THEA 230/330

MIDI LAB MANUAL

THEATER DEPARTMENT, BINGHAMTON UNIVERSITY

Contents

Introduction to Audio and MIDI 9

Brief History of Synthesizers and MIDI 9

Sound 9

Building Blocks of Sound 9

Introduction to MIDI LAB 11

Basic Rules 11

Default 11

MIDI Lab Equipment 13

Synthesizers 13

Roland D-50 13

Korg Triton Extreme 14

E-mu Proteus 2000 15

Audio Equipment 16

Mackie CR1604 VLZ Mixer 16

DMV-Pro Effects Processor 19

Line 6 TonePort MK2 19

MIDI Time Piece MTP AV (MOTU) 20

Subsection 1 20

Subsection 2 20

Chapter 2 Title 21

Bibliography 23

List of Figures

1 Room Arrangement 11

2 Roland D-50 13
3 Korg Triton Extreme 14
4 E-mu Proteus 2000 15
5 Mackie CR1604 Mixer 16
6 Channel from Mackie CR1604-VLZ Mixer 17
7 Master, Sub and Send Controls from Mackie CR1604-VLZ Mixer 18

Dedicated to Sue Peters

Introduction to Audio and MIDI

Brief History of Synthesizers and MIDI

Sound

Building Blocks of Sound

Example of the `newthought` command for starting new sections. Typography examples: ALL CAPS and small caps.

Introduction to MIDI LAB

Welcome to the Theater Department's MIDI Lab. This room offers students who take/TA for the MIDI class (THEA 230/330) a place to play with synthesizers and make music. By taking this class you join a community of people interested in synthesizers, sound, audio technology, and music.

Please do not limit yourselves to the comforts of software instruments. This class offers so much hardware that a

Basic Rules

- Be respectful of the furniture and the equipment. Please wash your hands before touching any of the instruments, audio equipment, and computer.
- Do not eat or drink close to any of the instruments, audio equipment, and computer.
- Return the lab it's default state (see)

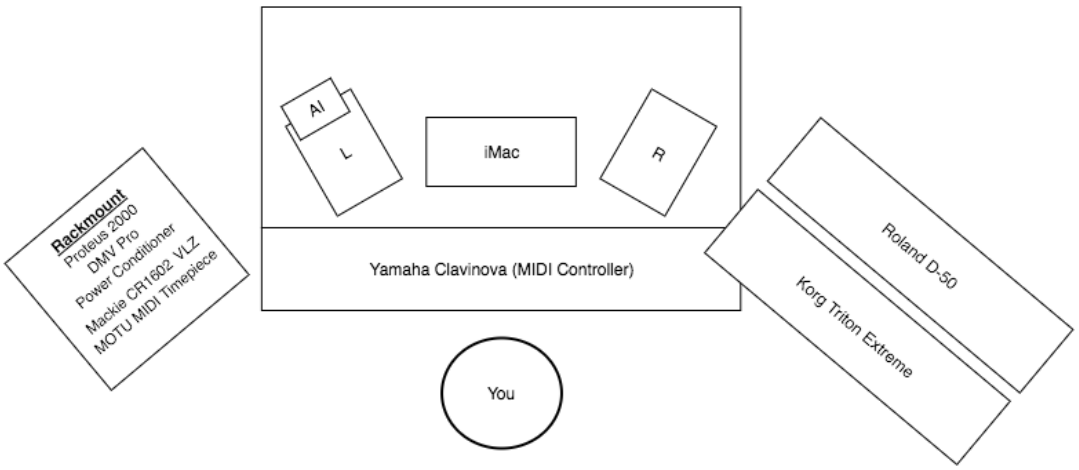

Figure 1: Room Arrangement

Default

MIDI Lab Equipment

Synthesizers

Roland D-50

The Roland D-50 is a polyphonic 61-key synthesizer produced by Roland in 1987. It features Linear Arithmetic synthesis, onboard effects, a joystick, and analog synthesis-styled layout. Linear Arithmetic synthesis combines sample playback with digital synthesis. Roland used samples to simulate the most realistic attack and then the D-50 uses the synthesizer section to sustain the sound. This method saved on the expense of RAM and gave the synthesized sound a texture that made it popular with choir, wind, and string patches. Notable users are: 808 State, Alphaville, Aphex Twin, Enya, Duran Duran, George Michael, Micahel Jackson, Phil Collins, Prince, and Rush.

Roland D-50 Manual (PDF)

Figure 2: Roland D-50

Quick Patching

1. Move that Joystick!
2. test
3. test

Korg Triton Extreme

The Korg Triton made its debut in 2004. It is a workstation and sampler (16 MB sample RAM, 2 minutes and 54 seconds in mono at 48 kHz), has a programmable arpeggiator, ribbon controller, 2 USB ports, and "Valve Force" which can convert the signal into analog form. Notable users are: David Bowie, Coldplay, Lady Gaga, Ronald Jenkees, Linkin Park, Moby, Paul Oakenfold, Scooter, Mike Shinoda, Serj Tankian, and Timbaland.

Figure 3: Korg Triton Extreme

Edit Suggestions

1. Press [PROG] (Program) Mode
2. Press Bank Program keys, turn dial, use touchscreen or use up and down keys to select patches.
3. Press

   MENU

4. Press [REAL TIME CONTROLS]

Add Effects

1. Press [MENU] key, Page Jump Menu, press P8 (or hold MENU key down)
2. Press routing tab in window, choose IFX
3. Press Insert FX tab at the bottom of the window and choose a tab at the bottom of the window
4. Choose desired effect (change to ON by pressing OFF button)
5. Check CHAIN box to add another effect; press OFF button of that effect to change to ON

E-mu Proteus 2000

The E-mu Proteus 2000 was released in 1999. Contains thousands of waves utilizing 32 MB of ROM. Features 128 voice polyphony and 32-part multi-timbrality. E-mu Systems became a popular company with their Emulator sampler and continued to pioneer sample-based synthesis with the Proteus range. The sampler does not allow users to record sounds, but offers a range of factory sounds that then can be layered, filtered, modulated by LFO's, and shaped by envelopes.

E-mu Proteus 2000 (PDF)

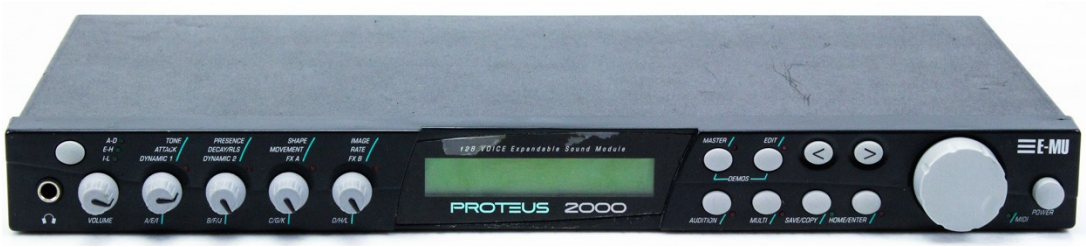

Figure 4: E-mu Proteus 2000

Quick Patching

1. Turn the large knob (data entry knob) to switch through patches
2. Change parameters with the 5 smaller knobs (realtime control knobs) on the left side. The button to the left of the realtime control knobs changes the function of the row of knobs (written list above knobs).
3. For more complex control, press the [EDIT] button and use the data entry knob to select the parameters you want to change. Press the in the data entry knob as an enter function and then change the data values by turning the knob.

Audio Equipment

Mackie CR1604 VLZ Mixer

16 channel audio mixer with ability to send audio to effects processor, other keyboards (for sampling), and for recording on the iMac as well as to a personal computer through a personal audio interface.

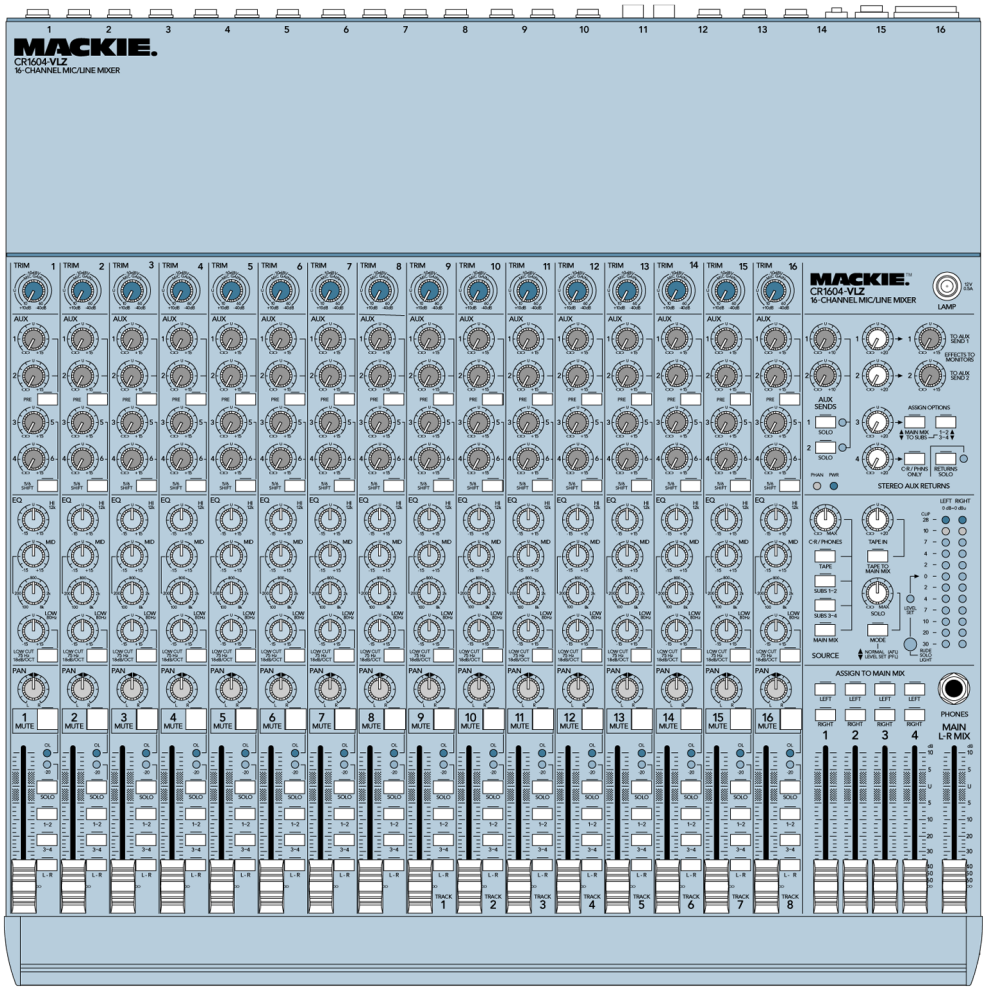

Figure 5: Mackie CR1604 Mixer

Control of Individual Channel

1. Volume Fader: Controls the volume of the channel within the mixer
2. Path (Subs): Chooses where the channel signal is directed to
   (a) **Solo**: Isolates the channel in the mix. Useful for when you only want to hear the specific channel without other ones.
   (b) **1-2**: Sends to Computer for Recording
   (c) **3-4**: Sends to stereo $\frac{1}{4}$" cables for use with personal audio interfaces.
   (d) **L-R**: Sends only to Monitors (Speakers)
3. Mute: Mutes the Channel
4. Pan: Controls the amount of signal sent to the left vs right, 1 vs 2, or 3 vs 4
5. Equalization (EQ)
   (a) **High EQ**: $\pm$15 dB at 12 kHz
   (b) **Mid EQ**: $\pm$15 dB within 1.5 octaves of the frequency center (Determined by Frequency Sweep)
   (c) **Frequency Sweep**: Selects the center of the Mid EQ between 100 Hz and 8 kHz
   (d) **Low Cut Switch**: Removes all signal below 75 Hz (High Pass Filter)
6. Auxiliary Sends: Sends a parallel signal path to other outputs on the mixer. See **??** for more information.
   (a) **Aux A-B**: The DMV Pro effects processor has two inputs and can run different effects on each input. Aux **A** sends a signal to input 1 on the processor and Aux **B** sends a signal to input 2. See the section on the effects processor.
   (b) **Aux C-D**: Not used
7. Trim (Gain): Controls the amplitude of the signal going into the mixer. Input sensitivity is adjusted by -10 dB to 40 dB. Please do not adjust unless necessary.

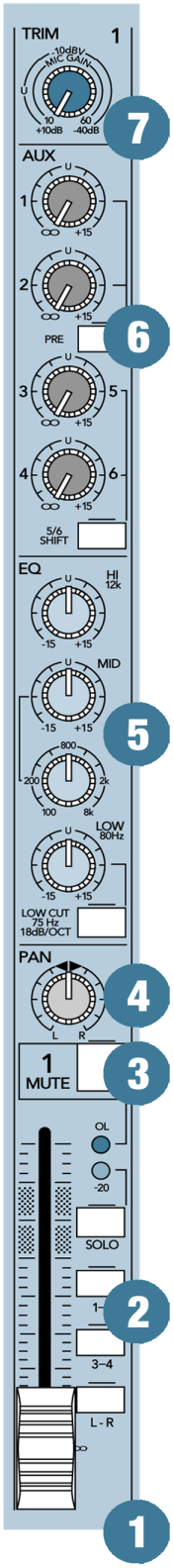

Figure 6: Channel from Mackie CR1604-VLZ Mixer

Control of Mixer

1. Effects to Monitors: Adds effects to monitors.
2. Aux 1-2 Sends: Controls the gain of the AUX 1-2 send output into the mixer.
3. AUX Returns: Controls the volume of the signal returning from the AUX within the mixer.
4. 1-2/3-4 Toggles: Controls the path of the signal to
5. IGNORE ABOVE
6. C-R/Phones: Controls volume to the Control Room out and the Headphone Jack
7. Selects what inputs are routed to the meter display
8. Meter Display: Visually shows the strength of the signal. Want the highest possible signal strength (green) without clipping (red light). At yellow compression occurs.
9. Selects what inputs are routed to the meter display, the C-R out and the headphone jack.
10. Solo Knob: Controls the level of the soloed channels
11. Mode Control:
    (a) **Normal (AFL)**: solo signal is post EQ, Pan, and Fader
    (b) **Level Set (PFL)**: solo signal is pre EQ, Pan, and Fader
12. Headphone Jack: Accepts $\frac{1}{4}$ in. plug. Feel free to use your own headphones.
13. Main Mix Assigns: Allows fader subgroups 1-4 to be assigned left, right, or both channels in main mix.
14. Subgroup Volume Faders: Control the output levels of chosen group. Adjusting the volume of subgroup 1-2 will change the volume audio into the iMac. Adjusting 3-4 will change volume of the audio going into personal audio equipment.
15. Master Fader: controls output to speakers.

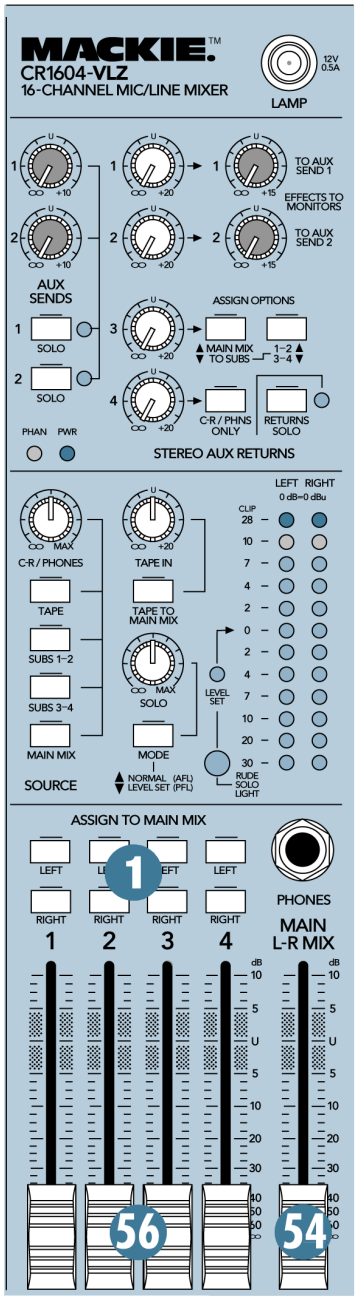

Figure 7: Master, Sub and Send Controls from Mackie CR1604-VLZ Mixer

DMV-Pro Effects Processor

Line 6 TonePort MK2

MIDI Time Piece MTP AV (MOTU)

Subsection 1

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Bibliography