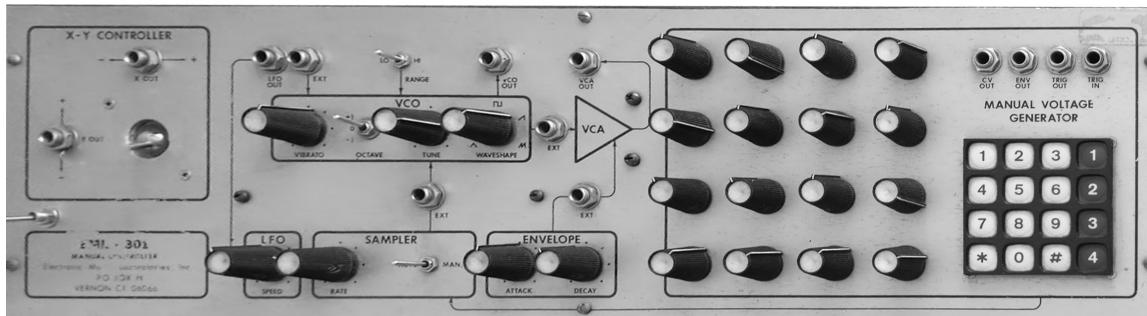
Individual modules on the synthesizer can be connected using the black 1/8" TS cables from the patch cable rack (1). The synthesizer has output jacks for four independent signals in the upper right corner of the synthesizer, labeled "ROLAND AUDIO SIGNAL":



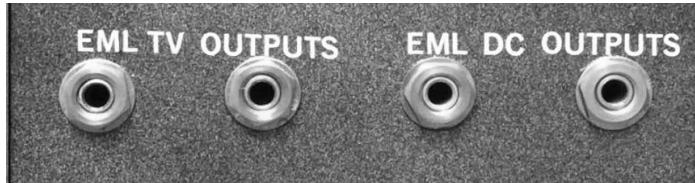
Output signals connected to these jacks are accessible at the patchbay:



#### 4. EML voltage controller



This is a DC voltage generator used to control modules on the Roland synthesizer (3). The outputs of this device are hard-wired to the jacks in the upper right of the Roland synthesizer, labeled “EML TV OUTPUTS” AND “EML DC OUTPUTS.”

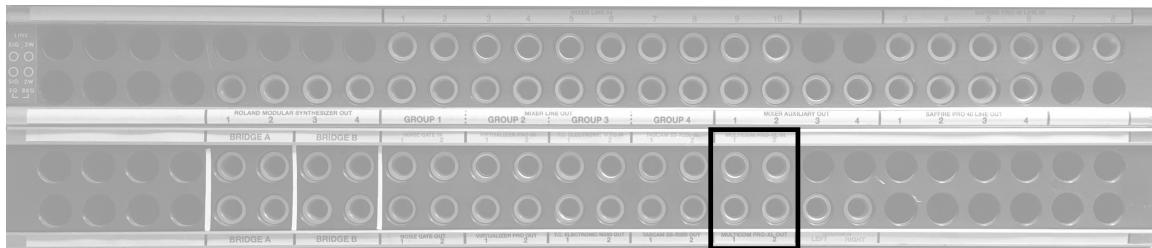


To use this control voltage at the Roland synthesizer, patch from these jacks to the desired destination jack(s).

#### 5. Multicom dynamics processor



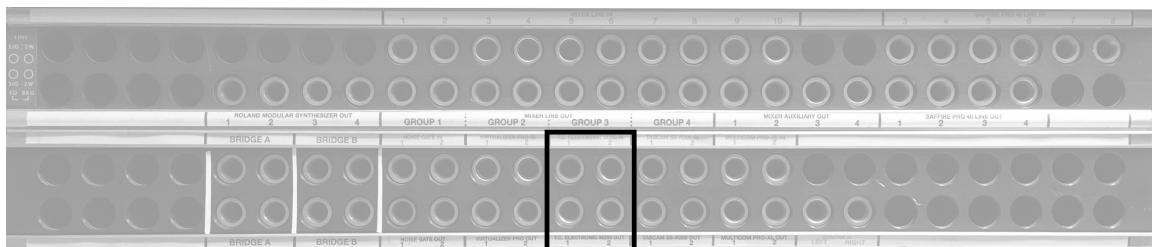
This device has four independent, identical groups of dynamics processing effects, each consisting of an expander/gate, compressor, and peak limiter. Signal is sent to this device using the top pair of jacks labeled below, and output signal is accessible via the bottom jacks. Only the first two channels are connected to the patchbay:



## 6. T.C. Electronic M350 effects unit



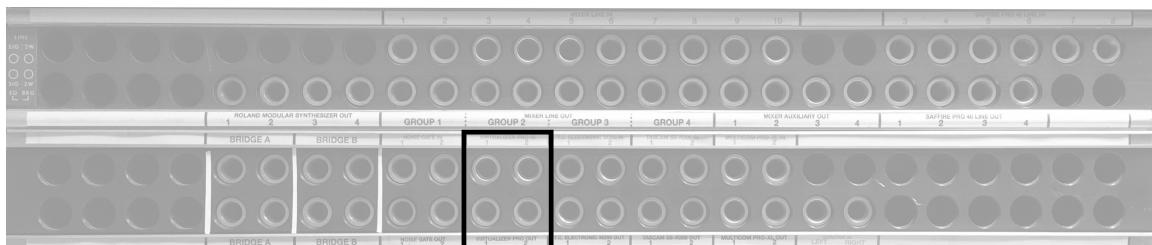
This device provides a variety of delay-based signal effects (echo, reverb, etc). Signal is sent to this device using the top pair of jacks labeled below, and output signal is accessible via the bottom jacks:



## 7. Virtualizer Pro effects unit



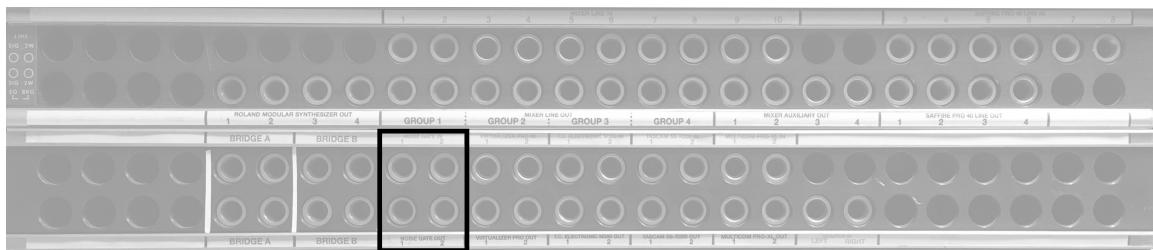
This device provides a variety of delay-based signal effects (echo, reverb, etc). Signal is sent to this device using the top pair of jacks labeled below, and output signal is accessible via the bottom jacks:



## 8. Drawmer noise gate



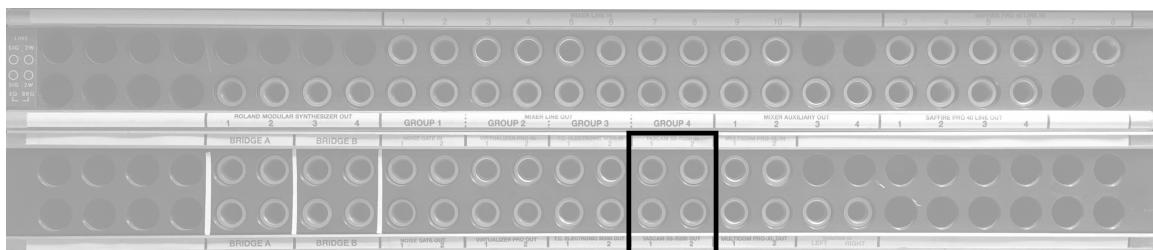
A noise gate silences a signal when its amplitude falls below a threshold. Note that this functionality is also available via the Multicom dynamics processor (5). Signal is sent to this device using the top pair of jacks labeled below, and output signal is accessible via the bottom jacks:



## 9. Tascam solid-state recorder



This device can record audio to and playback from USB flash drives, compact flash cards, and SD cards. Physical storage media must first be formatted by the Tascam (i.e. completely erased) in order to be used. A common application is to record back and forth between the computer and Tascam in order to apply various outboard effects to a signal. Signal is sent to this device using the top pair of jacks labeled below, and output signal is accessible via the bottom jacks:



## 10. Calibration oscillator and output plug

Normally used for testing audio equipment, the calibration oscillator provides a steady sinusoidal tone, switchable between 100 Hz, 1 kHz, and 10 kHz. This device is usually used for troubleshooting and diagnosing problems, but can also be used as a sound source for composition and creative applications. The oscillator output signal is not hard-wired to the

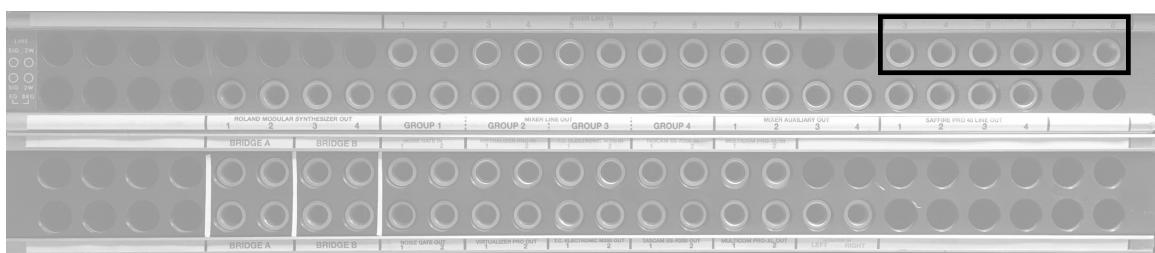
patchbay; instead, is accessible via a free-floating 1/4" TS plug, and can be plugged into a suitable input at the patchbay (e.g. the mixer or an effects unit).

## 11. Focusrite Scarlett 18i20 digital audio interface

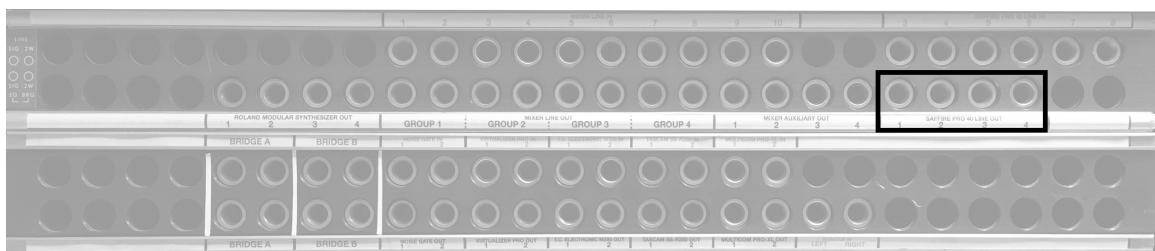


This device allows the computer to communicate with the rest of the studio equipment by converting analog audio to digital, and vice-versa. The device has eight analog inputs and ten analog outputs, and is connected to the computer via USB.

Inputs 1 and 2 are accessible directly on the Focusrite front panel, and inputs 3-8 are accessible via the patchbay:



Although the device has ten analog outputs, only the first four are connected to the patchbay:



Signal routing for the Focusrite (i.e. which physical jacks to use for software input/output) is handled via audio software running on the computer (e.g. Logic Pro X). The Focusrite can also be configured using Focusrite Control software, which is installed on the computer, although generally there should be no need to modify these settings.

To use the headphones outputs on the front panel of the Saffire, a signal sent to software outputs 7-8 is accessible via the first headphones jack, and software outputs 9-10 are accessible via the

second headphones jack. These are the default settings for the Focusrite and should not be modified.

## 12. Patchbay

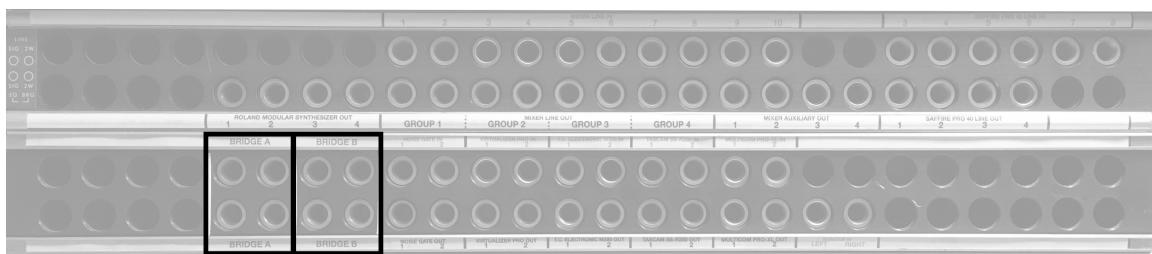
With few exceptions, the inputs and outputs of all audio equipment in Studio B are hard-wired to the patchbay. The patchbay is therefore a centralized location where the user can create an arbitrary signal path that suits a particular application.

As a general rule, patchbay connections should be made by establishing the source connection first, and *then* the destination connection. When de-patching, this order is reversed: disconnect from the destination first, and then disconnect the source. Failure to follow this order may result in a voltage spike being sent to a piece of equipment, which may create a loud speaker “pop,” and may damage the equipment.

*Note that careless patching can create a feedback loop, in which one or more devices are circularly connected, e.g. patching a mixer output signal back into itself. Note also that feedback loops need not include loudspeakers, and may occur silently! Regardless, feedback loops are dangerous for the equipment and can damage your ears. Always be aware, read patchbay labels closely, and think before you patch.*

### Bridges:

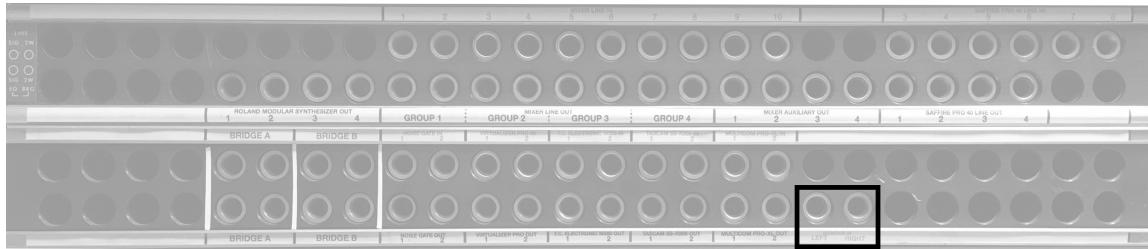
The patchbay includes two groups of four jacks labeled “BRIDGE A” and “BRIDGE B.” Behind the patchbay, these jacks are simply wired together. The primary purpose of a bridge is to facilitate signal duplication. When a signal is plugged into one of these bridges, that signal then becomes available as an output at the other three jacks, providing three independent copies. This can be useful for processing a signal in parallel using two different effects units.



*Note that only one input should be present on a bridge at any given time! Bridges cannot be used to “mix” two signals together. Having two different inputs connected to one bridge is equivalent to plugging an output signal into the **output** jack of another device. Effects can vary, but this is usually bad for audio equipment and may result in damage.*

## 13. Studio monitors

These devices create sound by converting an analog signal into a physical wave. Signal is sent to the monitors using the two patchbay connections labeled below:



Note that any signal sent to the monitors is also sent to the subwoofer (14) in parallel. It is not possible to send signal to the monitors or subwoofer independently.

#### **14. Subwoofer**

Signal is sent to the subwoofer using the patchbay connections in the image immediately above. Any signal sent to the monitors is sent to the subwoofer in parallel. The two monitor inputs are mixed (summed) to a monophonic signal at the subwoofer. *The subwoofer level has been calibrated for the room and should not be adjusted.* Please try to avoid scuffing or muddying the subwoofer with your shoes.

#### **15. Mac Mini computer and monitor**

The power switch for the computer is located on the back right corner of the Mac Mini. If the computer is off, hold this button down for a second or two to power on the computer. Log in as “Composer.” The login password is “Composer” (exactly the same as the login name).

When you are finished using the studio, log out of the Composer account. For the sake of convenience for other users, do not shut down the computer.

The secondary display should power on, function, and sleep automatically. The power switch for the monitor is on the right side of the bottom edge of the screen. It is possible to adjust the height, tilt, and rotation of the monitor screen by gently adjust it.

#### **16. Computer keyboard and mouse**

To avoid damage or cable disconnection, only pull the keyboard/mouse drawer out as far as needed. The keyboard/mouse drawer is designed for the weight of the keyboard and mouse only. Do not place objects (e.g. laptops) on the keyboard/mouse tray.

#### **17. M-Audio Oxygen 49 MKIV MIDI keyboard controller**



This device communicates with the computer via USB cable and sends MIDI data that can be used to control a DAW environment (e.g. Logic Pro X).

### **18. MIDI foot pedal**

This device acts as a sustain pedal for the MIDI keyboard controller (17).

### **19. Mood lighting power switch**

This switch powers on the lava lamp, desk light, and backlights, and generally makes the room a more pleasant place to work. Make sure to turn these lights off when you are finished using the studio.

### **20. Loudspeaker amplifier**

This device powers the studio monitors. For safety reasons, and because the amplifier has been calibrated for the room, it is secured behind a cage. Do not attempt to adjust the amplifier.

### **21. 1/8" auxiliary cable**

This cable allows a laptop, phone, or other personal audio device to be connected with the rest of the studio. The stereo output signal will appear at the mixer (24) on input channels 15 and 16. From there, the signal can be routed to one of the mixer's output channels and accessed via the patchbay.

### **22. Main power switch**

This switch provides power to a majority of the studio equipment. Turn this switch on when you arrive, and turn it off when you are finished using the studio, after you have disconnected all cables from the patchbay.

The computer, subwoofer, and calibration oscillator operate on separate AC circuits and will always have power, regardless of the state of this switch.

This rack power supply also includes a front-facing AC outlet for convenient laptop charging, phone charging, etc. This outlet always supplies power, regardless of the state of the power switch.

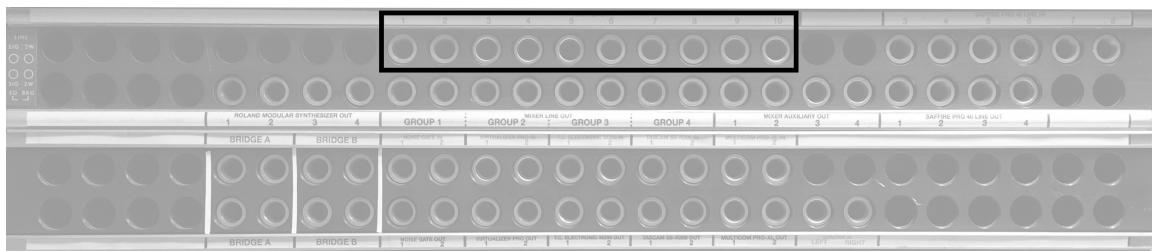
## 23. XLR panel

In addition to the XLR inputs on the front panel of the Focusrite (11), microphones can be connected to this panel, and their signal will appear at the mixer (24) on input channels 11 and 12. From there, the signal can be preamplified and routed to one of the mixer's output channels, and accessed via the patchbay.

Note that the four RCA jacks on the XLR panel are not connected to anything.

## 24. Mixer

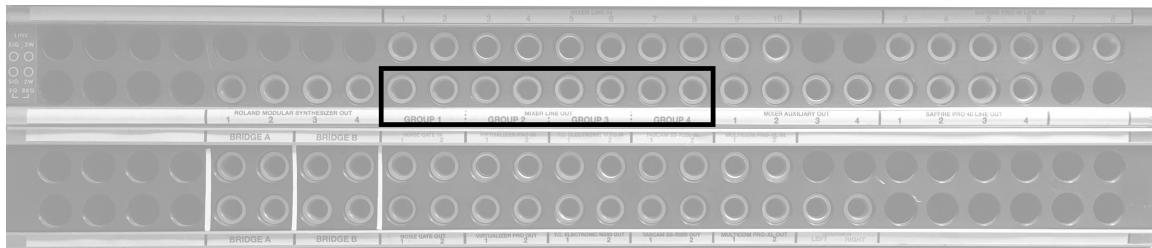
The mixer provides several inputs and outputs, enabling a variety of flexible signal routing options. Signal can be sent to mixer channels 1-10 via the patchbay (12):



A signal on a mixer channel can be routed to an output group pair (either group 1-2 or group 3-4) using the buttons next to the input faders, and a signal can be balanced between a group pair using that channel's pan knob.

For instance, if a signal is routed to group 1-2 and the pan knob is turned all the way to the right, the signal will only play through output group 2. If the pan knob is centered, the signal will play equally out of output groups 1 and 2.

Group outputs appear at the patchbay, indicated below. Note that each group output jack has an identical copy. So, a signal sent out on group 1 will be accessible via both "GROUP 1" jacks. This duplication is done for the convenience of being able to send one signal to two different destinations.



A signal on a mixer input channel can be sent to one of the first four auxiliary outputs by turning the appropriate gain knob on that channel.

A common studio use of auxiliary (“aux”) outputs involves copying a signal to an effects unit to allow the processed and unprocessed signal to be mixed together later in the signal path. Auxiliary outputs 1-4 are accessible via the patchbay:

