SAFETY PRECAUTIONS AND ELECTRICAL REQUIREMENTS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR OTHER MOISTURE.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: DO NOT PERMIT FINGERS TO TOUCH THE TERMINALS OF POWER PLUGS WHEN INSTALLING OR REMOVING THE PLUG TO OR FROM A POWER SOURCE.

IMPORTANT SAFEGUARDS

1. Read instructions - All the safety and operating instructions should be read before operating the MOTU Traveler-mk3.
2. Retain instructions - The safety instructions and owner’s manual should be retained for future reference.
3. Heed Warnings - All warnings on the MOTU Traveler-mk3 and in the owner’s manual should be adhered to.
4. Follow Instructions - All operating and use instructions should be followed.
5. Cleaning - Unplug the MOTU Traveler-mk3 from the computer before cleaning and use a damp cloth. Do not use liquid or aerosol cleaners.
6. Power Sources - The MOTU Traveler-mk3 should be operated only from the type of power sources indicated on the marking label.
7. Power-Cord Protection - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the MOTU Traveler-mk3.
8. Lightning - For added protection for the MOTU Traveler-mk3 during a lightning storm, unplug its power supply from any wall outlets. This will prevent damage to the MOTU Traveler-mk3 due to lightning and power line surges.
9. Servicing - Do not attempt to service this MOTU Traveler-mk3 yourself as opening or removing covers will expose you to dangerous voltage and other hazards. Refer all servicing to qualified service personnel.
10. Damage Requiring Service - Unplug the MOTU Traveler-mk3 from the computer and refer servicing to qualified service personnel under the following conditions.
   a. When the power supply cord or plug is damaged.
   b. If liquid has been spilled or objects have fallen into the MOTU Traveler-mk3.
   c. If the MOTU Traveler-mk3 has been exposed to rain or water.
   d. If the MOTU Traveler-mk3 does not operate normally by following the operating instructions in the owner’s manual.
   e. If the MOTU Traveler-mk3 has been dropped or the cabinet has been damaged.
   f. When the MOTU Traveler-mk3 exhibits a distinct change in performance, this indicates a need for service.
11. Replacement Parts - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
12. Safety Check - Upon completion of any service or repairs to this MOTU Traveler-mk3, ask the service technician to perform safety checks to determine that the product is in safe operating conditions.

ENVIRONMENT

Operating Temperature: 10°C to 40°C (50°F to 104°F)

AVOID THE HAZARDS OF ELECTRICAL SHOCK AND FIRE

Do not handle the power supply, or power cables with wet hands.

DC INPUT

10-18V, 12 watts

CAUTION: DANGER OF EXPLOSION IF BATTERY IS REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY MANUFACTURER. DISPOSE OF USED BATTERY ACCORDING TO MANUFACTURER’S INSTRUCTIONS.
About the Mark of the Unicorn License Agreement and Limited Warranty on Software

TO PERSONS WHO PURCHASE OR USE THIS PRODUCT, carefully read all the terms and conditions of the “click-wrap” license agreement presented to you when you install the software. Using the software or this documentation indicates your acceptance of the terms and conditions of that license agreement.

Mark of the Unicorn, Inc. (“MOTU”) owns both this program and its documentation. Both the program and the documentation are protected under applicable copyright, trademark, and trade-secret laws. Your right to use the program and the documentation are limited to the terms and conditions described in the license agreement.

Reminder of the terms of your license

This summary is not your license agreement, just a reminder of its terms. The actual license can be read and printed by running the installation program for the software. That license agreement is a contract, and clicking “Accept” binds you to MOTU to all its terms and conditions. In the event anything contained in this summary is incomplete or in conflict with the actual click-wrap license agreement, the terms of the click-wrap agreement prevail.

YOU MAY: (a) use the enclosed program on a single computer; (b) physically transfer the program from one computer to another provided that the program is used on only one computer at a time and that you remove any copies of the program from the computer from which the program is being transferred; (c) make copies of the program solely for backup purposes. You must reproduce and include the copyright notice on a label on any backup copy.

YOU MAY NOT: (a) distribute copies of the program or the documentation to others; (b) rent, lease or grant sublicenses or other rights to the program; (c) provide use of the program in a computer service business, network, time-sharing, multiple CPU or multiple user arrangement without the prior written consent of MOTU; (d) translate, adapt, reverse engineer, decompile, disassemble, or otherwise alter the program or related documentation without the prior written consent of MOTU.

MOTU warrants to the original licensee that the disk(s) on which the program is recorded be free from defects in materials and workmanship under normal use for a period of ninety (90) days from the date of purchase as evidenced by a copy of your receipt. If failure of the disk has resulted from accident, abuse or misapplication of the product, then MOTU shall have no responsibility to replace the disk(s) under this Limited Warranty.

THIS LIMITED WARRANTY AND RIGHT OF REPLACEMENT IS IN LIEU OF, AND YOU HEREBY WAIVE, ANY AND ALL OTHER WARRANTIES, BOTH EXPRESS AND IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE LIABILITY OF MOTU PURSUANT TO THIS LIMITED WARRANTY SHALL BE LIMITED TO THE REPLACEMENT OF THE DEFECTIVE DISK(S), AND IN NO EVENT SHALL MOTU OR ITS SUPPLIERS, LICENSORS, OR AFFILIATES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE, LOSS OF PROFITS, LOSS OF DATA OR DATA BEING RENDERED INACCURATE, OR LOSSES SUSTAINED BY THIRD PARTIES EVEN IF MOTU HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE. SOME STATES DO NOT ALLOW THE LIMITATION OR EXCLUSION OF LIABILITY FOR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Update Policy

In order to be eligible to obtain updates of the program, you must register the software at motu.com.

Copyright Notice

Copyright © 2008, 2007, 2006, 2005, 2004 by Mark of the Unicorn, Inc. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any human or computer language, in any form or by any means whatsoever, without express written permission of Mark of the Unicorn, Inc., 1280 Massachusetts Avenue, Cambridge, MA 02138, U.S.A.

Limited Warranty on Hardware

Mark of the Unicorn, Inc. and S&S Research (“MOTU/S&S”) warrant this equipment against defects in materials and workmanship for a period of TWO (2) YEARS from the date of original retail purchase. This warranty applies only to hardware products; MOTU software is licensed and warranted pursuant to separate written statements.

If you discover a defect, first write or call Mark of the Unicorn at (617) 576-2760 to obtain a Return Merchandise Authorization Number. No service will be performed on any product returned without prior authorization. MOTU will, at its option, repair or replace the product at no charge to you, provided you return it during the warranty period, with transportation charges prepaid, to Mark of the Unicorn, Inc., 1280 Massachusetts Avenue, MA 02138. You must use the product’s original packing material for shipment, and insure the shipment for the value of the product. Please include your name, address, telephone number, a description of the problem, and the original, dated bill of sale with the returned unit and print the Return Merchandise Authorization Number on the outside of the box below the shipping address.

This warranty does not apply if the equipment has been damaged by accident, abuse, misuse, or misapplication; has been modified without the written permission of MOTU, or if the product serial number has been removed or defaced.

ALL IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO TWO (2) YEARS FROM THE DATE OF THE ORIGINAL RETAIL PURCHASE OF THIS PRODUCT.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, ORAL OR WRITTEN, EXPRESS OR IMPLIED. NO MOTU/S&S dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

MOTU/S&S ARE NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, OR UNDER ANY LEGAL THEORY, INCLUDING LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE OR REPLACEMENT OF EQUIPMENT AND PROPERTY AND COST OF REMOVAL, INSTALLATION, OR REPRODUCING ANY PROGRAM OR DATA STORED IN OR USED WITH MOTU/S&S PRODUCTS.

Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

MOTU, AudioDesk, Mark of the Unicorn and the unicorn silhouette logo are trademarks of Mark of the Unicorn, Inc.
Contents

5  Quick Reference: Traveler-mk3 Front Panel
6  Quick Reference: Traveler-mk3 Rear & Side Panels
7  Quick Reference: MOTU Audio Setup
9  About the Traveler-mk3
15  Packing List and Mac System Requirements
17  Installing the Traveler-mk3 Hardware
33  Installing the Traveler-mk3 Mac Software
37  MOTU Audio Setup
43  Traveler-mk3 Front Panel Operation
55  Digital Performer
59  AudioDesk
63  Other Mac OS X Audio Software
71  Reducing Monitoring Latency
77  CueMix FX
107 MOTU SMPTE Console
111 Troubleshooting
Quick Reference: Traveler-mk3 Front Panel

1. These four detented digital trim knobs provide 53 dB of pre-amp gain for the four preamp inputs (analog 1-4) which provide low-impedance XLR mic input or high-impedance TRS guitar/instrument input. The knobs also function as pad switches (when pushed) for a 20 dB pad. When you turn or push the knobs, you'll see dynamic feedback of your adjustment in the LCD display. The total gain range — from when pad is disabled and trim is turned all the way down to when the pad is enabled and trim is turned all the way up — is 73 dB. Use the trim knobs and the LCD metering for individual channels (via the METERS knob) to calibrate the input signal level. The semic inputs are also equipped with the Traveler-mk3’s V-U™ meter, which provides an additional +12 dB of headroom above zero with no clipping or digital distortion. See “Overload protection (mic/guitar inputs only)” on page 87 for details.

2. Turn the VOL knob to control the headphone volume. The LCD provides visual feedback for the headphone volume setting as you turn the knob. Push the knob once to view the current volume setting in the LCD display.

3. From the factory, the MASTER VOL knob controls the main outs (Analog 1-2), but MASTER VOL can be programmed to control any combination of outputs. Use “The Monitor Group” on page 100 for details. Push the knob once to view the current volume setting in the LCD display. A second push to the “MUTE” position will mute the monitor group; a third push to return to the previous volume. Note: if the monitor group is programmed to not include the main outs, the MASTER VOL knob will no longer control the volume of the main outs.

4. This section controls the Traveler-mk3's built-in CueMix FX mixer and effects. There are eight stereo mix busses: each bus mixes all inputs (or any subset you wish) to a stereo output of your choice. You can apply EQ, compression and/or reverb to inputs and outputs. The four knobs to the left of the LCD correspond directly to the four labeled sections of the LCD. Use the CHANNEL knob to choose the input/output mix you wish to edit. Push it to switch among inputs, outputs and buses, then turn it to choose the desired channel or bus. Use the PAGE, PARAM, and VALUE knobs to access the mix settings for the chosen channel.

5. These four 4-segment meters show input signal level for the mic/instrument XLR/combo inputs on the rear panel.

6. These four 4-segment meters show input signal level for the analog TRS input jacks on the rear panel.

7. 4-segment metering for AES/EBU input.

8. MIDI activity LEDs for MIDI input and output.

9. 4-segment metering for S/PDIF input.

10. Optical digital LO signal present LEDs for each bank.

11. When the Traveler-mk3 is resolving to SMPTE time code, the LO light glows green when lockup has been achieved. The TACH light blinks once per second when the Traveler-mk3 is successfully reading address (time code) information.

12. The Traveler-mk3 is powered by its FireWire connection to the computer. Use this power switch to turn it on and off. It is recommended that you always power off the Traveler-mk3 before unplugging the FireWire cable.

13. The TACH light blinks once per second when the Traveler-mk3 is successfully reading address (time code) information.

14. These four round “L/R” LEDs indicate signal presence on the stereo S/PDIF and AES/EBU digital outputs.

15. These round LEDs indicate signal presence on the eight rear-panel TRS analog outputs. Their threshold is around -42 dB. They do not indicate clipping in any way: your host software level meters to calibrate output levels. Outputs 1-2 serve as the main outs. Push and then turn the front-panel volume knob for volume control.

16. The multi-purpose backlit LCD shows system settings, CueMix FX settings, or metering, depending on which knobs you turn. The labels above and below the LCD refer to the four digital rotary encoders to the left of the LCD. The channel numbers indicate individual channels when viewing level meters for banks of 8 channels.

17. Push the CHANNEL knob repeatedly to cycle among the four main sections of the mixer: mix busses, inputs, outputs and the reverb module. Push the PARAM knob to enter the SETUP menu, which provides global Traveler-mk3 settings, such as the global sample rate, etc.

18. Push the METERS knob to cycle among three meter display modes in the LCD: 1) vertical multi-channel meters, 2) horizontal long-throw metering for individual channels, and 3) CueMix FX/Setup. In either meter mode (1 or 2), turn it to choose the banks and/or channels you wish to view in the LCD.

19. This is a standard quarter-inch stereo headphone jack. From the factory, it serves as its own independent output. But it can be programmed to mirror any other output pair (digital or analog). Use the volume knob above to control its level.

20. These switches provide phantom power for their respective microphone input. Left is off, right is on. (Right on!)
Quick Reference: Traveler-mk3 Rear & Side Panels

1. These jacks provide stereo, 24-bit AES/EBU digital input and output at any sample rate up to 96kHz. They are disabled at the 4x rates (176.4 and 192kHz).

2. Connect the Traveler-mk3 to the computer here using the standard 1394 FireWire A cable provided with your Traveler-mk3. Important note: It is best to turn off the Traveler-mk3 when plugging in the FireWire cable, as this avoids the possibility of static discharge, which can harm the electrical components in the Traveler-mk3 or your computer.

3. These are standard word clock jacks. Use them for a variety of applications, such as for digital transfers with devices that cannot slave to the clock supplied by their audio interfaces. You can also connect other devices to this jack and monitor them with the front panel LCD and CueMix FX software. The trim can be adjusted over a range of 0 to +12 dB.

4. These optical digital I/O connectors can be connected either to an ADAT-compatible "lightpipe" device (such as a digital mixer) or to a S/PDIF optical ("TOSLink") compatible device. Choose from the equivalent 1x rate (either 44.1 or 48 kHz). This setting is made via MOTU Audio Setup. See "Word Out" on page 42.

5. These jacks provide stereo, 24-bit S/PDIF digital input and output at any sample rate up to 96kHz. They are disabled at the 4x rates (176.4 and 192kHz).

6. The Traveler-mk3's eight analog outputs are gold-plated, balanced +4dB TRS (tip/ring/sleeve) quarter-inch connectors that can also accept an unbalanced plug. They are equipped with 24-bit 192 kHz converters.

7. These two balanced, quarter-inch jacks serve as the Traveler-mk3's main outputs. You can connect them to a set of powered studio monitors and then control the volume from the front panel MASTER VOL volume knob. To hear disk tracks in your audio software on these main outs, assign the disk tracks (and master fader) to these main outs (Analog 1-2). You can also use CueMix FX to monitor live Traveler-mk3 inputs here as well.

8. The analog inputs are gold-plated, balanced TRS (tip/ring/sleeve) quarter-inch connectors that can also accept an unbalanced plug. The front panel LCD and CueMix FX software can be used to set up a variety of applications for the analog inputs, such as for powering the analog inputs from other devices. The trim can be adjusted over a range of 0 to +12 dB.

9. These four XLR/TRS combo jacks accept either a mic cable or a quarter-inch guitar cable. Both the low-impedance XLR jack and the high-impedance TRS jack are equipped with a 120 dB gain boost. The trim can be adjusted over a range of 0 to +12 dB.

10. Connect a MIDI device here using standard MIDI cables. Connect the Traveler-mk3's MIDI OUT port to the MIDI IN port on the other device. Conversely, connect the Traveler-mk3's MIDI IN port to the MIDI OUT port on the other device. This allows you to control and monitor MIDI devices, but be sure to manage their MIDI channels (so that they don't receive or transmit on the same channel).

11. For bus-powered operation, turn on the Bus Power Enable switch. For battery operation (i.e. powering the Traveler-mk3 from a battery pack via the 4-in XLR jack), turn this switch to the OFF position.

12. Connect a 10-24V battery pack or other DC power supply here via a 4-in XLR cable. Remember to also turn the BUS POWER switch to the OFF position.

13. This jack accepts any standard 10-24V DC power supply and can be used to power the Traveler-mk3. When turned on, this power supply provides 33 dB of gain.
Quick Reference: MOTU Audio Setup

The Traveler-mk3 driver provides a stereo return back to the computer. This return feeds the signal on any Traveler-mk3 output pair or CueMix FX mix bus directly back to the computer, where you can record, process, monitor or otherwise use it. This is a great way to "bounce" full mixes, complete with live audio routed through the Traveler-mk3 only, back into the computer.

This menu lets you choose what you will hear from the PHONES jack. To mirror the main outs, choose Analog 1-2. Or you can mirror any other output pair. To hear the phones as their own independent output, choose Phones 1-2.

The Clip Hold Time controls how long the top-most red LED remains illuminated after clipping. Choose 'Infinite' to be able to clear the LED from Digital Performer. The Peak Hold Time controls how long the highest illuminated LED remains lit before going dark.

In the standard Mac OS X fashion, the console appears in the dock when you launch it. If the Launch option is checked (as shown above), the icon appears as soon as you switch on your Traveler-mk3 interface. If you click and hold on the dock icon (instead of clicking it) or control-click, a menu of hardware settings appears as shown to the right. You can view and configure any hardware settings from this menu, without opening the console window.
CHAPTER 1  About the Traveler-mk3

Overview .................................................. 9
The Traveler-mk3 Rear Panel ......................... 10
The Traveler-mk3 Front Panel ....................... 12
Traveler-mk3 side panel .............................. 12
16-bit and 24-bit recording .......................... 13
CueMix FX 32-bit floating point mixing and effects... 13
AudioDesk............................................... 14
Digital Performer ..................................... 14
Other Host Audio Software ......................... 14

OVERVIEW
The Traveler-mk3 is a FireWire audio interface for Mac and Windows with on-board effects and mixing that offers 28 inputs and 30 outputs at 44.1 or 48 kHz. Both analog and digital I/O are offered at sample rates up to 96 kHz, and analog recording and playback is offered at rates up to 192 kHz. All inputs and outputs can be accessed simultaneously. The Traveler-mk3 consists of a light (3.8 pounds) and small (14.75 x 9 inches) aluminum alloy-encased interface that connects directly to a computer via a standard IEEE 1394 FireWire™ cable.

The Traveler-mk3 offers the following main features:

- Bus-powered and battery-powered operation
- Four combo XLR/TRS mic/guitar inputs with preamps, 48V phantom power, 20 dB pad, Precision Digital Trim™ and V-Limit™ overload protection
- Four 24-bit analog quarter-inch (TRS) inputs
- Eight 24-bit analog quarter-inch (TRS) outputs
- Operation on all analog I/O at standard sample rates up to 192 kHz
- Digitally controlled analog trim for all analog inputs
- Two banks of optical digital I/O that provide 16 channels of ADAT optical at 48 kHz, 8 channels of S/MUX optical I/O at 96 kHz or two banks of stereo TOSLink at rates up to 96 kHz
- RCA S/PDIF at sample rates up to 96 kHz
- AES/EBU digital I/O at rates up to 96 kHz
- Word clock I/O
- MIDI I/O
- On-board SMPTE synchronization
- Headphone jack with independent volume control
- Programmable master volume knob
- CueMix™ FX no-latency mixing, monitoring and effects processing
- Front-panel LCD programming for the mixer and all other settings
- Extensive front panel metering and status LEDs
- Stand-alone operation
- Mac and Windows drivers for across-the-board compatibility with any audio software on current Mac and Windows systems
- AudioDesk™, full-featured audio workstation software for Mac OS X

With a variety of I/O formats, mic preamps, no-latency mixing and processing of live input and synchronization capabilities, the Traveler-mk3 is a complete, portable “studio in a box” when used with a Mac or Windows computer.
THE TRAVELER-MK3 REAR PANEL
The Traveler-mk3 rear panel has the following connectors:

- Eight gold-plated, balanced quarter-inch (TRS) analog outputs (with 24-bit 192 kHz converters)
- Four gold-plated, balanced quarter-inch (TRS) analog inputs (with 24-bit 192 kHz converters)
- Four combo XLR/TRS mic/guitar inputs with preamps
- Two sets of optical connectors (in and out), individually switchable among ADAT optical “lightpipe”, 96 kHz S/MUX optical or S/PDIF “TOSLink”
- RCA S/PDIF in/out
- XLR AES/EBU in/out
- Word clock in/out
- Two 1394 FireWire jacks

28 inputs and 30 outputs
All Traveler-mk3 inputs and outputs can be used simultaneously, for a total of 28 inputs and 30 outputs when operating at 44.1 or 48 kHz:

<table>
<thead>
<tr>
<th>Connection</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog 24-bit 192 kHz on bal/unbal TRS</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Mic/guitar 24-bit 192 kHz on XLR/TRS combo</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Headphone output*</td>
<td>-</td>
<td>stereo</td>
</tr>
<tr>
<td>ADAT optical digital†</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>AES/EBU 24-bit 96 kHz digital</td>
<td>stereo</td>
<td>stereo</td>
</tr>
<tr>
<td>RCA S/PDIF 24-bit 96 kHz digital</td>
<td>stereo</td>
<td>stereo</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

* The PHONES output can operate as an independent output pair, or it can mirror any other Traveler-mk3 output pair, such as the main outs (Analog 1-2).
† The Traveler-mk3 optical connectors support several standard optical I/O formats, which provide varying channel counts. See “Optical” on page 11 for details about optical bank operation.

All inputs and outputs are discrete. For example, using a mic input does not “steal” an input from the TRS analog I/O bank.

All digital I/O is disabled for 192kHz operation.

Mic/instrument inputs with preamps
The four mic/instrument inputs are equipped with preamps and “combo” XLR/TRS jacks, which accept low-impedance XLR microphone inputs or high-impedance quarter-inch guitar/instruments inputs. The total gain range for these preamps, including the 20dB pad, is 73dB, allowing you to connect any type of guitar or microphone. Preamp gain and pad can be controlled from the front panel digital rotary encoders/switches or the included CueMix FX™ software.

Mic/guitar input overload protection
All four mic/guitar inputs are equipped with V-Limit™, a hardware limiter that helps prevent digital clipping from overloaded input signals. With V-Limit enabled, signals can go above zero dB (with limiting applied) to as high as +12 dB above zero with no distortion due to digital clipping.

Additional or alternative protection can be applied to the mic/guitar inputs by enabling the Traveler-mk3’s Soft Clip feature, which engages just before clipping occurs and helps reduce perceptible distortion.

Analog
All analog inputs are equipped with 24-bit 192 kHz A/D converters. All analog outputs have 24-bit 192 kHz D/A converters. All audio is transferred to and from the computer in a 24-bit data stream.
All quarter-inch analog inputs can accept either a balanced or unbalanced plug. They are equipped with a -10 dBV / +4 dBu reference level switch, plus up to +12 dB of digital trim boost.

The quarter-inch outputs are referenced to a +4 dBu line level output signal.

**Precision Digital Trim™**
The Traveler-mk3’s mic/guitar inputs are equipped with digitally controlled analog trims that allow adjustments in 1 dB increments. The mic/guitar input trims can be adjusted using front-panel digital rotary encoders that provide feedback in the front panel LCD with up to 53 dB of boost. All analog inputs, including four rear-panel TRS analog inputs, can be trimmed using the front panel LCD or using the Traveler-mk3’s included CueMix FX control software for Mac and Windows. This allows you to fine-tune trim settings for synths, effects modules and a wide variety of analog inputs for optimum levels. Different trim configurations can then be saved as files on disk for instant recall.

**Optical**
The two optical banks provide 16 channels of ADAT optical at 44.1 or 48 kHz, 8 channels of S/MUX optical I/O at 96 kHz or two banks of stereo TOSLink at rates up to 96 kHz. The banks operate independently, including input and output, allowing you to mix and match any optical formats. For example, you could receive 4 channels of 96 kHz S/MUX input on Bank A while at the same time sending 96 kHz stereo optical S/PDIF (“TOSLink”) from the Bank A output.

**AES/EBU**
The Traveler rear panel provides a standard AES/EBU digital input and output that supports digital I/O at 44.1, 48, 88.2 and 96 kHz. The AES/EBU jacks are disabled at the 4x sample rates (176.4 and 192kHz).

**S/PDIF**
The Traveler-mk3 rear panel provides S/PDIF input and output in two different formats: RCA “coax” and optical “TOSLink”. The RCA jacks are dedicated to the S/PDIF format. The TOSLink jacks can be used either for either TOSLink or ADAT optical, as discussed earlier.

**Word clock**
The Traveler-mk3 provides standard word clock that can slave to any supported sample rate. In addition, word clock can resolve to and generate “high” and “low” sample rates. For example, if the Traveler-mk3 global sample rate is set to 96 kHz, the word clock input can resolve to a “low” rate of 48 kHz. Similarly, when the Traveler-mk3 is operating at 96 kHz, Setup lets you choose a word clock output rate of 48 kHz.

**1394 FireWire**
The two 1394 FireWire jacks accept a standard IEEE 1394 FireWire cable to connect the Traveler-mk3 to a FireWire-equipped Mac or Windows computer. The second jack can be used to daisy chain multiple interfaces — up to four MOTU FireWire interfaces on a single FireWire bus. It can also be used to connect other FireWire devices without the need for a FireWire hub. Keep in mind, however, that the Traveler-mk3 uses more FireWire bus bandwidth when one or both optical banks are enabled, or when it operates at higher sample rates. These operating configurations will limit the number of devices you can daisy chain on a single FireWire bus.

**On-board SMPTE synchronization**
The Traveler-mk3 can resolve directly to SMPTE time code via any analog input, without a separate synchronizer. It can also generate time code via any analog output. The Traveler-mk3 provides a DSP-driven phase-lock engine with sophisticated filtering that provides fast lockup times and sub-frame accuracy.
The included MOTU SMPTE Console™ software provides a complete set of tools for generating and regenerating SMPTE time code, which allows you to slave other devices to the computer. Like CueMix FX, the synchronization features are cross-platform and compatible with all audio sequencer software that supports sample-accurate sync or MIDI Time Code.

**THE TRAVELER-MK3 FRONT PANEL**

**Digital Precision Trim™ rotary encoders**
The four Digital Precision Trim™ detented rotary encoders provide preamp gain adjustment and also serve as 20dB pad switches when pushed. When you turn these trim knobs, input gain can be adjusted in 1dB increments, and the LCD display provides active numeric feedback as the adjustment is made.

**Phantom power**
Individual 48V phantom power can be enabled for each preamp with the four front panel switches.

**Headphone output and main volume control**
The Traveler front panel includes a quarter-inch stereo headphone output jack and volume knob.

**Dedicated MASTER VOLUME knob**
From the factory, the MASTER VOL knob controls the main outs (Analog 1-2), but MASTER VOL can be programmed to control any combination of outputs. See “The Monitor Group” on page 100 for details.

**Programmable backlit LCD display**
Any Traveler-mk3 setting, including the powerful CueMix FX on-board 16-bus mixer with effects, can be accessed directly from the front panel using the four rotary encoders and the 2x16 backlit LCD display.

**Programmable LCD metering**
Push the METERS knob to cycle among three meter display modes in the LCD: 1) vertical multi-channel meters, 2) horizontal long-throw metering for individual channels, and 3) CueMix FX/Setup. In either meter mode (1 or 2), turn it to choose the banks and/or channels you wish to view in the LCD.

**Metering section**
The front panel of the Traveler-mk3 displays several banks of input metering and output activity LEDs. The round analog, SPDIF and AES/EBU output activity LEDs, as well as the ADAT optical in/out activity LEDs, display signal presence. The threshold for these lights is approximately -42 dB. The four-segment input meters provide dedicated multi-segment metering for their respective inputs.

The Clock lights indicate the global sample rate (as chosen in the Setup software). The LOCK and TACH LEDs provide feedback for the Traveler-mk3’s on-board SMPTE synchronization features. The ADAT and MIDI LEDs indicate audio and MIDI activity, respectively.

**TRAVELER-MK3 SIDE PANEL**

**MIDI I/O**
The Traveler-mk3’s standard MIDI IN and MIDI OUT jacks supply 16 channels of MIDI I/O to and from the computer via the Traveler-mk3’s FireWire connection. Timing accuracy can be sample-accurate with host software that supports it.

**Bus power**
The Traveler-mk3 can draw power from three possible sources:
1. the computer (via the FireWire cable connection between the Traveler-mk3 and the computer)
2. an external battery pack (purchased separately)
3. a DC power supply
Bus power provides convenient portability with laptop computers. An external battery pack provides both portability and extended operation, even in remote locations. The included DC power supply allows for stand-alone operation as a mixer, without a computer. (The Traveler-mk3 can also run stand-alone with a battery pack.)

**Battery power**
The 4-pin XLR battery power jack allows you to connect a standard DC battery pack for extended remote recording. The battery pack must supply a minimum of 10-18 volts and 12 watts. For further details, contact your preferred supplier of professional audio/video equipment.

**Power supply**
If you do not want the Traveler-mk3 to draw power from the computer, and AC power is available, you can power the Traveler-mk3 from any standard 10-18V, 12 watt DC power supply with any polarity (tip positive or negative).

16-BIT AND 24-BIT RECORDING
The Traveler-mk3 system handles all data with a 24-bit signal path, regardless of the I/O format. You can record and play back 16-bit or 24-bit audio files at any supported sample rate via any of the Traveler-mk3’s analog or digital inputs and outputs. 24-bit audio files can be recorded with any compatible host application that supports 24-bit recording.

**CUEMIX FX 32-BIT FLOATING POINT MIXING AND EFFECTS**
All Traveler-mk3 inputs and outputs can be routed to the on-board CueMix FX 16-bus (8 stereo) digital mixer driven by hardware-based DSP with 32-bit floating point precision. The mixer allows you to apply no-latency effects processing to inputs, outputs or busses directly in the Traveler-mk3 hardware, independent of the computer. Effects can even be applied when the Traveler-mk3 is operating stand-alone (without a computer) as a complete rack-mounted mixer.

Input signals to the computer can be recorded wet, dry, or dry with a wet monitor mix (for musicians during recording, for example).

Effects include reverb, parametric EQ and compression/limiting. The Traveler-mk3’s Classic Reverb™ provides five different room types, three frequency bands with adjustable crossover points, shelf filtering and reverb lengths up to 60-seconds.

Two forms of compression are supplied: a standard compressor with conventional threshold/ratio/attack/release/gain controls and the Leveler™, an accurate model of the legendary LA-2A optical compressor, which provides vintage, musical automatic gain control.

CueMix FX also provides 7-band parametric EQ modeled after British analog console EQs, featuring 4 filter styles (gain/Q profiles) to effectively cover a wide range of audio material. Low-pass and high-pass filters are also supplied with slopes that range from 6 to 36 dB. The EQ employs extremely high precision 64-bit floating point processing.

The Traveler-mk3’s flexible effects architecture allows you to apply EQ and compression on every input and output (a total of 58 channels), with enough DSP resources for at least one band of parametric EQ and compression on every channel at 48 kHz. However, DSP resources are allocated dynamically and a DSP meter in the CueMix FX software (included) allows you to keep tabs on the Traveler-mk3’s processing resources. Each input, output and mix bus provides a send to the Classic Reverb processor, which then feeds reverb returns to mix busses and outputs, with a selectable split point between them to prevent send/return feedback loops.
**AUDIODESK**
AudioDesk is a full-featured, 24-bit audio workstation software package included with the Traveler-mk3 system (for Mac only). AudioDesk provides multi-channel waveform editing, automated virtual mixing, graphic editing of ramp automation, real-time effects plug-ins with 32-bit floating point processing, crossfades, support for many third-party audio plug-ins, background processing of file-based operations, sample-accurate editing and placement of audio, and more.

**DIGITAL PERFORMER**
The Traveler-mk3 system is fully integrated with MOTU’s award-winning Digital Performer audio sequencer software package.

**OTHER HOST AUDIO SOFTWARE**
The Traveler-mk3 system includes a standard Mac OS X CoreAudio driver for multichannel I/O with any audio application that supports CoreAudio.
PACKING LIST
The Traveler-mk3 ships with the items listed below. If any of these items are not present in your Traveler-mk3 box when you first open it, please immediately contact your dealer or MOTU.

- One Traveler-mk3 I/O rack unit
- One set of removable rack ears
- One 6-pin to 6-pin IEEE 1394 “FireWire” cable
- One DC power adapter
- One Traveler-mk3 Mac/Windows manual
- One cross-platform Universal Audio Installer CD
- One Mac OS X AudioDesk installer CD with PDF manual
- Traveler-mk3 product registration card

PLEASE REGISTER TODAY!
Please register your Traveler-mk3 today. There are two ways to register.

- Visit www.motu.com to register online
- OR
- Fill out and mail the included product registration card

As a registered user, you will be eligible to receive technical support and announcements about product enhancements as soon as they become available. Only registered users receive these special update notices, so please register today.

Be sure to do the same for the included AudioDesk software, which must be registered separately. You can do so online at motu.com/register. Please be sure to register AudioDesk as well, so that you will be eligible to receive technical support and announcements about AudioDesk software enhancements as soon as they become available.

Thank you for taking the time to register your new MOTU products!
OVERVIEW
Here's an overview for installing the Traveler-mk3:

Connect the Traveler-mk3 interface .................. 18
Connect the Traveler-mk3 to the computer.

Connect audio inputs and outputs ................. 18
Make optical and analog connections as desired.

Connect MIDI gear................................. 22
Connect a controller, synth or control surface.

A typical Traveler-mk3 setup.......................... 25
An example setup for computer-based mixing/FX.

Operating the Traveler-mk3 as a converter .......... 26
An example of using the Traveler-mk3 as an expander.

Making sync connections......................... 26
If you need to resolve the Traveler-mk3 with other devices, make the necessary sync connections.

Syncing to SMPTE time code..................... 28
Syncing AES/EBU and S/PDIF devices .......... 29
Syncing word clock devices....................... 30
Connecting multiple MOTU FireWire interfaces .... 30

IMPORTANT NOTE BEFORE YOU BEGIN!
Before you begin installing the Traveler-mk3 (or any bus-powered device), take these important precautionary measures to avoid damaging the sensitive electrical components in your computer, the Traveler-mk3 or other devices being connected:

■ Turn off the computer.
■ Turn off the Traveler-mk3’s front panel power switch.
■ Turn off the power of any other devices.
■ Touch the metal casing of the Traveler-mk3 to discharge any static electricity that you may be carrying just before the installation.

After you have made all of the necessary connections, as described in this chapter, turn on the devices in this sequence:

1. Turn on the computer.
2. Turn on the Traveler-mk3.
3. Turn on other devices connected to the Traveler-mk3.
CONNECT THE TRAVELER-MK3 INTERFACE

1. Plug one end of the Traveler-mk3 FireWire cable (included) into the FireWire socket on the computer as shown below in Figure 3-1.

   - You can connect the Traveler-mk3 to an 800Mbit “FireWire B” port using a 9-pin to 6-pin FireWire B cable (not shown). However, the Traveler-mk3 will still operate at its specified 400Mbit (FireWire A) data rate.

2. Plug the other end of the FireWire cable into the Traveler-mk3 I/O as shown below in Figure 3-1.

CONNECT AUDIO INPUTS AND OUTPUTS

The Traveler-mk3 audio interface has the following audio input and output connectors:

- 8 balanced, +4 dB quarter-inch analog outputs
- 4 balanced +4 dB quarter-inch analog inputs
- 4 mic/guitar combo jack inputs with preamps
- 2 pair of optical in/out switchable between ADAT (“Lightpipe”) or optical S/PDIF (TOSLink)
- 1 pair of AES/EBU in and out
- 1 pair of RCA S/PDIF in and out

Here are a few things you should keep in mind as you are making these connections to other devices.

Mic/guitar inputs with preamps

Connect a microphone, guitar, instrument or other analog input to the back panel XLR/quarter-inch combo jack (Figure 3-4) with either a standard mic cable or a balanced cable with a quarter-inch plug.

- Do not connect a +4 (line level) XLR cable to the mic/guitar inputs (because of the preamps).

Phantom power

If you are connecting a condenser microphone or other device that requires phantom power, move the corresponding 48V phantom power switch on the front panel (Figure 3-2) to the right (enabled).

Trim

Both the low-impedance XLR mic input and the high-impedance quarter-inch guitar input are equipped with 53 dB of digitally controlled analog trim. Use the detented trim knobs on the front panel.
INSTALLING THE TRAVELER-MK3 HARDWARE

19

Figure 3-3: The LCD gives you feedback as you turn the TRIM knobs for the four mic/guitar inputs.

The Traveler-mk3’s input trims are digitally controlled, so they allow you to make fine-tuned adjustments in 1dB increments. Use the four input level meters on the front panel (labeled ANALOG 1–4) to calibrate the level. You can also use a long-throw horizontal meter in the LCD. See “Meters knob” on page 44. You can also adjust trim in the MOTU CueMix FX software. See “Input trim” on page 83.

20 dB pad
If the input signal is still too hot with the trim turned all the way down, engage the 20dB pad by pushing the Trim rotary encoder (Figure 3-2). The LCD provides feedback for the current pad setting.

Quarter-inch analog input trims
The quarter-inch inputs are calibrated to accommodate either +4 dBu or -10 dBV signals and are equipped with digital trims that provide up to +12 dB of boost. You can use either the front panel LCD or the included CueMix FX software to adjust both the reference level and the input trim. To do so using CueMix FX, see “Pad and reference level” on page 86 and “Input trim” on page 83. To adjust the trims using the front panel LCD:

1 Push the CHANNEL knob repeatedly until you see “I:” (which stands for Input) in the CHANNEL section of the LCD (Figure 3-5).

2 Turn the CHANNEL KNOB until you see the desired analog input or input pair. For example, analog inputs 1-2 appear as “I:An 1-2” (Figure 3-5), which means Input analog 1-2.

3 From the factory, TRS analog inputs are grouped in stereo pairs (5-6 and 7-8) If you need to split a pair to deal with it as two individual mono inputs, turn the PARAMETER knob until you see PAIR in the parameter section of the LCD (Figure 3-5). Turn the VALUE knob to choose MONO. Then turn the CHANNEL knob again to select the desired input you are adjusting.

Figure 3-4: Traveler-mk3 back panel

Quarter-inch analog input trims
The quarter-inch inputs (5-8) and outputs (1-8) shown in Figure 3-4 are balanced (TRS) connectors that can also accept an unbalanced plug.

The quarter-inch outputs are calibrated to produce a +4 dBu line level output signal.

Figure 3-5: The settings for analog inputs 1 and 2 (as a pair).
After splitting the stereo pair, if necessary, turn the PARAM knob until you see the TRIM parameter in the LCD (Figure 3-6):

![Figure 3-6: Setting the input trim for a TRS analog input.](image)

1. Turn the VALUE knob to adjust the trim.
2. Repeat steps 4 and 5 for the REF LEVEL setting (+4 or -10).

Main outs
Analog outputs 1-2 can serve as main outputs. From the factory, the volume for the TRS main outputs is controlled by the MASTER VOL knob on the front panel, although this knob can be programmed to control any combination of outputs. For details, see “The Monitor Group” on page 100. In a standard studio configuration, the main outs are intended for a pair of studio monitors, but they can also be used as additional outputs for any purpose.

Optical
The Traveler-mk3 rear panel provides two sets of ADAT optical (“lightpipe”) connectors: Bank A and B (Figure 3-4). Each bank provides an input and output connector. All four connectors can operate independently and offer two different optical formats: ADAT optical or TOSLink (optical S/PDIF). For example, you could connect 8-channel ADAT optical input from your digital mixer and stereo TOSLink output to an effects processor.

The Traveler-mk3 supplies +12dB of digital trim (boost) for each optical input, which can be adjusted from CueMix FX (“Input trim” on page 83) or the front panel (“The IN (inputs) menu” on page 49).

Optical operation at 44.1 or 48 kHz
When configured for ADAT “lightpipe”, an optical connector provides 8 channels at 44.1 and 48 kHz.

ADAT optical operation at 88.2 or 96 kHz
When configured for ADAT “lightpipe”, an optical connector provides four channels at 88.2 or 96 kHz (2x sample rates). When using the ADAT lightpipe format at a 2x rate, be sure to choose either Type I or Type II operation, as explained in “ADAT SMUX Type” on page 48.

Below is a summary of optical formats:

<table>
<thead>
<tr>
<th>Format</th>
<th>44.1 or 48 kHz</th>
<th>88.2 or 96 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAT optical</td>
<td>8 channels</td>
<td>4 channels</td>
</tr>
<tr>
<td>TOSLink</td>
<td>stereo</td>
<td>stereo</td>
</tr>
</tbody>
</table>

Optical is disabled at 4x sample rates
The optical banks are disabled at the 4x sample rates (176.4 and 192kHz).

Using optical I/O to operate the Traveler-mk3 as a 16-channel expander
When the Traveler-mk3 is not connected directly to a computer via FireWire, the sixteen optical output channels can be programmed (via the CueMix FX mixer) to mirror the incoming signal on any combination of the Traveler-mk3’s inputs. By connecting the Traveler-mk3 optical outputs to another device, such as another ADAT-optical equipped interface or a digital mixer, you add up to sixteen additional inputs to your system (or eight inputs at the 2x sample rates).
To learn how to program the Traveler-mk3 when it is operating as a stand-alone expander in this fashion, see chapter 6, “Traveler-mk3 Front Panel Operation” (page 43).

Choosing a clock source for optical connections

When connecting an optical device, make sure that its digital audio clock is phase-locked (in sync with) the Traveler-mk3, as explained in “Making sync connections” on page 26. There are two ways to do this:

1. Resolve the optical device to the Traveler-mk3
2. Resolve the Traveler-mk3 to the optical device

For 1), choose Internal (or any other clock source except ADAT optical) as the clock source for the Traveler-mk3 in MOTU Audio Setup.

For 2), choose either ADAT Optical A or ADAT Optical B as the Traveler-mk3’s clock source (Figure 3-7). Be sure to choose the optical port that the device is connected to.

Using word clock to resolve optical devices

If the optical device you are connecting to the Traveler-mk3 has word clock connectors on it, you can use them to resolve the device to the Traveler-mk3, similar to the diagram shown in Figure 3-18 on page 29 for S/PDIF devices with word clock. Also see “Syncing word clock devices” on page 30.

S/PDIF

If you make a S/PDIF digital audio connection to another device, be sure to review the digital audio clocking issues, as explained in “Syncing AES/EBU and S/PDIF devices” on page 29. The Traveler-mk3 supplies +12dB of digital trim (boost) for the S/PDIF input pair, which can be adjusted from CueMix FX (“Input trim” on page 83) or the front panel (“The IN (inputs) menu” on page 49).

AES/EBU

Connect standard AES/EBU input and output. 2x sample rates (88.2 & 96 kHz) are supported; 4x sample rates (176.4 or 192kHz) are not supported. Be sure to review the digital audio clocking issues, as explained in “Syncing AES/EBU and S/PDIF devices” on page 29.

The Traveler-mk3 supplies +12dB of digital trim (boost) for the AES/EBU input pair, which can be adjusted from CueMix FX (“Input trim” on page 79) or the front panel (“The IN (inputs) menu” on page 46).
**CONNECT MIDI GEAR**

Connect your MIDI device's MIDI IN jack to the Traveler-mk3's MIDI OUT jack (Connection A below). Connect the MIDI device’s MIDI OUT jack to the MIDI IN jack (Connection B).

---

**Connecting additional gear with MIDI THRU**

If you need to connect several pieces of MIDI gear, run a MIDI cable from the MIDI THRU of a device already connected to the Traveler-mk3 to the MIDI IN on the additional device as shown below in Figure 3-9. The two devices then share the Traveler-mk3’s MIDI OUT port. This means that they share the same set of 16 MIDI channels, too, so try to do this with devices that receive on only one MIDI channel (such as effects modules) so their receive channels don’t conflict with one another.

---

**One-way MIDI connections**

MIDI devices that do not receive MIDI data, such as a dedicated keyboard controller, guitar controller, or drum pad, only need Connection B shown in Figure 3-8. Similarly, devices that never send data, such as a sound module, only need Connection A. Make both connections for any device that needs to both send and receive MIDI data.
**POWER OPTIONS**

The Traveler-mk3 can draw power from three possible sources:

1. the computer (via FireWire)
2. an external battery pack
3. a DC power supply

![Figure 3-10: The Traveler-mk3's battery and power supply options.](image)

**Bus power requirements**

The Traveler-mk3 draws all the power it needs from the FireWire bus connection to the computer. However, the FireWire connection to the computer must meet all of the requirements discussed below.

**6-pin FireWire connectors**

The Traveler-mk3 can only draw power over the FireWire bus from a 6-pin to 6-pin cable, or a 6-pin to 9-pin (FireWire B) cable. It cannot draw power from a FireWire cable with a 4-pin connector, as shown below:

![Figure 3-11: 4-pin FireWire connectors cannot be used for bus power.](image)

When operating under bus power, daisy-chaining is not recommended.

The Traveler-mk3 can be daisy-chained with other FireWire devices from a single FireWire connection to the computer. However, if the Traveler-mk3 is operating under bus power, this is not recommended. If you need to daisy chain the Traveler-mk3 with other devices on the same FireWire bus, power the Traveler-mk3 with a DC power supply (or battery), and turn off the Bus Power switch on the side panel. The other devices on the chain should also have their own power supply. In general, bus-powered FireWire devices should not be daisy-chained.

**FireWire adapter products must be powered**

If you are using a FireWire adapter (a third-party product that supplies one or more FireWire ports to your computer), it must have direct access to a power supply:

- **PCI FireWire cards** — If you plan to connect the Traveler-mk3 to a PCI card and run the Traveler-mk3 under bus power, the PCI card must have a direct connection to the power supply harness inside your computer. This is the same power supply harness to which you connect internal hard drives, CD/DVD drives, etc.

- **PCMCIA, Cardbus or ExpressCard slot adapters** — If you plan to connect the Traveler-mk3 to a PC card, Cardbus or ExpressCard FireWire adapter (inserted in the card slot in your laptop), it must provide a 6-pin connection and it must also have its own power supply. Most commonly, these types of products have a DC power adapter that plugs into an AC wall outlet. As you can see, however, this situation does not allow for remote battery operation, as the card adapter requires AC.
**Examples of bus-powered operation**
Here are a few typical examples of bus-powered Traveler-mk3 operation:

**Bus power from a desktop computer**
Your desktop computer is running off of its usual AC power connection, and the Traveler-mk3 draws power from the FireWire cable connected to the computer. There are no limits to running time.

**Bus power from an AC-powered laptop**
This scenario is identical to the desktop situation described above: the laptop is powered by AC, the Traveler-mk3 is powered via the FireWire bus and there are no limits to running time.

**Bus power from a battery-powered laptop**
The laptop is being powered by its own battery, and the Traveler-mk3 is being powered by its FireWire connection to the computer. So the laptop battery is supplying power to both the laptop and the Traveler-mk3. This is the most compact and portable operating scenario. Running time is determined by the capacity of the laptop battery. For extended recording sessions, bring extra, fully charged laptop batteries.

**Powering the Traveler-mk3 from a battery pack**
The 4-pin XLR battery jack on the Traveler-mk3 side panel allows you to connect a standard DC battery pack, which is ideal for extended remote recording. These products can provide multiple hours of operation, depending on their capacity. The battery pack should supply 10-18 volts and 12 watts. A typical application would employ a 12 volt battery, therefore requiring 1 amp. In this scenario, a 1 amp-hour battery will power the unit for 1 hour. A 10 amp-hour battery will power the unit for 10 hours. Follow the manufacturer’s recommendations for battery discharge for proper battery maintenance. For further details, contact your preferred supplier of professional audio/video equipment.

**DC power supply**
If you do not want the Traveler-mk3 to draw power from the computer, and AC power is available, you can power the Traveler-mk3 from any standard 8-18 volt, 12 watt DC power supply with any polarity (tip positive or negative) and amperage as shown below. To prevent the Traveler-mk3 from drawing power from the computer, turn off the Bus Power switch.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Amperage</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 volts</td>
<td>1.33 amps</td>
</tr>
<tr>
<td>12 volts</td>
<td>1 amp</td>
</tr>
<tr>
<td>18 volts</td>
<td>0.66 amps</td>
</tr>
</tbody>
</table>

**The Bus Power Enable/Disable switch**
The Bus Power Enable/Disable switch on the side panel of the Traveler-mk3 lets you control whether or not the Traveler-mk3 draws power from the computer via FireWire.

For example, when battery or DC power supply options are not being used, and FireWire is the only available power source, turn on the Bus Power switch.

If you are powering the Traveler-mk3 via battery or DC power supply, and you do not want it to draw power from the computer (perhaps because it is a laptop running under its own battery, and you don’t want the Traveler-mk3 to run down the laptop’s battery unnecessarily), turn off the Bus Power switch.
A TYPICAL TRAVELER-MK3 SETUP

Here is a typical Traveler-mk3 studio setup. This rig can be operated without an external mixer. All mixing and processing can be done either in the Traveler-mk3, in the computer with audio software, or both. During recording, you can use the Traveler-mk3’s CueMix™ FX mixer to apply reverb, EQ and compression to what you are recording and monitor it via the main outs, headphone outs, or any other output pair. You can control everything from the included CueMix Console software.

![Diagram of a typical Traveler studio setup.](image)
OPERATING THE TRAVELER-MK3 AS A CONVERTER
As explained earlier in “Using optical I/O to operate the Traveler-mk3 as a 16-channel expander” on page 20, the Traveler-mk3 can serve as a multi-channel analog-to-digital converter when disconnected from the computer and instead connected to another device equipped with an ADAT optical input. For example, you could connect the Traveler-mk3 optical output to the optical input on another MOTU audio interface, such as a Traveler, 896mk3 or even another Traveler-mk3. The Traveler-mk3 then serves as a multi-channel expander that adds additional mic, analog TRS and digital inputs to the interface. The benefit of connecting the Traveler-mk3 in this manner (instead of as another FireWire interface) is that you can seamlessly integrate the Traveler-mk3’s inputs into the on-board no-latency CueMix monitor mixing in the interface, since the Traveler-mk3’s inputs are fed into CueMix via the interface’s optical inputs.

If the device to which you are connecting the Traveler-mk3 supports 2x optical sample rates (88.2 or 96 kHz), you can also use both banks of connectors as discussed in “ADAT optical operation at 88.2 or 96 kHz” on page 20.

MAKING SYNC CONNECTIONS
If you connect devices digitally to the Traveler-mk3, or if you need to synchronize the Traveler-mk3 with an outside time reference such as SMPTE time code, you must pay careful attention to the synchronization connections and clock source issues discussed in the next few sections.
Do you need to synchronize the Traveler-mk3?
If you will be using only the Traveler-mk3’s analog inputs and outputs (and none of its digital I/O), and you have no plans to synchronize your Traveler-mk3 system to SMPTE time code, you don’t need to make any sync connections. You can skip this section and proceed to chapter 4, “Installing the Traveler-mk3 Mac Software” (page 33). After you install the Traveler-mk3 software, you’ll open MOTU Audio Setup to confirm that the Clock Source setting is Internal as shown below. For details, see chapter 5, “MOTU Audio Setup” (page 37).

Situations that require synchronization
There are three general cases in which you will need to resolve the Traveler-mk3 with other devices:

- Synchronizing the Traveler-mk3 with other digital audio devices so that their digital audio clocks are phase-locked (as shown in Figure 3-15)
- Resolving the Traveler-mk3 system to SMPTE time code from a video deck, analog multi-track, etc.
- Both of the above

Synchronization is critical for clean digital I/O
Synchronization is critical in any audio system, but it is especially important when you are transferring audio between digital audio devices. Your success in using the Traveler-mk3’s digital I/O features
SYNCING TO SMPTE TIME CODE

The Traveler-mk3 system can resolve directly to SMPTE time code. It can also generate time code and word clock, under its own clock or while slaving to time code. Therefore, the Traveler-mk3 can act both as an audio interface and as a digital audio synchronizer to which you can slave other digital audio devices. You can use the Traveler-mk3 to slave your audio software to time code as well, as long as your software supports either sample-accurate sync or MIDI Time Code, which is the means by which the software follows the Traveler-mk3.

First, choose SMPTE as the clock source in AudioDesk, Digital Performer, or MOTU Audio Setup. This setting can also be made in the MOTU SMPTE Console (shown below). If your host application supports sample-accurate sync, enable it. If not, set it up to sync to MIDI Time Code (MTC).

This setup provides:
- Continuous sync to SMPTE time code.
- Sub-frame timing accuracy.
- Transport control from the SMPTE time code source.

In AudioDesk or Digital Performer:
1. Choose Receive Sync from the Setup menu.
2. Choose the Sample-accurate option. (If this option is grayed out, choose SMPTE as the clock source setting first, as shown above.)
3. Make sure that Slave to External Sync mode is enabled.

Launch the MOTU SMPTE Console to specify the time code frame rate and amount of freewheel. Also, confirm that the Clock Source/Address is SMPTE/SMPTE. For details about the other settings, see chapter 12, "MOTU SMPTE Console" (page 107).

Figure 3-17: Connections for synchronizing the Traveler-mk3 directly to SMPTE time code.
SYNCING AES/EBU AND S/PDIF DEVICES

DAT decks and other devices with S/PDIF and/or AES/EBU digital I/O will sync to the Traveler-mk3 in one of two ways:

- Via the S/PDIF or AES/EBU connection itself
- Via word clock

Devices with no word clock

If your S/PDIF or AES/EBU device has no word clock sync connectors, just connect it to the Traveler-mk3 via the S/PDIF or AES/EBU connectors. When the device records a digital audio signal (from the Traveler-mk3), it will simply synchronize to the clock provided by the digital audio input.

On the other hand, when you transfer audio from the S/PDIF or AES/EBU device into the Traveler-mk3, you'll have to slave the Traveler-mk3 to its S/PDIF or AES/EBU input. If you have other digital audio devices connected to the Traveler-mk3, and they are not slaved directly to the Traveler-mk3 itself, you may hear clicks and pops resulting from their unsynchronized audio clock. If so, just turn them off during the transfer.

Devices with word clock

If your S/PDIF or AES/EBU device has a Word Clock input, slave the device to the Traveler-mk3 via their word clock connection. You can then freely transfer audio between the Traveler-mk3 and the S/PDIF device.

Figure 3-18: Two setups for synchronizing an AES/EBU or S/PDIF device with the Traveler-mk3. In the top diagram, sync is achieved via the connection itself. In this case, you have to choose AES/EBU or S/PDIF as the Traveler-mk3's clock source when recording from the other device. If you don't want to have to worry about switching the Clock Source setting depending on the direction of the transfer, you can slave the other device to word clock from the Traveler-mk3 or vice versa (not shown). The Word Clock connection maintains sync, regardless of the direction of the transfer.
SYNCING WORD CLOCK DEVICES

The Traveler-mk3 word clock connectors allow you to synchronize it with a wide variety of other word clock-equipped devices.

For standard word clock sync, you need to choose an audio clock master (as explained in “Be sure to choose a digital audio clock master” on page 27). In the simplest case, you have two devices and one is the word clock master and the other is the slave as shown below in Figure 3-19 and Figure 3-20.

Figure 3-19: Slaving another digital audio device to the Traveler-mk3 via word clock. For the Traveler-mk3 clock source, choose any source besides word clock, as it is not advisable to chain word clock.

Figure 3-20: Slaving the Traveler-mk3 to word clock. For the Traveler-mk3 clock source, choose ‘Word Clock In’.

Don’t chain word clock
If you have three or more digital audio devices that you need to synchronize, avoid chaining their word clock connections (OUT to IN, OUT to IN, etc.), as this causes problems. Instead, use a dedicated synchronizer or a word clock distribution device of some kind.

Slaving to 2x and 1/2x word clock
All MOTU FireWire audio interfaces that support 96 kHz operation have the ability to slave to a word clock signal running at either one half or one quarter of their current clock rate. For example, the Traveler-mk3 could be running at 96 kHz while slaving to a 48 kHz word clock signal. Similarly, the Traveler-mk3 could run at 88.2 kHz and slave to 44.1 kHz word clock.

Remember, the word clock signal must be one of the following:
- the same as the Traveler-mk3 clock
- half of the Traveler-mk3 clock

Forcing a 1x word out rate
The Traveler-mk3 can generate a word clock output signal that either matches the current system clock rate (any rate between 44.1 and 192kHz) or the corresponding 1x rate. For example, if the Traveler-mk3 is operating at 192kHz, you can choose to generate a word out rate of 48kHz. For details on how to make this word clock output setting, see “Word Out” on page 42.

CONNECTING MULTIPLE MOTU FIREWIRE INTERFACES

You can daisy-chain multiple MOTU FireWire interfaces on a single FireWire bus, with the restrictions described in the following sections. Most computers have only one built-in FireWire bus (even if it supplies multiple FireWire sockets). Connect them as follows:
Synchronizing multiple interfaces

Mac OS X provides an advanced, flexible driver model that allows multiple Core Audio drivers to be active at one time, accessed by multiple applications simultaneously. For example, you can run both FireWire and PCI audio interfaces at the same time, accessing all of their inputs and outputs from your host audio application — or even multiple applications — simultaneously.

A by-product of this more flexible model is that multiple devices must be synchronized to one another in order to remain resolved to each other. Without synchronization, the audio streams going to each interface might drift with respect to one another. For example, the audio tracks playing back through the Traveler-mk3 might drift out of sync with the audio tracks playing back through your 2408mk3 PCI interface. Synchronizing them to each other ensures that they remain as tightly and continuously phase-locked as if they were one unified interface.

There are two ways to synchronize the Traveler-mk3 with other devices, as discussed in the following sections: via the driver or via word clock.

Resolving to other Core audio drivers

The MOTU FireWire driver has the ability to resolve to other Core Audio drivers. This allows the Traveler-mk3, and other MOTU FireWire interfaces, to resolve to other audio interfaces running simultaneously on the same computer, such as the Mac’s built-in audio, a PCI-424 core system, or even 3rd-party interfaces, without the need for external word clock connections between the devices. Doing so ensures that audio tracks being played or recorded by your MOTU FireWire interface will not drift apart from tracks on the other device during long playback or recording passes.

Multiple interfaces cannot be bus-powered

Do not run the Traveler-mk3, UltraLite or other bus-powered interfaces under bus power with other devices on the same FireWire bus.

Multiple interfaces in MOTU Audio Setup

MOTU Audio Setup displays the settings for one interface at a time. To view the settings for an interface, click its tab as shown in Figure 3-22.

Figure 3-21: Connecting multiple Traveler-mk3 interfaces (or other MOTU FireWire audio interfaces) to a computer.

Figure 3-22: To view the settings for an interface, click its tab.
To synchronize multiple devices via the MOTU FireWire driver, choose one device (PCI, FireWire or otherwise) as the master clock and then slave the Traveler-mk3 and other FireWire devices to it. All interfaces will remain resolved to each other via the master interface.

Make the Clock Source settings for each interface as follows:

- For the master interface, click its tab in MOTU Audio Setup and choose any clock source you wish (except any of the slave interfaces, of course).
- For each slave interface, click its tab and choose the master interface from the Clock Source menu, as demonstrated below in Figure 3-23. This causes the slave interfaces to resolve to the master interface.

![Figure 3-23: To resolve a MOTU FireWire interface to another Core Audio device, choose the other device from the Clock Source menu in the MOTU Audio Setup. In this example, the Traveler-mk3 will slave to the 828mk3.](image)

If you have multiple Traveler-mk3s, choose one as the master, and set its Clock Source to Internal. Then, click the tab of the other Traveler-mk3s and set their Clock Source to the first Traveler-mk3.

**Resolving to word clock**

To resolve two Traveler-mk3 FireWire interfaces with each other via word clock, choose one as the word clock master and then slave the second interface to the first, as shown in Figure 3-21 on page 31. For three interfaces, you can probably get away with daisy-chaining them via their word clock connectors, but this may not always produce the most reliable results. For three or more devices, a word clock distribution device is highly recommended. In this case, the distribution box is the master, and all FireWire interfaces slave directly to it (instead of to each other).

**Connecting other MOTU FireWire interfaces**

You can add an original MOTU 828 to the end of a FireWire daisy chain (because the 828 has only one FireWire port), or you can mix and match multiple 828’s with other MOTU FireWire interfaces using a standard FireWire hub. Alternately, can daisy-chain any MOTU audio interface with two FireWire ports.

**Operating multiple FireWire interfaces at high sample rates**

Four MOTU FireWire interfaces can operate at 44.1 or 48kHz on a single FireWire bus, although you may have to disable optical banks to conserve FireWire bus bandwidth. At the 2x samples rates (88.2 or 96kHz) and 4x sample rates (176.4 and 192kHz), you can operate no more than two FireWire interfaces on a single FireWire bus.

**Adding additional interfaces with a second FireWire bus**

Third-party FireWire bus expansion products in the form of a cardbus (“PC card”), ExpressCard or PCI card adapter allow you to add a second FireWire bus to your computer. In may be possible to add additional MOTU FireWire interfaces connected to such a product, depending on their performance with your host computer.
CHAPTER 4  Installing the Traveler-mk3 Mac Software

OVERVIEW
Software installation ........................................... 33
CueMix FX ....................................................... 35
MOTU SMPTE Console .......................................... 35
AudioDesk workstation software ......................... 35

SOFTWARE INSTALLATION
Install the Traveler-mk3 software as follows:

1  Insert the MOTU Universal Installer disc and launch the installer.

2  Follow the directions that the installer gives you.

What does the installer do?
The installer checks the computer to make sure it satisfies the minimum system requirements for your MOTU interface. If so, the installer proceeds with the OS X installation. Drivers are installed, along with the MOTU Audio Setup, CueMix FX, and several other applications, summarized in the following table:

<table>
<thead>
<tr>
<th>Software component</th>
<th>Location</th>
<th>Purpose</th>
<th>For more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTU FireWire Audio driver.kext</td>
<td>/System/Library/</td>
<td>Provides Traveler-mk3 multi-channel audio input and output with all Mac OS X audio software</td>
<td>“The Traveler-mk3 CoreAudio driver” on page 33</td>
</tr>
<tr>
<td></td>
<td>Extensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOTU MIDI driver.kext</td>
<td>/System/Library/</td>
<td>Provides Traveler-mk3 MIDI input and output for all Mac OS X MIDI software</td>
<td>“CoreMIDI and Audio MIDI Setup” on page 34</td>
</tr>
<tr>
<td></td>
<td>Extensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOTU MIDI driver.plugin</td>
<td>/Library/Audio/</td>
<td>Provides Traveler-mk3 MIDI input and output for all Mac OS X MIDI software</td>
<td>“CoreMIDI and Audio MIDI Setup” on page 34</td>
</tr>
<tr>
<td></td>
<td>MIDI Drivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOTU Audio Setup</td>
<td>Applications folder</td>
<td>Provides access to all of the settings in the Traveler-mk3 and other MOTU interfaces. Required for Traveler-mk3 operation.</td>
<td>chapter 5, “MOTU Audio Setup” (page 37)</td>
</tr>
<tr>
<td></td>
<td>Applications folder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CueMix FX</td>
<td>Applications folder</td>
<td>Gives you complete control over the Traveler-mk3’s CueMix FX onboard mixer, which provides no-latency monitoring, mixing and processing of live inputs through your Traveler-mk3.</td>
<td>chapter 11, “CueMix FX” (page 77)</td>
</tr>
<tr>
<td></td>
<td>Applications folder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOTU SMPTE Setup</td>
<td>Applications folder</td>
<td>Provides access to the Traveler-mk3 system’s SMPTE time code sync features.</td>
<td>chapter 12, “MOTU SMPTE Console” (page 107)</td>
</tr>
<tr>
<td></td>
<td>Applications folder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AudioDesk</td>
<td>Applications/MOTU</td>
<td>Provides complete multi-track recording, mixing and processing. Optional.</td>
<td>AudioDesk User Guide</td>
</tr>
<tr>
<td></td>
<td>AudioDesk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CoreMIDI and Audio MIDI Setup

CoreMIDI is the “under-the-hood” portion of Mac OS X that handles MIDI services for MIDI hardware and software. CoreMIDI provides many universal MIDI system management features, including MIDI communication between your Traveler-mk3 FireWire interface and all CoreMIDI compatible software.

Audio MIDI Setup is a utility included with Mac OS X that allows you to configure your Traveler-mk3 interface for use with all CoreMIDI compatible applications. Audio MIDI Setup provides:

- A “virtual” studio on your Mac that graphically represents your MIDI hardware setup and that is shared by all CoreMIDI-compatible programs
- A simple, intuitive list of your MIDI devices whenever you need it in any CoreMIDI-compatible program

Launching Audio MIDI Setup

1. Make sure your Traveler-mk3 interface is connected and turned on.

2. Launch the Audio MIDI Setup utility.

This can usually be found in /Applications/Utilities. If it has been moved, just search for Audio MIDI Setup.

3. Confirm that the Traveler-mk3 is present in the MIDI Devices tab of Audio MIDI Setup.

If the Traveler-mk3 does not appear, or if it is grayed out, check your cable connections and click Rescan MIDI.

Connecting MIDI devices to the Traveler-mk3

Once your Traveler-mk3 interface appears in Audio MIDI Setup, you are ready to add devices, indicate how they are connected, and identify properties they may have for particular purposes. This information is shared with all CoreMIDI compatible applications.

To add a device in Audio MIDI Setup:

1. Click Add Device.

2. Drag on its input and output arrows to draw connections to the Traveler-mk3 that match its physical connection.
INSTALLING THE TRAVELER-MK3 MAC SOFTWARE

3 Double-click the device to make settings, such as input and output channels, that further describe the device.

4 Repeat the above steps for each MIDI device connected to the interface.

5 When you are finished, quit Audio MIDI Setup.

Your configuration is automatically saved as the default configuration, and it is shared with all CoreMIDI-compatible software.

CUEMIX FX

This program provides a mixing console that gives you control over the Traveler-mk3’s on-board mixing and effects processing. For details, see chapter 11, “CueMix FX” (page 77).

MOTU SMPTE CONSOLE

The MOTU SMPTE Console software provides a complete set of tools to resolve the Traveler-mk3 to SMPTE time code, and to generate SMPTE for striping, regenerating or slaving other devices to the computer. For details, see chapter 12, “MOTU SMPTE Console” (page 107).

AUDIODESK WORKSTATION SOFTWARE

AudioDesk is an advanced workstation software package for the Traveler-mk3 that lets you record, edit, mix, process, bounce and master multi-track digital audio recording projects. Advanced features include real-time 32-bit effects processing, 24-bit recording, and much more.

See the AudioDesk manual for details.
CHAPTER 5  MOTU Audio Setup

OVERVIEW
MOTU Audio Setup gives you access to basic Traveler-mk3 hardware settings, such as sample rate, clock source, optical format and more.

Accessing the Traveler-mk3 settings .......................... 37
‘Traveler-mk3’ Tab Settings ................................. 38
Sample Rate ............................................. 38
Clock Source ............................................. 39
Default Stereo Input/Output ................................. 40
Phones Assign .............................................. 41
Optical input/output ....................................... 41
Main Outs Assign .......................................... 41
Return Assign .............................................. 41
Clip Hold Time ............................................ 42
Peak Hold Time ............................................ 42
Word Out .................................................. 42
‘General’ Tab settings ......................................... 42
Launch MOTU Audio Setup when hardware becomes available ............................................. 42
Channel Names .............................................. 42

ACCESSING THE TRAVELER-MK3 SETTINGS
There are several ways to access MOTU Audio Setup settings:

■ Click the MOTU Audio Setup icon in the dock
■ Press on the MOTU Audio Setup dock icon to open the menu shown in Figure 5-1, or control-click it to open the menu immediately
■ From within AudioDesk™ or Digital Performer™, choose Setup menu>Configure Audio System>Configure Hardware Driver (Note: this dialog only provides access to basic settings such as sample rate and clock source. For access to all settings, use one of the techniques above.)

Figure 5-1: Accessing Traveler-mk3 settings from the dock.

■ In Cubase or Nuendo, open the Device Setup window, click VST Audio System and choose MOTU Traveler mk3 from the ASIO Driver menu. Then click the MOTU Traveler mk3 item in the list, click the Control Panel button and click the Open ConfigApp button.

■ From the front panel LCD as explained in chapter 6, “Traveler-mk3 Front Panel Operation” (page 43).

Traveler-mk3 tab settings
The Traveler-mk3 tab (Figure 5-2) provides settings that apply to a specific Traveler-mk3 interface. If you have several Traveler-mk3 (or other MOTU) interfaces connected, you’ll see a separate tab for each one.

General tab settings
The General tab provides settings that apply globally to all connected MOTU interfaces.
‘TRAVELER-MK3’ TAB SETTINGS

Sample Rate
Choose the desired Sample Rate for recording and playback. The Traveler-mk3 can operate at 44.1 (the standard rate for compact disc audio), 48, 88.2, 96, 176.4 or 192 kHz. Make sure that all of the devices connected digitally to the Traveler-mk3 match the Traveler-mk3’s sample rate. Also make sure that your digital audio synchronizer matches it as well (if you have one). At the 4x sample rates (176.4 or 192kHz), all digital I/O on the Traveler-mk3 is disabled.

Mismatched sample rates cause distortion and cracking. If you hear this sort of thing, check the sample rate settings in your hardware and here in MOTU Audio Setup.

Operation at 4x sample rates (176.4 or 192kHz)
At the 4x sample rates (176.4 or 192kHz), operation of the Traveler-mk3 is restricted, due to the higher audio bandwidth demands, as follows:

- All digital I/O is disabled (there is no optical, AES/EBU or S/PDIF input/output).
- The Traveler-mk3 provides 8 channels of analog input and 8 channels of analog output, simultaneously.
- The stereo return bus, as described in “Return Assign” on page 41, can only be assigned to one of the four available analog output pairs or phones.
- The headphone output can only be assigned to one of the four available analog output pairs or phones.
- The Main Outs can only be assigned to one of the four available analog output pairs or phones.

Figure 5-2: MOTU Audio Setup gives you access to all of the settings in the Traveler-mk3 hardware.
Clock Source

The Clock Source determines the digital audio clock that the Traveler-mk3 will use as its time base. For a complete explanation of synchronization issues, see “Making sync connections” on page 26. The following sections briefly discuss each clock source setting.

Internal

Use the Internal setting when you want the Traveler-mk3 to operate under its own digital audio clock. For example, you may be in a situation where all you are doing is playing tracks off hard disk in your digital audio software on the computer. In a situation like this, you most often don’t need to reference an external clock of any kind.

Another example is transferring a mix to DAT. You can operate the Traveler-mk3 system on its internal clock, and then slave the DAT deck to the Traveler-mk3 via the S/PDIF connection (usually DAT decks slave to their S/DIF input when you choose the S/PDIF input as their record source) or via the Traveler-mk3’s word clock output (if your DAT deck has a word clock input).

If you would like help determining if this is the proper clock setting for your situation, see “Making sync connections” on page 26.

Word Clock In

The Word Clock In setting refers to the Word Clock In BNC connector on the Traveler-mk3 rear panel. Choosing this setting allows the Traveler-mk3 to slave to an external word clock source, such as the word clock output from a digital mixer or another Traveler-mk3.

S/PDIF

The S/PDIF clock source setting refers to the S/PDIF RCA input jack on the Traveler-mk3. This setting allows the Traveler-mk3 to slave to another S/PDIF device.

AES/EBU

Use this setting whenever you are recording input from a DAT deck or other S/PDIF device into the Traveler-mk3. It is not necessary in the opposite direction (when you are transferring from the Traveler-mk3 to the DAT machine).

For further details about this setting, see “Syncing AES/EBU and S/PDIF devices” on page 29.

ADAT Optical A / B

The ADAT optical clock source settings (ADAT Optical A and ADAT Optical B) refer to the clock provided by the Traveler-mk3’s two optical inputs, when either one is connected to another optical device. These two settings only appear in the Clock Source menu when their corresponding optical bank input is enabled and set to the ADAT Optical format, as explained in “Optical input/output” on page 41.

This setting can be used to resolve the Traveler-mk3 directly to the optical input connection. Most of the time, you can set up a better operating scenario that uses one of the other synchronization options. However, there may be occasions when you have an optical device that has no way of synchronizing digitally to the Traveler-mk3 or an external synchronizer. In this
case, the **ADAT Optical** clock source setting lets you
slave the Traveler-mk3 to the device itself via its
digital input to the Traveler-mk3.

This setting is also useful if you just need to make a
simple, click-free digital transfer between the
Traveler-mk3 and another device — where a time
code reference and shared transport control are not
needed — without having to set up an elaborate
synchronization scenario.

For further details, see “Choosing a clock source
for optical connections” on page 21.

**TOSLink A / B**
The **TOSLink** clock source settings (**TOSLink A** and
**TOSLink B**) refer to the clock provided by the
Traveler-mk3’s two optical inputs, when either one
is connected to another optical device. These two
settings only appear in the Clock Source menu
with their corresponding optical bank input is
enabled and set to the **TOSLink** format, as
explained in “Optical input/output” on page 41.

The **TOSLink** clock source setting refers to the
clock provided an optical S/PDIF device connected
to the Traveler-mk3’s optical input. This setting
can be used to slave the Traveler-mk3 directly to
the optical input connection. Most of the time, you
can set up a better operating scenario that uses one
of the other synchronization options. However,
there may be occasions when you have an
TOSLink-compatible device that has no way of
synchronizing digitally to the Traveler-mk3 or an
external synchronizer such as the Digital
Timepiece. In this case, the **TOSLink** clock source
setting lets you slave the Traveler-mk3 to the other
device via the Traveler-mk3’s optical input.

This setting is also useful if you just need to make a
simple, click-free digital transfer between the
Traveler-mk3 and another device — where a time
code reference and shared transport control are not
needed — without having to set up an elaborate
synchronization scenario.

For further details, see “Choosing a clock source
for optical connections” on page 21.

**SMPTE**
Choose this setting to resolve the Traveler-mk3
directly to SMPTE time code (LTC) being received
via any Traveler-mk3 analog input jack. For details,
see “Syncing to SMPTE time code” on page 28 and
chapter 12, “MOTU SMPTE Console” (page 107).

**Built-in Audio**
Choose this setting to resolve the Traveler-mk3 to
your Mac’s built-in audio. Doing so will ensure that
audio streams playing back from or recorded by
the Traveler-mk3 will not drift apart from audio
streams simultaneously played or recorded by the
Mac’s built-in mic, speakers or audio output.

**Other audio devices (drivers)**
The MOTU FireWire Audio Driver has the ability
to resolve to other Core Audio drivers. Doing so
will ensure that audio streams playing back from or
recorded by the Traveler-mk3 will not drift apart
from audio streams simultaneously played or
recorded by the other devices.

**Default Stereo Input/Output**
In the System Preferences window, Mac OS X lets
you choose third-party hardware such as the
Traveler-mk3 for your Mac sound input and
output. The system input and output can be used
for alert sounds and general audio I/O for
applications like iTunes, iMovie, etc.
The Default Stereo Input and Default Stereo Output settings in MOTU Audio Setup (Figure 5-2 on page 38) let you specify the stereo input and output on the Traveler-mk3 to be used when it is chosen as the audio I/O device in the system preferences.

Phones Assign
The Phones Assign setting lets you choose what you will hear from the headphone jack. Choose Analog 1-2 if you’d like the headphone output to match the Main Outs. Choose Phones 1-2 if you would like the headphones to serve as their own independent output, which you can access as an independent output destination in your host audio software and as an output destination for the eight on-board CueMix FX mix busses.

Optical input/output
The Optical input and Optical output settings let you choose between ADAT optical (‘lightpipe’) and S/PDIF optical (‘TOSLink’) as the format for the Traveler-mk3’s two banks of optical input and output (Bank A and Bank B). Choose the format that matches the device connected. If you are not using the optical connections, it is recommended that you turn them off (by choosing Disabled from the menu) to reduce bandwidth and processing overhead. Note that you can operate each optical port independently. For example, you could use the ADAT optical format on the Bank A input (with a digital mixer, for example) and optical S/PDIF on the Bank A output (with a DAT deck, for example).

Main Outs Assign
Choose Analog 1-2 from the Main Outs Assign menu to treat the Main Outs as their own independent output pair. Choose any other output pair to cause the Main Outs to mirror (duplicate) the output pair you choose.

Return Assign
The Return Assign menu lets you choose any pair of Traveler-mk3 audio outputs, or any mix bus output (when operating at 44.1 or 48 kHz). The audio signal from this output pair or mix is then sent back to the computer via the Stereo Return 1-2 bus. This stereo return bus from the Traveler-mk3 appears in your host software alongside all other Traveler-mk3 inputs, wherever your host software lists them.

The Traveler-mk3 stereo return bus can be used for a variety of purposes. For example, you could use it to send a final mix being played through the Traveler-mk3 back to the computer, where you could record it for mastering or archiving purposes.

As another example, you could use the stereo return bus to capture tracks played from your host software, along with live inputs being routed directly through the Traveler-mk3 hardware via CueMix FX (with or without CueMix effects processing on the live inputs).
**Clip Hold Time**
The *Clip Hold Time* option controls how long the top red LED on the front panel metering remains illuminated after clipping occurs.

If you want the ability to clear the LED manually from your host audio software or the Cue Mix Console, Choose *Infinite* from the *Clip Hold Time* menu. In Digital Performer or AudioDesk, you can clear the Traveler-mk3 clip LEDs by choosing Audio menu>Clear All Clipping Indicators.

**Peak Hold Time**
The Traveler-mk3 front-panel level meters support standard peak/hold metering, where the LED for the highest level recently measured on the channel remains illuminated for a brief period of time while the rest of the LEDs below it remain fully dynamic. The *Peak Hold Time* controls how long the peak-hold LED remain illuminated before going dark again.

**Word Out**
The *Word Out* menu appears when the Traveler-mk3 is operating at a 2x sample rate (88.2 or 96kHz) or 4x sample rate (176.4 or 192kHz). This menu lets you set the word clock output either to match the current sample rate (*System Clock*) or force it to the corresponding 1x rate (either 44.1 or 48kHz). For example, if the Traveler-mk3 were operating at 176.4kHz, choosing the *Force 44.1*/48kHz option would produce word clock output at 44.1kHz.

**‘GENERAL’ TAB SETTINGS**

**Launch MOTU Audio Setup when hardware becomes available**
Check this option if you would like the MOTU Audio Setup icon to appear in the application dock as soon as a MOTU interface is detected (switched on, plugged in, etc.)

**Channel Names**
Click the *Channel Names* button to open the Channel Names window (Figure 5-4). This window lets you edit the names of the Traveler-mk3 inputs and outputs, as they appear in your host audio software. For example, when you click on a menu that displays the Traveler-mk3 inputs (or outputs), you will see the names you specify in this window (e.g. “vocal mic”, “lead guitar”, etc.), instead of the default generic names (“Analog 1”, “Analog 2”, etc.)

*Not all Mac OS X audio software supports channel names. If not, you'll see generic port names in your host audio software.*

![Figure 5-4: The Channel Names window.](image1)

![Figure 5-5: Traveler-mk3 channel names as they appear in Digital Performer’s Bundles window.](image2)
OVERVIEW
The Traveler-mk3 offers complete front-panel programming via six rotary encoders and a 2x16 backlit LCD display. All Traveler-mk3 settings can be accessed via these front-panel controls.

Precision Digital Trim and pad ............................................. 43
Phones ............................................................................. 44
Meters and status LEDs ................................................. 46
Push-button rotary encoders ............................................ 46
Multi-function LCD display ............................................. 46
Traveler-mk3 SETUP menu ................................................ 47
Audio menu ................................................................. 48
CueMix menu ............................................................... 49
Inputs menu ................................................................. 52
Outputs menu ............................................................... 52
Mixes menu ................................................................. 53
Reverb menu ............................................................... 53
Stand-alone operation ..................................................... 53

PRECISION DIGITAL TRIM AND PAD
Turn the Precision Digital Trim™ detented rotary encoders on the Traveler-mk3 front panel (Figure 6-1) to adjust the input level of their corresponding mic/guitar input on the rear panel. The LCD provides visual feedback as you turn the knob (Figure 6-2). Each detent adjusts the gain by approximately 1 dB. The gain range is from zero (0) to +53 dB. This is digitally controlled analog trim.

Pad switch
Push the rotary encoder once to view the current gain and pad settings as shown in Figure 6-2 without changing them. Push it again (while the

Figure 6-2: the LCD provides feedback when you adjust the Precision Digital Trim and pad for the four mic/guitar inputs.

Figure 6-1: The Traveler-mk3 front panel mic/guitar input controls.
pad setting is still visible) to toggle the 20dB pad on or off. After a few seconds, the LCD display will return to the previous screen.

Other mic/guitar input settings
The Traveler-mk3 mic/guitar inputs are equipped with many features to handle a wide variety of recording situations. For information about connections and settings, see “Mic/guitar inputs with preamps” on page 18 in the installation chapter. For information about the many settings available for the mic/guitar inputs, see:

- “The Inputs tab” on page 82
- “The channel settings section” on page 86
- “The Channel tab” on page 86
- “The EQ tab” on page 88
- “The Dynamics tab” on page 96

PHONES
From the factory, the PHONES jack (Figure 6-1) is a discrete output, but it can mirror any other output pair (digital or analog) or serve as its own independent output. For example, at 88.2/96 kHz, it defaults to mirroring the TRS main outs.

When you turn the phone VOL knob, the LCD display provides visual feedback (Figure 6-9). To view the current setting without changing it, just push the knob (without turning it).

MASTER VOLUME
From the factory, the MASTER VOL knob (Figure 6-1) controls the main outs (analog 1-2), but MASTER VOL can be programmed to control any combination of outputs. See “The Monitor Group” on page 95 for details. Push the knob once to view the current volume setting in the LCD display; push it again to mute the monitor group; push a third time to return to the previous volume.

Figure 6-3: The LCD provides feedback as you adjust Phone volume.

METERS KNOB
The METERS knob (Figure 6-1) provides access to extensive input and output metering in the LCD. Push the knob to cycle through three modes:

- Vertical multi-channel mode
- Horizontal single channel mode
- CueMix FX / Setup / Audio

Multichannel metering
For multi-channel metering in the LCD, push the METERS knob repeatedly until you see a multi-channel meter display similar to Figure 6-4 below:

Figure 6-4: Multi-channel metering in the LCD.

The display shows two 8-channel banks at a time, one in each row, with channel numbers displayed above and below and bank labels in the LCD itself on the left-hand side.

Choosing which bank to display
Turn the METERs knob to cycle among the following 8-channel bank displays:

- Analog input and output
- Digital input and output (AES/EBU + S/PDIF)
- Optical bank A input and output
- Optical Bank B input and output
- Optical Bank A and B inputs
- Optical Bank A and B outputs

The digital I/O bank
In the digital input/output bank meter display (Figure 6-5), the first pair of channels represents AES/EBU and the second pair represents S/PDIF, as shown below:

![Figure 6-5: Viewing AES/EBU and S/PDIF level meters in the LCD.](image)

Long throw metering for individual channels
To view long-throw horizontal metering for one channel (or channel pair) at a time in the LCD, push the METERS knob repeatedly until you see a horizontal meter display similar to Figure 6-4 below:

![Figure 6-6: Horizontal long-throw metering for an individual channel in the LCD.](image)

Choosing a channel
Turn the METERS knob to cycle among all active channels or channel pairs. Stereo pairs show two meters together.

Mic input metering with V-Limit
If you view a mic input, there is an extra meter in the top row of the LCD that displays V-Limit compression. This meter shows the amount of compression applied to the raw input signal when it exceeds zero dB.

![Figure 6-7: Metering for a mic input with V-Limit engaged.](image)

For complete details about V-Limit, see “Overload protection (mic/guitar inputs only)” on page 87.

When viewing individual channels, banks are identified as follows:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN</td>
<td>Analog</td>
</tr>
<tr>
<td>AES</td>
<td>AES/EBU</td>
</tr>
<tr>
<td>SP</td>
<td>S/PDIF</td>
</tr>
<tr>
<td>ADA or ADB</td>
<td>ADAT A or B</td>
</tr>
<tr>
<td>TLA or TLB</td>
<td>TOSLink A or TOSLink B</td>
</tr>
</tbody>
</table>
METERS AND STATUS LEDS
The meters and LEDs (Figure 6-8) provide status and metering information for all Traveler-mk3 inputs and outputs.

PUSH-BUTTON ROTARY ENCODERS
All of the knobs shown in Figure 6-10 are push-button digital rotary encoders. In many cases, you can either push the knob or turn it to make a setting or toggle the LCD display (depending on the encoder and setting).

MULTI-FUNCTION LCD DISPLAY
The LCD provides access to the many Traveler-mk3 settings, as well as visual feedback of the current parameter being modified.

Parameter “zooming”
For many settings, the LCD temporarily “zooms in” to display a long-throw meter and alphanumeric display to give you precise, real-time feedback as you adjust the setting. For example, if you change the headphone volume, the LCD will display a level meter and gain reduction reading that updates as you turn the volume knob. After a brief time-out, the display returns to its previous state before you turned the volume knob.

Three global menus
Push the PARAM knob to cycle the LCD among three global menus, described in the rest of this chapter:
- Traveler-mk3 SETUP
- AUDIO (settings)
- CUEMIX (mixer)
TRAVELER-MK3 SETUP MENU
To access the Traveler-mk3 SETUP menu, push the PARAM knob until you see Traveler-mk3 SETUP displayed in the LCD. This menu provides basic features for managing the Traveler-mk3 hardware. Turn the PARAM knob to access each setting, explained briefly below.

LCD Contrast
Turn the VALUE knob to adjust the LCD contrast.

Save/Name Preset
An Traveler-mk3 preset holds all current CueMix FX mix settings (everything in the CUEMIX menu). SETUP menu and AUDIO menu parameters are not included. Turn the VALUE knob to move from character to character in the preset name. Turn PAGE to change the currently flashing letter. Once you’ve named the preset, push VALUE to save it, turn it again to choose the desired preset slot you wish to save it to (1-16), and the push again to confirm the save. To cancel the save operation at any time by turning the PARAM knob.

Load Preset
Turn VALUE to choose the preset you wish to load (1-16) and push VALUE to load it.

Figure 6-11: In setup mode, the LCD displays a setup parameter in the top row of the LCD and the current setting in the bottom row.
MIDI Thru in standalone
Turn VALUE to enable (Y) or disable (N) the Traveler-mk3’s MIDI Thru feature when it is being operated stand-alone (not connected to a computer via FireWire). When MIDI Thru is enabled, the MIDI IN jack passes MIDI data directly to the MIDI OUT jack. This allows you, for example, to play a sound module connected to the MIDI OUT from a keyboard controller connected to the MIDI IN, without a computer connected.

You can use this feature even when the Traveler-mk3 is connected to the computer, but make sure that you are not also patching MIDI data through any host software running on the computer. In this case, data received on the MIDI IN port would be doubled on (i.e. sent twice to) the MIDI OUT port. In this case, simply disable patch thru either in the Traveler-mk3 or in your host software.

All Notes Off
The All Notes Off setting sends a MIDI All Notes Off message, as well as a MIDI note-off message for every note on every MIDI channel. This stops any stuck notes that are currently playing. Push VALUE to send the All Notes Off MIDI data.

AutoSave Status
All of the parameters in the Traveler-mk3 are periodically saved automatically in its memory, so that if you power down the unit, it will power back up in the same state. AutoSave Status tells you the current state of this process: Change Detected, Saving… or Saved. If it says Saved, it is ready to be powered down. If it says Change Detected or Saving…, wait until it changes to Saved.

Factory Defaults
Push VALUE to restore the Traveler-mk3 hardware to its factory default settings. Push VALUE again to confirm, or turn PARAM to cancel.

AUDIO MENU
To access the AUDIO menu, push the PARAM knob until you see AUDIO displayed in the LCD. This menu provides basic settings such as sample rate, clock source, optical bank format (ADAT versus TOSLink), and so on. These settings have corresponding settings in the MOTU Audio Setup software, as shown in the following table:

<table>
<thead>
<tr>
<th>Audio menu item</th>
<th>Where to find more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clock Source*</td>
<td>“Clock Source” on page 39</td>
</tr>
<tr>
<td>Sample rate*</td>
<td>“Sample Rate” on page 38</td>
</tr>
<tr>
<td>Phones Assign</td>
<td>“Phones Assign” on page 41</td>
</tr>
<tr>
<td>Main Out Assign</td>
<td>“Main Outs Assign” on page 41</td>
</tr>
<tr>
<td>Return Assign</td>
<td>“Return Assign” on page 41</td>
</tr>
<tr>
<td>Optical In/Out A/B*</td>
<td>“Optical input/output” on page 41</td>
</tr>
<tr>
<td>ADAT SMUX Type</td>
<td>See below. This menu item is only available when the Traveler-mk3 is operating at 88.2 or 96 kHz.</td>
</tr>
<tr>
<td>Word Clock Out</td>
<td>“Word Out” on page 42. This menu item is only available when the Traveler-mk3 is operating at 88.2 or 96 kHz.</td>
</tr>
<tr>
<td>Clip Hold</td>
<td>“Clip Hold Time” on page 42</td>
</tr>
<tr>
<td>Peak Hold</td>
<td>“Peak Hold Time” on page 42</td>
</tr>
</tbody>
</table>

*If the Traveler-mk3 is currently connected to a computer, this setting cannot be changed from the front-panel LCD. It must be changed in MOTU Audio Setup instead. Or, you can disconnect the Traveler-mk3 from the computer to change the Clock Source from the front panel.

ADAT SMUX Type
When the Traveler-mk3 is operating at either 88.2 or 96 kHz, the AUDIO menu includes an item called ADAT SMUX Type.

This setting lets you configure the optical ports for ADAT format operation at the 2x sample rates only (88.2 or 96 kHz).

There are two choices:

- Type I — for 2x optical connection to 3rd-party SMUX-compatible hardware products
- Type II — for 2x optical connection to MOTU products that are equipped with optical ports and support 2x operation.

Turn the VALUE knob to select an optical port and push the knob to toggle between the Type I and Type II setting.

**CUEMIX MENU**

To access the CUEMIX menu, push the PARAM knob until you see CUEMIX displayed in the LCD. This menu displays the settings for the Traveler-mk3 CueMix FX mixer.

**CueMix mixer basics**

It is much easier to navigate the CUEMIX menu in the LCD if you have a general understanding of the CueMix FX mixer. We strongly recommend that you review chapter 11, “CueMix FX” (page 77) before learning the LCD, especially “CueMix FX basic operation” on page 79.

**CUEMIX menu organization**

Mixer settings are divided into four sub-menus, which correspond to the Inputs, Mixes, Outputs and Reverb tabs in the CueMix FX software:

- IN (inputs)
- OUT (outputs)
- MIX (Mixes)
- REVERB (reverb processor)

**Navigating the four main menus**

To access the four main menus above, push the CHANNEL knob repeatedly. Then turn the CHANNEL knob to select the desired channel or mix.

**The IN (inputs) menu**

Push the CHANNEL button repeatedly until you see “I:” in the channel section of the LCD (Figure 6-12). This is similar to accessing the Inputs tab in CueMix FX console (“The Inputs tab” on page 82).

"I:" Indicates the IN (inputs) menu.

The current channel.

Access individual parameters here, such as the frequency setting for a band of EQ.

"Pages" are groups of channel settings, such as one band of EQ.

Change the value of the current parameter here.

*Figure 6-12: The IN (inputs) menu.*

**Choosing a channel**

Once you see the Inputs menu (Figure 6-12) in the LCD, turn the CHANNEL knob to select the desired input that you wish to edit. This is roughly equivalent to specifying an input channel strip to work with in the Inputs tab in CueMix FX software (Figure 11-3 on page 82).

**Choosing a setting to modify**

Once you've selected an input channel, you can access the various settings for that channel using the PAGE knob and PARAMETER knobs.

Turn the PAGE knob to scroll through channel settings such as individual bands of EQ, the compressor, reverb sends, etc. Push the PAGE knob to jump to the next “section” of parameters or to jump back to the beginning of the list. This is roughly the equivalent of moving through the various channel controls in an individual input.
channel strip in CueMix FX (Figure 11-3 on page 82), as well as the settings in the Channel tab (Figure 11-8 on page 86).

Turn the PARAMETER knob to scroll through individual parameters, such as the frequency for the current band of EQ. This is roughly equivalent to the parameters in the EQ tab (Figure 11-10 on page 88), Dynamics tab (Figure 11-26 on page 96) and Reverb tab (Figure 11-28 on page 99) in the CueMix FX software.

Adjusting the value of a parameter
Turn the VALUE knob to adjust the value of the current PARAMETER. Some parameters have default values. If so, push the VALUE knob to cycle through them.

Inactive items
If a menu item is inactive for some reason (perhaps it doesn’t currently apply or it is disabled), it is displayed in parentheses.

Copying and pasting
EQ, dynamics and Mix Assign settings allow you to copy and paste settings between EQ bands and/or channels. Push the VALUE knob to copy, scroll to the other item and then push again to paste.

Summary of Inputs menu settings
For a summary of Inputs menu settings, see “Inputs menu” on page 52.

The OUT (Outputs) menu
Push the CHANNEL button repeatedly until you see “O:” in the channel section of the LCD (Figure 6-13). This is similar to accessing the Outputs tab in CueMix FX console (“The Outputs tab” on page 84).
The MIX (Mixes) menu
Push the CHANNEL button repeatedly until you see “MIX 1” (or “MIX 2”, etc.) in the channel section of the LCD (Figure 6-14). This is similar to accessing the Mixes tab in CueMix FX console (“The Mixes tab” on page 80).

Choosing a mix bus
Once you see the MIX menu (Figure 6-14) in the LCD, turn the CHANNEL knob to select the desired mix that you wish to edit. This is roughly equivalent to choosing a mix in the Mixes tab in CueMix FX software (Figure 11-2 on page 80).

Working with mix busses in the LCD
Once you’ve selected a mix, you can access the various settings for that mix using the PAGE knob and PARAMETER knobs. The knobs function the same as described for inputs in “Choosing a setting to modify” on page 49 and “Adjusting the value of a parameter” on page 50. The PAGE knob scrolls through the following mix bus settings:

- MASTER — these are master fader settings, such as the master fader output assignment, master mute on/off, and the master fader volume. Access them with the PARAMETER knob.
- REVERB — these are the reverb send and return controls for the bus master fader. Access them with the PARAMETER knob.
- Individual channels — once you scroll past MASTER and REVERB, the PAGE knob then scrolls through all available inputs for the mix bus. Once you choose an input, access its channel settings using the PARAM knob and VALUE knob.

Summary of Mix menu settings
For a summary of Mix menu settings, see “Mixes menu” on page 53.

The REVERB menu
Push the CHANNEL button repeatedly until you see “REVERB” in the channel section of the LCD (Figure 6-15). This is similar to accessing the Reverb tab in CueMix FX (“The Reverb tab” on page 99).

- The REVERB processor is not available at sample rates above 48 kHz. Therefore, when the Traveler-mk3 is operating at 88.2 kHz or higher, the REVERB menu does not appear in the LCD.

Working with reverb settings in the LCD
Once you’ve selected the REVERB menu, you can access all settings using the PARAMETER and VALUE knobs. The PAGE knob is not needed and is therefore disabled when editing reverb settings.

Summary of Reverb menu settings
For a summary of Reverb menu settings, see “Reverb menu” on page 53.
## TRAVELER-MK3 FRONT PANEL OPERATION

### INPUTS MENU

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic 1-4</td>
<td>INPUT</td>
<td>PAIR</td>
<td>PHASE</td>
</tr>
<tr>
<td>L-R/M-S</td>
<td>CHANNEL</td>
<td>WIDTH</td>
<td>SWAP</td>
</tr>
<tr>
<td>L-R/M-S</td>
<td>TRIM</td>
<td></td>
<td>PLF</td>
</tr>
<tr>
<td>L-R/M-S</td>
<td>REF LEVEL</td>
<td></td>
<td>PAD</td>
</tr>
<tr>
<td>L-R/M-S</td>
<td>LMTR</td>
<td></td>
<td>LIMITER</td>
</tr>
<tr>
<td>L-R/M-S</td>
<td>LOOKAHEAD</td>
<td></td>
<td>SOFTCLIP</td>
</tr>
</tbody>
</table>

### OUTPUTS MENU

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog 1-2</td>
<td>INPUTS</td>
<td>EQ</td>
<td>(global)</td>
</tr>
<tr>
<td>Analog 3-4, etc.</td>
<td>CHANNEL</td>
<td>ENABLE</td>
<td>COPY</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td></td>
<td>PASTE</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td></td>
<td>RESET</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIM</td>
<td>HPF</td>
<td>(High-pass)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>LF</td>
<td>(Low w/shelf)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>MF</td>
<td>(Mid)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>MF</td>
<td>(High-mid)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>HF</td>
<td>(Low w/shelf)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>LPF</td>
<td>(Low-pass)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>DYN</td>
<td>(Dynamics)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>COMP</td>
<td>(Compressor)</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TRIM</td>
<td>LEVELER</td>
<td>ENABLE</td>
<td>MODE</td>
</tr>
<tr>
<td>TRIM</td>
<td>REVERB</td>
<td>SEND</td>
<td>PAN</td>
</tr>
<tr>
<td>TRIM</td>
<td>MASTER</td>
<td>SEND</td>
<td>SEND PAN (mono only)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog 1-2</td>
<td>INPUTS</td>
<td>LF</td>
<td>(Low w/shelf)</td>
</tr>
<tr>
<td>Analog 3-4, etc.</td>
<td>CHANNEL</td>
<td>ENABLE</td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>LF</td>
<td>(Low w/shelf)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>MF</td>
<td>(Mid)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>MF</td>
<td>(High-mid)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>HF</td>
<td>(High w/shelf)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>LPF</td>
<td>(Low-pass)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>DYN</td>
<td>(Dynamics)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>COMP</td>
<td>(Compressor)</td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td>LEVELER</td>
<td>ENABLE</td>
<td>MODE</td>
</tr>
<tr>
<td></td>
<td>REVERB</td>
<td>SEND</td>
<td>RETURN</td>
</tr>
<tr>
<td></td>
<td>MASTER</td>
<td>SEND</td>
<td>MASTER</td>
</tr>
</tbody>
</table>

### CHANNEL PAGE PARAM

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUTS</td>
<td>PAIR</td>
<td>PHASE</td>
</tr>
<tr>
<td></td>
<td>WIDTH</td>
<td>SWAP</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>PLF</td>
</tr>
<tr>
<td></td>
<td>REF LEVEL</td>
<td>PAD</td>
</tr>
<tr>
<td></td>
<td>LMTR</td>
<td>LIMITER</td>
</tr>
<tr>
<td></td>
<td>LOOKAHEAD</td>
<td>SOFTCLIP</td>
</tr>
<tr>
<td></td>
<td>EQ</td>
<td>(global)</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>PASTE</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TEST</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TRIM</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TRIM</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TRIM</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TRIM</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TRIM</td>
</tr>
<tr>
<td></td>
<td>TRIM</td>
<td>TRIM</td>
</tr>
</tbody>
</table>
### MIXES MENU

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIXES</td>
<td>1</td>
<td>ASSIGN</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>MUTE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COPY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PASTE</td>
</tr>
<tr>
<td>Master Mixes</td>
<td></td>
<td>RESET</td>
</tr>
<tr>
<td>Mix 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mix 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverb</td>
<td></td>
<td>SEND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RETURN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog 1</td>
<td></td>
<td>MUTE</td>
</tr>
<tr>
<td>Analog 2</td>
<td></td>
<td>SOLO</td>
</tr>
<tr>
<td>(if mono)</td>
<td></td>
<td>BAL/WID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog 1-2</td>
<td></td>
<td>MUTE</td>
</tr>
<tr>
<td>(if stereo)</td>
<td></td>
<td>SOLO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL/WID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BALANCE/WIDTH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES/EBU 1-2</td>
<td></td>
<td>MUTE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SOLO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL/WID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPDIF 1-2</td>
<td></td>
<td>MUTE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SOLO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL/WID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAT A1-2</td>
<td></td>
<td>MUTE</td>
</tr>
<tr>
<td>ADAT A3-4</td>
<td></td>
<td>SOLO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL/WID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAT B1-2</td>
<td></td>
<td>MUTE</td>
</tr>
<tr>
<td>ADAT B3-4</td>
<td></td>
<td>SOLO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL/WID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FADER</td>
</tr>
</tbody>
</table>

### STAND-ALONE OPERATION

All settings, including all mix settings and global settings, are saved in the Traveler-mk3’s memory, and they remain in effect even when the Traveler-mk3 is not connected to a computer. This allows you to use the Traveler-mk3 as a stand-alone 8-bus mixer. You can make adjustments to any setting at any time from the front panel.

### REVERB MENU

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PAGE</th>
<th>PARAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverb</td>
<td></td>
<td>ENABLE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIME</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PREDelay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WIDTH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CUT Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CUT db</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ROOM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REFSize</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REF Lev</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LO %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MID %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HI %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LO XOVR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HI XOVR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPLIT</td>
</tr>
</tbody>
</table>
CHAPTER 7  Digital Performer

OVERVIEW
This chapter provides a brief overview of Digital Performer's basic I/O and synchronization operation with the Traveler-mk3 hardware.

Installing the Traveler-mk3 Mac OS X drivers .......... 55
The Traveler-mk3 settings ............................... 55
Working with Traveler-mk3 inputs and outputs ...... 57
24-bit operation ............................................. 57
MIDI I/O via the Traveler-mk3 MIDI ports .......... 57
Processing live inputs with DP plug-ins .......... 57
Working with CueMix FX mixing and effects ............ 57
Synchronization .............................................. 58
Exchanging projects with AudioDesk .................... 58

INSTALLING THE TRAVELER-MK3 MAC OS X DRIVERS
As described in chapter 4, “Installing the Traveler-mk3 Mac Software” (page 33), the Digital Performer and MOTU Traveler-mk3 software installers will properly install and update everything for you.

THE TRAVELER-MK3 SETTINGS
Choose the Traveler-mk3 as your audio input output device by choosing Configure Audio System> Configure Hardware Driver from the Setup menu. This window shows some of the Traveler-mk3 settings, such as sample rate and clock source, but to access all of the Traveler-mk3 settings, open MOTU Audio Setup, as shown in Figure 5-2 on page 38.

For complete details about the Traveler-mk3 settings, see chapter 5, “MOTU Audio Setup” (page 37). The following sections provide a brief explanation of each Traveler-mk3 setting for use with Digital Performer.
Sample rate
Choose the desired overall sample rate for the Traveler-mk3 system and Digital Performer. Newly recorded audio in Digital Performer will have this sample rate. Imported audio or soundbites in existing files that do not match this sample rate will be displayed in the Soundbites window with a red 'X' on their move handles to indicate that they cannot be played.

Clock Source
This setting is very important because it determines which audio clock the Traveler-mk3 will follow.

If you do not have any digital audio connections to your Traveler-mk3 (you are using the analog inputs and outputs only), and you will not be slaving Digital Performer to external SMPTE time code, choose Internal.

If you have digital audio devices connected to the Traveler-mk3, or if you are not sure about the clock source of your setup, be sure to read “Making sync connections” on page 26 and “Clock Source” on page 39.

If you are slaving the Traveler-mk3 and Digital Performer to SMPTE time code via the Traveler-mk3 itself, choose SMPTE and follow the directions in “Syncing to SMPTE time code” on page 28.

Buffer Size
The Buffer Size setting can be used to reduce the delay — or monitoring latency — that you hear when live audio is patched through Digital Performer. For example, you might have MIDI instruments, samplers, microphones, and so on connected to the analog inputs of the Traveler-mk3. If so, you will often be mixing their live input with audio material recorded in Digital Performer. See chapter 10, “Reducing Monitoring Latency” (page 71) for complete details.

Phones Assign
This Traveler-mk3 setting lets you choose what you’ll hear from the headphone jack. For example, if you choose Analog 1-2, the headphones will duplicate the main outs. Or you can choose any other output pair. If you choose Phones 1-2, this setting makes the headphone jack serve as its own independent output pair. As a result, you’ll see Phones 1-2 as an additional audio destination in Digital Performer’s audio output menus. Audio tracks assigned to this output pair will be heard on the headphone jack only. For further explanation, see “Phones Assign” on page 41.

Optical input and output
To make an Traveler-mk3’s optical inputs and/or outputs available in Digital Performer, choose ADAT Optical or TOSLink from the optical input and/or output menus. If you won’t be using the optical connectors, turn them off. Note: these settings can only be accessed in the MOTU Audio Setup application. For details, see “Optical input/output” on page 41. If you are operating the optical ports at 88.2 or 96 kHz using the ADAT format, also see “ADAT SMUX Type” on page 48.

Main Outs Assign
Use the Main Outs Assign setting to determine what audio you will hear on the TRS main outs of the Traveler-mk3. By default, they of course are assigned to the Analog 1-2 bus, but you can assign them to mirror any other output bus you wish.

Return Assign
In Digital Performer’s audio input menus and the Bundles window, you’ll see an Traveler-mk3 input called Return 1-2 (Figure 7-2). This is a stereo feed from the Traveler-mk3 that matches the output of one of its output pairs, or any mix bus output (when operating at 44.1 or 48 kHz). Use the Return Assign menu in MOTU Audio Setup to choose which output pair or mix you would like to hear on this return. This can be used, for example, to
record back a final stereo mix that includes effects processing from the Traveler-mk3 DSP (such as the Leveler) for reference and archiving purposes.

### Reverb return

The Traveler-mk3 also supplies a return to Digital Performer that carries the output of its reverb processor (Figure 7-2). This return can be used for any purpose you wish.

### Working with Traveler-mk3 Inputs and Outputs

Once you've enabled the MOTU FireWire Audio driver as explained earlier in “The Traveler-mk3 settings” on page 55, Traveler-mk3 audio inputs and outputs will appear in Digital Performer’s audio input and output menus, as well as the Bundles window (Figure 7-2). If you don't see the optical inputs and/or outputs, check MOTU Audio Setup to make sure they are turned on. If you don't plan to use either optical bank, turn them off to conserve computer bandwidth.

### 24-Bit Operation

Your Traveler-mk3 hardware fully supports Digital Performer’s 24-bit recording capabilities, including both analog and digital 24-bit recording. If you would like to record and play back 24-bit audio files, go to the Audio Files options in the Digital Performer Preferences (Digital Performer menu), and choose 24-bit recording as the sample format. This setting is saved with the Digital Performer project.

### MIDI I/O via the Traveler-Mk3 MIDI Ports

Once you’ve followed the procedure for enabling the Traveler-mk3’s MIDI features as explained in “Software installation” on page 33, the Traveler-mk3 MIDI ports will appear as an input source and output destination in Digital Performer’s MIDI I/O menus.

### Processing Live Inputs with DP Plug-ins

If you patch a live input (such as MIDI synthesizer) through a plug-in effect in Digital Performer, you might hear a slight delay. There are several ways to reduce this delay. For details, see chapter 10, “Reducing Monitoring Latency” (page 71).

### Working with CueMix FX Mixing and Effects

The Traveler-mk3 provides powerful external mixing, EQ, compression and reverb, which you can operate hand-in-hand with Digital Performer’s complete mixing environment. For example, the Traveler-mk3 can serve as a monitor mixer routing channels to musicians, or it can serve as an integrated extension of your Digital Performer mixing environment. If you program an Traveler-mk3 mixing and processing configuration that goes hand in hand with your DP project, be sure to use the file save features in CueMix FX to save the Traveler-mk3 settings as a file in your DP project folder for instant recall of all settings. See chapter 11, “CueMix FX” (page 77) for complete...
details. You can even set up your Traveler-mk3 configuration file as a DP startup clipping so that it automatically loads when you open the project. See your DP manual for details.

SYNCHRONIZATION
As you read through the following sections to decide what form of synchronization you might need with other devices in your studio, be sure to consult “Making sync connections” on page 26 for the proper hardware connections. Use the synchronization diagrams to be clear about how you will be synchronizing Digital Performer and the Traveler-mk3 to the other components of your system.

Synchronizing digital audio connections
If you have devices connected to the Traveler-mk3 digital inputs (optical, S/PDIF or AES/EBU), you need to be concerned with the synchronization of the Traveler-mk3’s digital audio clock with other devices connected to it digitally (if any). For example, if you have a digital mixer connected to the Traveler-mk3 via an ADAT optical light pipe cable, you need to make sure that their audio clocks are phase-locked. For details, see “Choosing a clock source for optical connections” on page 21 and “Making sync connections” on page 26. If you don’t have any digital audio devices connected to the Traveler-mk3, digital audio phase-lock does not apply to you.

Resolving directly to time code (with no synchronizer)
If you need to slave Digital Performer and the Traveler-mk3 to SMPTE time code, you can do so with or without a dedicated synchronizer.

To resolve your Traveler-mk3 directly to SMPTE time code with no additional synchronization devices, use the setup shown in “Syncing to SMPTE time code” on page 28.

EXCHANGING PROJECTS WITH AUDIODESK
Digital Performer can exchange projects with AudioDesk. To open an AudioDesk project in Digital Performer, open it in the same way you would a DP project. To export a project to AudioDesk, use DP’s File menu> Save A Copy As command and choose the AudioDesk 3.0 file format.
CHAPTER 8  AudioDesk

OVERVIEW
This chapter provides a brief overview of AudioDesk's basic I/O and synchronization operation with the Traveler-mk3 hardware. For complete information about all of AudioDesk's powerful workstation features, see the AudioDesk manual.

Installing the Traveler-mk3 Mac OS X drivers ........................................ 59
The Traveler-mk3 settings ................................................................. 59
Working with Traveler-mk3 inputs and outputs ................................. 61
24-bit operation .............................................................................. 61
Processing live inputs through AudioDesk plug-ins ....................... 61
Working with CueMix FX mixing and effects .................................. 61
Synchronization ............................................................................. 61
Exchanging projects with Digital performer .................................. 62
AudioDesk and MIDI sequencing ..................................................... 62

INSTALLING THE TRAVELER-MK3 MAC OS X DRIVERS
As described in chapter 4, “Installing the Traveler-mk3 Mac Software” (page 33), the AudioDesk and MOTU Traveler-mk3 software installers will properly install and update everything for you.

THE TRAVELER-MK3 SETTINGS
Choose the Traveler-mk3 as your audio input output device by choosing MOTU Audio System options>Configure Hardware Driver from the Setup menu. This window shows some of the Traveler-mk3 settings, such as sample rate and clock source, but to access all of the Traveler-mk3 settings, open MOTU Audio Setup, as shown in Figure 5-2 on page 38.

Figure 8-1: Choose Setup menu>Configure Audio System>Configure Hardware Driver to open the dialog shown above and access the Traveler-mk3 CoreAudio driver. To access the rest of the Traveler-mk3 settings, open MOTU Audio Setup.

For complete details about the Traveler-mk3 settings, see chapter 5, “MOTU Audio Setup” (page 37). The following sections provide a brief explanation of each Traveler-mk3 setting for use with AudioDesk.
Sample rate
Choose the desired overall sample rate for the Traveler-mk3 system and AudioDesk. Newly recorded audio in AudioDesk will have this sample rate. Imported audio or soundbites in existing files that do not match this sample rate will be displayed in the Soundbites window with a red ‘X’ on their move handles to indicate that they cannot be played.

Clock Source
This setting is very important because it determines which audio clock the Traveler-mk3 will follow.

If you do not have any digital audio connections to your Traveler-mk3 (you are using the analog inputs and outputs only), and you will not be slaving AudioDesk to external SMPTE time code, choose Internal.

If you have digital audio devices connected to the Traveler-mk3, or if you are not sure about the clock source of your setup, be sure to read “Making sync connections” on page 26 and “Clock Source” on page 39.

If you are slaving the Traveler-mk3 and AudioDesk to SMPTE time code via the Traveler-mk3 itself, choose SMPTE and follow the directions in “Syncing to SMPTE time code” on page 28.

Buffer Size
The Buffer Size setting can be used to reduce the delay — or monitoring latency — that you hear when live audio is patched through your Traveler-mk3 hardware and AudioDesk. For example, you might have MIDI instruments, samplers, microphones, and so on connected to the analog inputs of the Traveler-mk3. If so, you will often be mixing their live input with audio material recorded in AudioDesk. See chapter 10, “Reducing Monitoring Latency” (page 71) for complete details.

Phones Assign
This Traveler-mk3 setting lets you choose what you’ll hear from the headphone jack. For example, if you choose Analog 1-2, the headphones will duplicate the main outs. Or you can choose any other output pair. If you choose Phones 1-2, this setting makes the headphone jack serve as its own independent output pair. As a result, you’ll see Phones 1-2 as an additional audio destination in AudioDesk’s audio output menus. Audio tracks assigned to this output pair will be heard on the headphone jack only. For further explanation, see “Phones Assign” on page 41.

Optical input and output
To make an Traveler-mk3’s optical inputs and/or outputs available in AudioDesk, choose ADAT Optical or TOSLink from the optical input and/or output menus. If you won’t be using the optical connectors, turn them off. Note: these settings can only be accessed in the MOTU Audio Setup application. For details, see “Optical input/output” on page 41. If you are operating the optical ports at 88.2 or 96 kHz using the ADAT format, also see “ADAT SMUX Type” on page 48.

Main Outs Assign
Use the Main Outs Assign setting to determine what audio you will hear on the TRS main outs of the Traveler-mk3. By default, they of course are assigned to the Analog Out 1-2 bus, but you can assign them to mirror any other output bus you wish.

Return Assign
In AudioDesk’s audio input menus and the Bundles window, you’ll see an Traveler-mk3 input called Return 1-2 (Figure 8-2). This is a stereo feed from the Traveler-mk3 that matches the output of one of its output pairs, or any mix bus output (when operating at 44.1 or 48 kHz). Use the Return Assign menu in MOTU Audio Setup to choose which output pair or mix bus you would like to hear on this return. This can be used, for example, to
record back a final stereo mix that includes effects processing from the Traveler-mk3 DSP (such as the Leveler) for reference and archiving purposes.

24-BIT OPERATION
Your Traveler-mk3 hardware fully supports AudioDesk's 24-bit recording capabilities, including both analog and digital 24-bit recording. If you would like to record and play back 24-bit audio files, go to the Audio Files options in the AudioDesk Preferences (AudioDesk menu), and choose 24-bit recording as the sample format for the project. This setting is saved with the AudioDesk project.

PROCESSING LIVE INPUTS THROUGH AUDIODESK PLUG-INS
If you patch a live input (such as MIDI synthesizer) through a plug-in effect in AudioDesk, you might hear a slight delay. There are several ways to reduce this delay. For details, see chapter 10, "Reducing Monitoring Latency" (page 71).

WORKING WITH TRAVELER-MK3 INPUTS AND OUTPUTS
Once you’ve enabled the MOTU FireWire Audio driver as explained earlier in “The Traveler-mk3 settings” on page 59, Traveler-mk3 audio inputs and outputs will appear in AudioDesk's audio input and output menus, as well as the Bundles window (Figure 8-2). If you don’t see the optical inputs and/or outputs, check the MOTU Audio Setup to make sure they are turned on and set to the format you require. If you don’t plan to use either optical bank, turn it off to conserve computer bandwidth.

Figure 8-2: The stereo return and reverb return busses from the Traveler-mk3 in AudioDesk's Bundles window.

Warning: the Return inputs can cause feedback loops! DO NOT assign this input to a track that shares the same Traveler-mk3 output pair as the returns.

Reverb return
The Traveler-mk3 also supplies a return to AudioDesk that carries the output of its reverb processor (Figure 8-2). This return can be used for any purpose you wish.

WORKING WITH TRAVELER-MK3 INPUTS AND OUTPUTS
Once you’ve enabled the MOTU FireWire Audio driver as explained earlier in “The Traveler-mk3 settings” on page 59, Traveler-mk3 audio inputs and outputs will appear in AudioDesk's audio input and output menus, as well as the Bundles window (Figure 8-2). If you don’t see the optical inputs and/or outputs, check the MOTU Audio Setup to make sure they are turned on and set to the format you require. If you don’t plan to use either optical bank, turn it off to conserve computer bandwidth.

24-BIT OPERATION
Your Traveler-mk3 hardware fully supports AudioDesk's 24-bit recording capabilities, including both analog and digital 24-bit recording. If you would like to record and play back 24-bit audio files, go to the Audio Files options in the AudioDesk Preferences (AudioDesk menu), and choose 24-bit recording as the sample format for the project. This setting is saved with the AudioDesk project.

PROCESSING LIVE INPUTS THROUGH AUDIODESK PLUG-INS
If you patch a live input (such as MIDI synthesizer) through a plug-in effect in AudioDesk, you might hear a slight delay. There are several ways to reduce this delay. For details, see chapter 10, "Reducing Monitoring Latency" (page 71).

WORKING WITH TRAVELER-MK3 INPUTS AND OUTPUTS
Once you’ve enabled the MOTU FireWire Audio driver as explained earlier in “The Traveler-mk3 settings” on page 59, Traveler-mk3 audio inputs and outputs will appear in AudioDesk's audio input and output menus, as well as the Bundles window (Figure 8-2). If you don’t see the optical inputs and/or outputs, check the MOTU Audio Setup to make sure they are turned on and set to the format you require. If you don’t plan to use either optical bank, turn it off to conserve computer bandwidth.

SYNCHRONIZATION
As you read through the following sections to decide what form of synchronization you might need with other devices in your studio, be sure to consult “Making sync connections” on page 26 for the proper hardware connections. Use the synchronization diagrams to be clear about how
you will be synchronizing AudioDesk and the Traveler-mk3 to the other components of your system.

**Synchronizing digital audio connections**
If you have devices connected to the Traveler-mk3 digital inputs (optical, S/PDIF or AES/EBU), you need to be concerned with the synchronization of the Traveler-mk3’s digital audio clock with other devices connected to it digitally (if any). For example, if you have a digital mixer connected to the Traveler-mk3 via an ADAT optical light pipe cable, you need to make sure that their audio clocks are phase-locked. For details, see “Choosing a clock source for optical connections” on page 21 and “Making sync connections” on page 26. If you don’t have any digital audio devices connected to the Traveler-mk3, digital audio phase-lock does not apply to you.

**Resolving directly to time code (with no synchronizer)**
If you need to slave AudioDesk and the Traveler-mk3 to SMPTE time code, you can do so with or without a dedicated synchronizer.

To resolve your Traveler-mk3 directly to SMPTE time code with no additional synchronization devices, use the setup shown in “Syncing to SMPTE time code” on page 28.

**EXCHANGING PROJECTS WITH DIGITAL PERFORMER**
To open AudioDesk Version 3 (or Version 1 or 2) files in Digital Performer, just use DP’s File menu> Open command. (No conversion is required beforehand in AudioDesk.) To export a Digital Performer project to AudioDesk, use Save A Copy As in Digital Performer’s File menu and choose the AudioDesk 3.0 file format. Then open the resulting AudioDesk 3.0 document in AudioDesk.

**AUDIODESK AND MIDI SEQUENCING**
AudioDesk can play audio as a background application, allowing you to run a sequencer at the same time in the foreground. However, there is no way to continuously synchronize — or resolve — a sequencer with AudioDesk, so the two programs will eventually drift out of sync, even if you manage to start them at the same time. If you’d like to do integrated MIDI sequencing, your best bet is Digital Performer, which offers pretty much all of the same features as AudioDesk, along with powerful, state-of-the-art MIDI sequencing. Talk to your authorized MOTU dealer for details about upgrading from AudioDesk to Digital Performer.
CHAPTER 9  Other Mac OS X Audio Software

OVERVIEW
The Traveler-mk3 provides multichannel audio and MIDI input and output for all Mac OS X audio applications, including Apple's Logic Pro, Logic Express, SoundTrack Pro and GarageBand. Other third-party software applications are also supported, such as Ableton Live, Propellerhead Reason, Steinberg Cubase and others.

Installing the Traveler-mk3 Mac OS X drivers ........................ 63
Preparing MIDI input and output ............................... 63
Run MOTU Audio Setup ........................................ 63
Choosing the MOTU FireWire Core Audio driver ........ 64
Working with Traveler-mk3 inputs and outputs ...... 66
Audio Input and output names .................................. 66
Number of channels ............................................ 68
MIDI I/O via the Traveler-mk3 MIDI ports .............. 68
Processing live inputs with host plug-ins ............. 68
Working with CueMix FX mixing and effects .......... 68
Synchronization .................................................. 68

INSTALLING THE TRAVELER-MK3 MAC OS X DRIVERS
To install the Traveler-mk3’s Mac OS X audio and MIDI drivers, just run the installer on the MOTU Audio installer CD as detailed in chapter 4, “Installing the Traveler-mk3 Mac Software” (page 33).

PREPARING MIDI INPUT AND OUTPUT
If you will be using the Traveler-mk3’s MIDI input and output ports, be sure to follow the procedure in “Preparing MIDI input and output” on page 63.

RUN MOTU AUDIO SETUP
Before you run your host audio software, launch MOTU Audio Setup to configure your Traveler-mk3 hardware. MOTU Audio Setup lets you configure your audio interface, and it lets you enable the desired inputs and outputs. Only enabled inputs and outputs will be available to your software, so this is an important step. For complete details see chapter 5, “MOTU Audio Setup” (page 37).

Figure 9-1: MOTU Audio Setup.

For complete details about the Traveler-mk3 settings, see chapter 5, “MOTU Audio Setup” (page 37). The following sections provide a brief explanation of each Traveler-mk3 setting for use with Logic and other Mac OS X audio software.

Sample rate
Choose the desired overall sample rate for the Traveler-mk3 system and your host audio software. Newly recorded audio will have this sample rate.

Clock Source
This setting is very important because it determines which audio clock the Traveler-mk3 will follow.

If you do not have any digital audio connections to your Traveler-mk3 (you are using the analog inputs and outputs only), and you will not be slaving your host software to external SMPTE time code, choose Internal.
If you have digital audio devices connected to the Traveler-mk3, or if you are not sure about the clock source of your setup, be sure to read “Making sync connections” on page 26 and “Clock Source” on page 39.

If you are slaving the Traveler-mk3 and your host software to SMPTE time code, follow the directions in “Syncing to SMPTE time code” on page 28.

**Phones Assign**
This Traveler-mk3 setting lets you choose what you'll hear from the headphone jack. For example, if you choose Analog 1-2, the headphones will duplicate the main outs. Or you can choose any other output pair. If you choose Phones 1-2, this setting makes the headphone jack serve as its own independent output pair. As a result, you'll see Phones 1-2 as an additional audio destination in your host's audio output menus. Audio tracks assigned to this output pair will be heard on the headphone jack only. For further explanation, see “Phones Assign” on page 41.

**Optical input and output**
To make a Traveler-mk3 optical input or output available in your host software, choose the appropriate format (ADAT optical or TOSLink) from the optical input and/or output menu. If you won't be using the optical connectors, turn them off. Note: these settings can only be accessed in the MOTU Audio Setup application. For details, see “Optical input/output” on page 41. If you are operating the optical ports at 88.2 or 96 kHz using the ADAT format, also see "ADAT SMUX Type" on page 48.

**Main Outs Assign**
Use the Main Outs Assign setting to determine what audio you will hear on the TRS main outs of the Traveler-mk3. By default, they of course are assigned to the Analog Out 1-2 bus, but you can assign them to mirror any other output bus you wish.

**Return Assign**
In your OS X host audio software audio input menus, you'll see an Traveler-mk3 input called Return 1-2. This is a stereo feed from the Traveler-mk3 that matches the signal of one of its output pairs, or any mix bus output (when operating at 44.1 or 48 kHz). Use the Return Assign menu in MOTU Audio Setup to choose which output pair or mix bus you would like to hear on this return. This can be used, for example, to record back a final stereo mix that includes effects processing from the Traveler-mk3 DSP (such as the Leveler) for reference and archiving purposes.

**Warning:** the Return inputs can cause feedback loops! DO NOT assign this input to a track that shares the same Traveler-mk3 output pair as the returns.

**Reverb return**
The Traveler-mk3 also supplies a return to your host software that carries the output of its reverb processor. This return can be used for any purpose you wish.

**Choosing the MOTU FireWire Core Audio Driver**
Once you've made the preparations described so far in this chapter, you're ready to run your audio software and enable the MOTU Traveler-mk3 Core Audio driver. Check the audio system or audio hardware configuration window in your software. There will be a menu there that lets you choose among various drivers that may be in your system. Choose the MOTU Traveler-mk3 from this menu.

**Logic Pro and Logic Express**
In Logic Pro and Logic Express, go to the Preferences window, click the Audio tab, click the Drivers tab and click the Core Audio tab as shown...
in Figure 9-2. Choose the MOTU Traveler-mk3 from the Driver menu. For information about the I/O Buffer Size setting, see “Adjusting the audio I/O buffer” on page 72.

**Soundtrack Pro**
In Soundtrack Pro, access the preferences window, click the Recording tab and choose MOTU Traveler-mk3 from the Input and Monitor menu as shown below in Figure 9-3.

**Garage Band**
In Garage Band, go to the Audio/MIDI preferences and choose MOTU Traveler-mk3 from the Audio Output and Audio Input menus (Figure 9-4). For information about the Optimize for setting, see “Adjusting the audio I/O buffer” on page 72.

**Live**
In Ableton Live, access the preferences window and click the Audio tab. Choose CoreAudio from the Driver Type menu. Choose the MOTU Traveler-mk3 from the Input Audio Device and Output Audio Device menus (Figure 9-5). For information about the Buffer Size setting, see “Adjusting the audio I/O buffer” on page 72.
Reason
In Propellerhead Reason, go to the Preferences window, choose Audio preferences from the menu and choose MOTU Traveler-mk3 from the Audio Output menu as shown below in Figure 9-6. For information about the Buffer Size setting, see “Adjusting the audio I/O buffer” on page 72.

Cubase and Nuendo
Go to the Devices menu and choose Device Setup. Click the VST Audio System item in the Devices list and choose MOTU Traveler-mk3 from the Master ASIO Driver menu as shown below in Figure 9-7. Activate the inputs and outputs within Cubase or Nuendo as usual. For information about the Audio Buffer Size setting, see “Adjusting the audio I/O buffer” on page 72.

Other audio software
For other audio applications, the procedure is similar to that shown above. Consult your owner’s manual for further information.

WORKING WITH TRAVELER-MK3 INPUTS AND OUTPUTS
Once you’ve enabled the Traveler-mk3’s Core Audio driver, Traveler-mk3 audio inputs and outputs will appear in your host software wherever audio inputs and outputs are listed. If you don’t see the optical inputs and/or outputs, check MOTU Audio Setup to make sure they are turned on. If you don’t plan to use either optical bank, turn it off to conserve computer bandwidth.

AUDIO INPUT AND OUTPUT NAMES
The Traveler-mk3 Core Audio driver supplies text string labels for its inputs and outputs to clearly identify each one, but some applications do not display these labels. For example, in Cubase, the Traveler-mk3 outputs are numbered like this:

The following sections show how you can identify each input and output in a numbered list like this.
**Inputs at 1x sample rates**

Inputs are always listed in the same order as follows, when operating the Traveler-mk3 at 1x sample rates (44.1 or 48 kHz):

<table>
<thead>
<tr>
<th>Input</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic-Instr.</td>
<td>4</td>
<td>1-4</td>
<td>-</td>
</tr>
<tr>
<td>TRS Analog</td>
<td>4</td>
<td>5-8</td>
<td>-</td>
</tr>
<tr>
<td>AES/EBU</td>
<td>2</td>
<td>9-10</td>
<td>-</td>
</tr>
<tr>
<td>SPDIF</td>
<td>2</td>
<td>11-12</td>
<td>-</td>
</tr>
<tr>
<td>Stereo return</td>
<td>2</td>
<td>13-14</td>
<td>See &quot;Return Assign&quot; on page 64.</td>
</tr>
<tr>
<td>Reverb return</td>
<td>2</td>
<td>15-16</td>
<td>See &quot;Reverb return&quot; on page 64.</td>
</tr>
<tr>
<td>Optical A</td>
<td>8 ADAT 2 TOSLink</td>
<td>17-24</td>
<td>-</td>
</tr>
<tr>
<td>Optical B</td>
<td>8 ADAT 2 TOSLink</td>
<td>25-32</td>
<td>Channel numbers assume that optical A is operating with the same format.</td>
</tr>
</tbody>
</table>

**Inputs at 2x sample rates**

When operating the Traveler-mk3 at a 2x sample rate (88.2 or 96 kHz), inputs are listed as follows:

<table>
<thead>
<tr>
<th>Input</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic-Instr.</td>
<td>4</td>
<td>1-4</td>
<td>-</td>
</tr>
<tr>
<td>TRS Analog</td>
<td>4</td>
<td>5-8</td>
<td>-</td>
</tr>
<tr>
<td>AES/EBU</td>
<td>2</td>
<td>9-10</td>
<td>-</td>
</tr>
<tr>
<td>SPDIF</td>
<td>2</td>
<td>11-12</td>
<td>-</td>
</tr>
<tr>
<td>Stereo return</td>
<td>2</td>
<td>13-14</td>
<td>See &quot;Return Assign&quot; on page 64.</td>
</tr>
<tr>
<td>Reverb return</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>Optical A</td>
<td>8 ADAT 2 TOSLink</td>
<td>17-24</td>
<td>-</td>
</tr>
<tr>
<td>Optical B</td>
<td>8 ADAT 2 TOSLink</td>
<td>25-32</td>
<td>Channel numbers assume that optical A is operating with the same format.</td>
</tr>
</tbody>
</table>

**Inputs at 4x sample rates**

When operating the Traveler-mk3 at a 4x sample rate (176.4 or 192 kHz), inputs are listed as follows:

<table>
<thead>
<tr>
<th>Input</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic-Instr.</td>
<td>4</td>
<td>1-4</td>
<td>-</td>
</tr>
<tr>
<td>TRS Analog</td>
<td>4</td>
<td>5-8</td>
<td>-</td>
</tr>
<tr>
<td>AES/EBU</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>SPDIF</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>Stereo return</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>Reverb return</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>Optical A</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>Optical B</td>
<td>not available</td>
<td>not available</td>
<td>not available</td>
</tr>
</tbody>
</table>

**Outputs at 1x sample rates**

Outputs are always listed in the same order as follows, when operating the Traveler-mk3 at 1x sample rates (44.1 or 48 kHz):

<table>
<thead>
<tr>
<th>Output</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>8</td>
<td>1-8</td>
<td>-</td>
</tr>
<tr>
<td>AES/EBU</td>
<td>2</td>
<td>9-10</td>
<td>-</td>
</tr>
<tr>
<td>SPDIF</td>
<td>2</td>
<td>11-12</td>
<td>-</td>
</tr>
<tr>
<td>Phones</td>
<td>2</td>
<td>13-14</td>
<td>If the phones are assigned to mirror another output pair, they won’t be listed separately.</td>
</tr>
<tr>
<td>Optical A</td>
<td>8 ADAT 2 TOSLink</td>
<td>15-22</td>
<td>If the phones are mirroring, then subtract 2.</td>
</tr>
<tr>
<td>Optical B</td>
<td>8 ADAT 2 TOSLink</td>
<td>23-30</td>
<td>These channel number ranges assume that optical A is operating with the same format.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>8</td>
<td>1-8</td>
<td>-</td>
</tr>
<tr>
<td>AES/EBU</td>
<td>2</td>
<td>9-10</td>
<td>-</td>
</tr>
<tr>
<td>SPDIF</td>
<td>2</td>
<td>11-12</td>
<td>-</td>
</tr>
<tr>
<td>Phones</td>
<td>2</td>
<td>13-14</td>
<td>If the phones are assigned to mirror another output pair, they won’t be listed separately.</td>
</tr>
<tr>
<td>Optical A</td>
<td>8 ADAT 2 TOSLink</td>
<td>15-22</td>
<td>If the phones are mirroring, then subtract 2.</td>
</tr>
<tr>
<td>Optical B</td>
<td>8 ADAT 2 TOSLink</td>
<td>23-30</td>
<td>These channel number ranges assume that optical A is operating with the same format.</td>
</tr>
</tbody>
</table>
Outputs at 2x sample rates
When operating the Traveler-mk3 at a 2x sample rate (88.2 or 96 kHz), outputs are listed as follows:

<table>
<thead>
<tr>
<th>Output</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>8</td>
<td>1-8</td>
<td></td>
</tr>
<tr>
<td>AES/EBU</td>
<td>2</td>
<td>9-10</td>
<td></td>
</tr>
<tr>
<td>SPDIF</td>
<td>2</td>
<td>11-12</td>
<td></td>
</tr>
<tr>
<td>Phones</td>
<td>2</td>
<td>13-14</td>
<td></td>
</tr>
<tr>
<td>Optical A</td>
<td>4 ADAT 2 TOSLink</td>
<td>15-18</td>
<td>If the phones are mirroring, then subtract 2.</td>
</tr>
<tr>
<td>Optical B</td>
<td>4 ADAT 2 TOSLink</td>
<td>19-22</td>
<td>These channel number ranges assume that optical A is operating with the same format.</td>
</tr>
</tbody>
</table>

Outputs at 4x sample rates
When operating the Traveler-mk3 at a 4x sample rate (176.4 or 192 kHz), outputs are listed as follows:

<table>
<thead>
<tr>
<th>Output</th>
<th>Number of Channels</th>
<th>List position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>8</td>
<td>1-8</td>
<td></td>
</tr>
<tr>
<td>AES/EBU</td>
<td>Not available</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>SPDIF</td>
<td>Not available</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Phones</td>
<td>2</td>
<td>9-10</td>
<td>If the phones are assigned to mirror another output pair, they won’t be listed separately.</td>
</tr>
<tr>
<td>Optical A</td>
<td>Not available</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Optical B</td>
<td>Not available</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

NUMBER OF CHANNELS
If your host audio software requires that you specify the number of audio voices or channels you will be using, be sure to choose enough channels to cover the 28 inputs and 30 outputs provided by your Traveler-mk3 — although the number of channels may depend on how your Traveler-mk3 is configured.

MIDI I/O VIA THE TRAVELER-MK3 MIDI PORTS
Once you’ve followed the procedure for enabling the Traveler-mk3’s MIDI features as explained in “Software installation” on page 33, the Traveler-mk3 MIDI ports will appear as an input source and output destination in your host software’s MIDI I/O menus.

PROCESSING LIVE INPUTS WITH HOST PLUG-INS
If you patch a live input (such as a MIDI synthesizer) through a plug-in effect in your host software, you might hear a slight delay. There are several ways to reduce this delay. For details, see chapter 10, “Reducing Monitoring Latency” (page 71).

WORKING WITH CUEMIX FX MIXING AND EFFECTS
The Traveler-mk3 provides powerful external mixing, EQ, compression and reverb, which you can operate hand-in-hand with your host’s mixing environment. For example, the Traveler-mk3 can serve as a monitor mixer routing channels to musicians, or it can serve as an integrated extension of your host’s mixing environment. If you program an Traveler-mk3 mixing and processing configuration that goes hand in hand with your host project, be sure to use the file save features in CueMix FX to save the Traveler-mk3 settings as a file in your host project folder for instant recall of all settings. See chapter 11, “CueMix FX” (page 77) for complete details.

SYNCHRONIZATION
As you review the following sections to decide what form of synchronization you might need with other devices in your studio, be sure to consult “Making sync connections” on page 26 for the proper hardware connections. Use the diagrams to be clear about how you will be synchronizing your audio software and the Traveler-mk3 to the other components of your system.
Synchronizing digital audio connections

If you have devices connected to the Traveler-mk3 digital inputs (optical, S/PDIF or AES/EBU), you need to be concerned with the synchronization of the Traveler-mk3’s digital audio clock with other devices connected to it digitally (if any). For example, if you have a digital mixer connected to the Traveler-mk3 via an ADAT optical light pipe cable, you need to make sure that their audio clocks are phase-locked. For details, see “Choosing a clock source for optical connections” on page 21 and “Making sync connections” on page 26. If you don’t have any digital audio devices connected to the Traveler-mk3, digital audio phase-lock does not apply to you.

Resolving to time code (with no synchronizer)

If your host audio software supports Core Audio’s sample-accurate positioning protocol, or if it supports MIDI Time Code (MTC) sync, then it can resolve to the Traveler-mk3’s built-in time code synchronization feature. To resolve your Traveler-mk3 directly to SMPTE time code with no additional synchronization devices, use the setup shown in “Syncing to SMPTE time code” on page 28.
CHAPTER 10  Reducing Monitoring Latency

OVERVIEW

Monitoring latency is that slight delay you hear when you run an input signal through your host audio software. For example, you might hear it when you drive a live guitar input signal through an amp modeling plug-in running in your audio sequencer.

This delay is caused by the amount of time it takes for audio to make the entire round trip through your computer, from when it first enters a Traveler-mk3 input, passes through the Traveler-mk3 hardware into the computer, through your host audio software, and then back out to an Traveler-mk3 output.

If you don't need to process a live input with plug-ins, the easiest way to avoid monitoring latency is to use the Traveler-mk3's CueMix FX digital mixer to patch the input directly to your monitor outs via the Traveler-mk3 audio hardware. The Traveler-mk3 even provides effects processing (EQ, compression and reverb), which can be applied on input, output, or even at the bussing stage, just like a conventional mixer. For details, see “CueMix FX hardware monitoring” on page 74.

If you do need to process a live input with host software plug-ins, or if you are playing virtual instruments live through your Traveler-mk3 audio hardware, you can significantly reduce latency — and even make it completely inaudible, regardless of what host audio application software you use. This chapter explains how.

It is important to note that monitoring delay has no effect on when audio data is recorded to disk or played back from disk. Actual recording and playback is extremely precise.

Monitoring live input .................................................. 71
Adjusting the audio I/O buffer ................................. 72
Lower latency versus higher CPU overhead .......... 73
Transport responsiveness ......................................... 74
Effects processing and automated mixing ............ 74
CueMix FX hardware monitoring ......................... 74
Two methods for controlling CueMix FX ............. 74
Using CueMix FX .................................................... 74
Controlling CueMix FX from your audio software .... 75

MONITORING LIVE INPUT

There are two ways to monitor live audio input with an Traveler-mk3: 1) through the computer or 2) via the Traveler-mk3 CueMix FX hardware mixer. Figure 10-1 on page 72 shows method 1, which allows you to apply host-based effects processing via plug-ins in your audio software. See the next section, “Adjusting the audio I/O buffer” for details about how to reduce or eliminate the audible monitoring delay that the computer introduces.

Figure 10-5 on page 73 shows how to use CueMix FX hardware-based monitoring, which lets you hear what you are recording with no monitoring delay and no computer-based effects processing. Instead, input is routed directly to an output, either with or without Traveler-mk3-based effects processing (EQ, compression or reverb). See “CueMix FX hardware monitoring” later in this chapter for details on how to use CueMix FX with your audio software, or with CueMix FX.

If the material you are recording is suitable, there is a third way to monitor live input: use both methods (Figure 10-1 and Figure 10-5) at the same time. For example, you could route guitar to both the computer (for an amp model effect) and mix that
processed signal on the main outs with dry guitar from CueMix FX — or perhaps with a touch of Traveler-mk3 Classic Reverb.

**ADJUSTING THE AUDIO I/O BUFFER**

A buffer is a small amount of computer memory used to hold data. For audio interfaces like the Traveler-mk3, buffers are used for the process of transferring audio data in and out of the computer. The size of the buffers determines how much delay you hear when monitoring live inputs through your audio software: larger buffers produce more delay; smaller buffers produce less.

Under Mac OS X, audio I/O buffer size is handled by the host audio application (not the Traveler-mk3 Core Audio driver). Most audio software applications provide an adjustable audio buffer setting that lets you control the amount of delay you’ll hear when monitoring live inputs or processing them with software plug-ins. Below are a few examples.

![Configure Hardware Driver](image.png)

**Figure 10-2:** In Digital Performer and AudioDesk, choose Setup menu> Configure Audio System> Configure Hardware Driver to open the dialog shown above and access the Buffer Size setting. Refer to your Digital Performer or AudioDesk manual for information about the Host Buffer Multiplier setting.

1. Live input (from mic, guitar, etc.) enters the MOTU interface.

2. Mic signal goes immediately to the computer.

3. Mic signal is 'patched thru' back to the audio interface with host-based plug-in effects, if any.

4. Mic signal (with plug-in processing, if any) is routed to the main outs (or other outputs that you’ve specified in the software).

**Figure 10-1:** There are two ways to monitor live audio inputs with an Traveler-mk3: 1) through the computer or 2) via CueMix FX hardware monitoring. This diagram shows method 1 (through the computer). When using this method, use your host software’s buffer setting to reduce the slight delay you hear when monitoring the live input, but don’t lower it too much, or your computer might get sluggish.
REDUCING MONITORING LATENCY

Lower latency versus higher CPU overhead

The buffer setting has a large impact on the following things:

- Patch thru latency
- The load on your computer’s CPU
- Possible distortion at the smallest settings
- How responsive the transport controls are in AudioDesk, Digital Performer or other audio software

The buffer setting presents you with a trade-off between the processing power of your computer and the delay of live audio as it is being patched through your software. If you reduce the size, you reduce patch thru latency, but significantly increase the overall processing load on your computer, leaving less CPU bandwidth for things like real-time effects processing. On the other hand, if you increase the buffer size, you reduce the load on your computer, freeing up bandwidth for effects, mixing and other real-time operations.

1. Live input (from mic, guitar, etc.) enters the MOTU interface.

2. CueMix FX immediately patches the live mic signal directly to the main outs (or other output), completely bypassing the computer. This signal could be dry, or with Traveler-mk3 effects processing, such as reverb, EQ and/or compression.

3. Mic signal is mixed with the main outs, and you can control the volume (relative to the rest of the mix) with the mic’s fader in CueMix FX.

Figure 10-5: This diagram shows the signal flow when using CueMix FX no-latency monitoring. Notice that this method does not process the live input with plug-ins in your audio software. Instead, you can apply Traveler-mk3 effects, such as the reverb, EQ and/or compression.
REDUCING MONITORING LATENCY

If you are at a point in your recording project where you are not currently working with live, patched-thru material (e.g., you’re not recording vocals), or if you have a way of externally processing inputs, choose a higher buffer size. Depending on your computer’s CPU speed, you might find that settings in the middle work best (256 to 1024).

**Transport responsiveness**
Buffer size also impacts how quickly your audio software will respond when you begin playback, although not by amounts that are very noticeable. Lowering the buffer size will make your software respond faster; raising the buffer size will make it a little bit slower, but barely enough to notice.

**Effects processing and automated mixing**
Reducing latency with the buffer size setting has another benefit: it lets you route live inputs through the real-time effects processing and mix automation of your audio software.

**CUEMIX FX HARDWARE MONITORING**
The Traveler-mk3 has a more direct method of patching audio through the system. This method employs the Traveler-mk3’s CueMix FX digital mixer. When enabled, CueMix activates hardware patch-thru in the Traveler-mk3 itself. CueMix FX has two important benefits:

- It completely eliminates the patch thru delay (reducing it to a small number of samples — about the same amount as one of today’s digital mixers).

- CueMix FX imposes no strain on the computer.

The trade-off, however, is that CueMix FX bypasses your host audio software. Instead, live audio inputs are patched directly through to outputs in the Traveler-mk3 itself and are mixed with disk tracks playing back from your audio software. This means that you cannot apply host-based plug-ins, mix automation, or other real-time effects that your audio software provides. But for inputs that don’t need these types of features, CueMix FX is the way to go.

On the other hand, if you really need to use the mixing and processing provided by your audio software, you should not use CueMix FX. Instead, reduce latency with the buffer setting (as explained earlier in this chapter).

**TWO METHODS FOR CONTROLLING CUEMIX FX**
There are two ways to control CueMix FX:

- With CueMix FX
- From within your host audio software (if it supports direct hardware monitoring)

You can even use both methods simultaneously.

**Using CueMix FX**
If your host audio software does not support direct hardware monitoring, you run the CueMix FX software side-by-side with your audio software and manage your monitor mix in CueMix FX.

CueMix FX allows you to create up to eight separate Traveler-mk3 stereo mixes, or any other desired routing configurations. These routings are independent of your host audio software. For complete details, see chapter 11, “CueMix FX” (page 77).
Controlling CueMix FX from your audio software

Some audio applications allow you to control CueMix FX monitoring from within the application (without the need to use CueMix FX). In most cases, this support consists of patching an Traveler-mk3 input directly to an output when you record-arm a track. Exactly how this is handled depends on the application.

The following applications are among those that support direct control over CueMix FX:

- Digital Performer
- AudioDesk

CueMix FX routings that are made via host applications are made “under the hood”, which means that you won’t see them in CueMix FX. However, CueMix FX connections made inside your host audio software dovetail with any other mixes you’ve set up in CueMix FX. For example, if your host application routes audio to an output pair that is already being used in CueMix FX for an entirely separate mix bus, both audio streams will simply be merged to the output.

Controlling CueMix FX from within AudioDesk or Digital Performer

To turn on CueMix FX in AudioDesk and Digital Performer:

1. From the Setup menu, choose Configure Audio System>Input Monitoring Mode.

2. Choose the Direct hardware playthrough option, as shown below in Figure 10-7.

3. From the Studio menu, choose Audio Patch Thru, and choose any monitoring mode except Off.

Once enabled, CueMix FX monitoring is tied with Digital Performer or AudioDesk’s Audio Patch Thru feature: when you record-enable a track, the track’s input is routed directly to its output (via CueMix FX in the Traveler-mk3 hardware). For example, if you record-enable a track called guitar in your DP or AudioDesk project, and its audio input assignment is Analog in 2, and its audio output assignment is optical channels 7-8, CueMix FX no-latency hardware monitoring will automatically be set up from analog in 2 to optical outputs 7-8.

Controlling CueMix FX from within other software

Consult the manual for your software.
REDUCING MONITORING LATENCY
CHAPTER 11  CueMix FX

OVERVIEW
CueMix FX is a cross-platform software application that provides graphic, on-screen control for the Traveler-mk3’s flexible CueMix FX on-board mixer and effects processing.

CueMix FX can be used independently of host audio software, or together with it. CueMix dovetails with the direct monitoring features of your host audio software, allowing you to seemlessly mix in both environments.

For information about programming the Traveler-mk3’s on-board mixing and effects using the front panel LCD, see chapter 6, “Traveler-mk3 Front Panel Operation” (page 43).

A 16-BUS MIXER WITH EQ, COMPRESSION AND REVERB
All Traveler-mk3 inputs and outputs can be mixed and controlled by the on-board CueMix FX 16-bus (8 stereo bus) digital mixer driven by hardware-based DSP with 32-bit floating point precision.

The CueMix FX mixer allows you to apply no-latency effects processing to inputs, outputs or busses directly in the Traveler-mk3 hardware, independent of the computer. Effects can even be applied when the Traveler-mk3 is operating stand-alone (without a computer) as a complete rack-mounted mixer. Input signals to the computer can be recorded wet, dry, or dry with a wet monitor mix (for musicians during recording, for example).

Effects include:

- Classic Reverb with tail lengths up to 60 seconds
- 7-band parametric EQ modeled after British analog console EQs
- A standard compressor with conventional threshold/ratio/attack/release/gain controls
- The Leveler™, an accurate model of the legendary LA-2A optical compressor, which provides vintage, musical automatic gain control

The Traveler-mk3’s flexible effects architecture allows you to apply EQ and compression on every input and output (a total of 58 channels), with enough DSP resources for at least one band of parametric EQ and compression on every channel at 48 kHz. DSP resources are allocated dynamically and a DSP meter in the CueMix FX software allows you to keep tabs on the Traveler-mk3’s processing resources.
Each input, output and mix bus provides a send to the Classic Reverb processor, which then feeds reverb returns to mix busses and outputs, with a selectable split point between them to prevent send/return feedback loops.

ADVANTAGES OVER HOST-BASED MIXING AND PROCESSING
CueMix FX provides several major advantages over mixing and processing in your host audio software:

- CueMix has no buffer latency. Thanks to the Traveler-mk3’s DSP chip, CueMix provides the same throughput performance as a digital mixer.
- CueMix mixing and effects processing imposes no processor drain on the computer’s CPU.
- CueMix routing can be maintained independently of individual software applications or projects.
- CueMix routing can operate without the computer, allowing the Traveler-mk3 to operate as a portable, stand-alone mixer with effects.

CUEMIX FX INSTALLATION
CueMix FX is installed with the rest of your Traveler-mk3 software.
CUEMIX FX BASIC OPERATION
Here is a brief overview of the CueMix FX mixer.

Eight stereo mix busses
CueMix provides eight stereo mix busses: Bus 1, Bus 2, Bus 3, and so on. Each mix bus can take any number of inputs and mix them down to any Traveler-mk3 output pair that you choose. For example, Bus 1 could go to the headphones, Bus 2 could go to the main outs, Bus 3 could go to a piece of outboard gear connected to analog outputs 7-8, etc.

Many inputs to one output pair
It might be useful to think of each mix bus as some number of inputs all mixed down to a stereo output pair. CueMix FX lets you choose which inputs to include in the mix, and it lets you specify the level, pan and other input-specific mix controls for each input being fed into the mix.

Viewing one mix bus at a time
CueMix FX displays one mix bus at a time in the Mixes tab (Figure 11-2 on page 80). To select which mix you are viewing, choose it from the mix bus menu (Figure 11-2). The mix name appears above the mix bus master fader (Figure 11-2), where you can click the name to change it.

Each mix bus is independent
Each mix bus has its own settings. Settings for one bus will not affect another. For example, if an input is used for one bus, it will still be available for other busses. In addition, inputs can have a different volume, pan, mute and solo setting in each bus.

Input channels
The Inputs tab (Figure 11-3 on page 82) gives you access to settings for individual Traveler-mk3 inputs (or input pairs), such as phase, trim, EQ and dynamics processing. Each input also includes a send to the Traveler-mk3’s global reverb processor. These settings are applied to the signal before it goes anywhere else (to a mix bus or the computer).

Output channels
The Outputs tab (Figure 11-6 on page 85) gives you access to settings for each Traveler-mk3 output pair, including EQ, dynamics processing and send/return controls for feeding and returning the output signal to/from the Traveler-mk3’s global reverb processor. These settings are applied to the signal just before it is sent to the output.

Channel focus and settings
Click the focus button for a channel (Figure 11-1) to view channel-specific parameters in the Channel Settings section of the CueMix FX window (Figure 11-1). Separate tabs are provided for channel-specific settings (channel strip, EQ and dynamics), plus the global meter bridge and reverb processor.

Global reverb processor
The Traveler-mk3 has a global reverb module (Figure 11-28 on page 99). Once it has been activated, you can feed signals to the reverb processor from various points in the Traveler-mk3 mix matrix via input sends, bus sends and output sends. Stereo output from the reverb processor can then be fed back to mix busses or output pairs using reverb returns.

Other features
CueMix offers many additional features, discussed in this chapter, such as talkback/listenback, extensive metering, graphic editing of certain effects parameters, monitor grouping and more.

Widening the CueMix FX window
To view more input faders at once, drag the grow box (Figure 11-1) to the right.
THE MIXES TAB
Click the Mixes tab (Figure 11-2) to gain access to the Traveler-mk3’s eight stereo mix busses. The Mixes tab displays one mix bus at a time.

Viewing a mix
Choose the mix you wish to view from the mix bus menu (in the Mixes tab itself, as shown in Figure 11-2). The menu shows all mixes by name, followed by the Traveler-mk3 output pair to which each bus master fader is currently assigned, if any.

Naming a mix
Click the mix name at the top of the mix bus master fader (Figure 11-2) to edit the name.

Assigning a mix bus output
Choose the desired output pair for the mix bus from the bus output menu (Figure 11-2). The bus output menu displays all current available (enabled) Traveler-mk3 output pairs. If a bus is already assigned to an output pair, the bus name appears next to the output pair name to indicate that the output pair is already taken by a bus. Only one bus can be assigned to any given output pair. If you choose an output already assigned to another bus, that bus output will become disabled.

Bus fader
The bus fader (Figure 11-2) controls the overall level of the mix (its volume on its stereo output). Use the individual input faders to the left to control individual input levels.

Figure 11-2: The Mixes tab.
**Bus mute**
The bus mute button (Figure 11-2) disables (silences) the mix.

**Bus level meter**
The bus level meter, which is post-fader, shows you the level of the mix output.

**Bus reverb send/return**
The bus reverb send (Figure 11-2) feeds the output of the mix bus, pre-fader, to the Traveler-mk3’s global reverb processor, where it is merged with any other signals being fed to the reverb. The reverb’s output can then be fed back into the mixer at various return points, including the bus return (discussed below).

The bus reverb return (Figure 11-2) feeds the output of the Traveler-mk3’s global reverb processor into the mix bus, pre-fader. This includes any other signals currently being fed to the reverb. The bus reverb return is disabled (grayed out) when the reverb Split Point is set to Outputs to eliminate the possibility for feedback loops created by reverb send/return loops. See “Split point” on page 99.

**Input section**
The horizontally scrolling area in the Mix tab to the left of the master fader (Figure 11-2) displays channel strips for all currently enabled Traveler-mk3 inputs.

**Naming an input**
Click the input name at the top of the input channel strip (Figure 11-2) to edit the name. Input names are global across all mixes. This name also appears in host audio software on the computer (if the software supports channel names).

**Input channel focus**
Click the channel focus button (Figure 11-3) to view and edit parameters in the channel settings section of the CueMix FX window (Figure 11-7 on page 86). Clicking the mix bus master fader focus button brings the assigned output into focus, if there is one.

**Input pan section**
The input pan knob (Figure 11-2) pans the input across the bus stereo outputs. If the input itself is grouped as a stereo pair (in the Inputs tab), two forms of panning control are provided:

**Balance**
*Balance* works like the balance knob on some radios: turn it left and the right channel dims, turn it right and left channel dims. But the left channel always stays left and the right channel stays right.

**Width**
*Width* spreads the left and right channels across the stereo image, depending on the knob position. Maximum value (turning the pan knob all the way up) maintains the original stereo image: the left channel goes entirely left and right goes entirely right, without attenuation. The minimum value (turning the knob all the way down) creates a mono effect: equal amounts of left and right are combined and sent to both outputs. In between, the left out is a mixture of the left input and some of the right input (and vice-versa) with the effect of narrowing the field.

**Input fader and mute/solo**
To add an input to a mix, or remove it, click its Mute button. To solo it, use its Solo button. Use the input fader (Figure 11-2) to adjust the level for the input in the mix. Note that an input can have different level, pan, mute and solo settings for different mixes. Input channel level meters are post-fader.

If any solo button on the current (active) bus is enabled, the Solo Light (Figure 11-1) will illuminate.
THE INPUTS TAB
The Traveler-mk3 provides many features for managing analog and digital input signals. Some of these features, such as the Traveler-mk3’s digitally controlled analog trims, are implemented in the analog domain; others are implemented in the digital domain as DSP applied to the digital signal (after the A/D converter on analog inputs). Click the Inputs tab (Figure 11-3) to access and control all of these input channel settings for each Traveler-mk3 input or input pair.

Input tab settings are global
Except for the reverb send, all settings you make in the Input tab are applied to the input signal before it goes anywhere else (to a mix bus or the computer). For example, if you apply EQ and compression to the input signal, you will record the processed version of the signal in your host audio software running on the computer. If you need to record a completely unprocessed input signal, do not apply any changes to it in the Input tab. The only exception to this is the reverb send, which simply splits the input signal and feeds a copy of it to the Traveler-mk3’s reverb processor.

Signal flows from top to bottom
Settings in each Input tab channel strip are generally applied to the signal in order from top to bottom. Input channel signal flow is as follows: trim, overload protection, phase, stereo versus M/S decoding, width, L/R swap, EQ, dynamics and reverb send.

Naming an input
Click the input name at the top of the input channel strip (Figure 11-3) to edit the name. Input names are global across all mixes. This name also appears in host audio software running on the computer (if the software supports channel names).

---

Figure 11-3: The Inputs tab.
**Input channel focus**

Click the channel focus button (Figure 11-3) to view and edit parameters in the channel settings section of the CueMix FX window (Figure 11-7 on page 86).

**Mono/stereo pairing**

Click the Mono button (Figure 11-3) if you would like an input to be treated as a mono channel. If you would like to work with it as one channel of a linked stereo pair, click the Stereo button. Inputs are grouped in odd/even pairs (Analog 1-2, Analog 3-4, Analog 5-6, etc.) Stereo pairs appear as a single channel strip in the CueMix FX mixer (in all tabs).

**Invert phase**

Click the Phase button (Figure 11-3) to invert the phase of the input signal. For stereo pairs, you can invert the phase for the left and right channels independently.

**Input trim**

All Traveler-mk3 inputs, both analog and digital, offer continuously variable input trim. In all cases, trim level can be controlled digitally in 1 dB increments. This includes the digitally controlled analog trims on the four mic/guitar inputs on the front panel and the digital trims on the four quarter-inch analog inputs on the back panel. Here is a summary of input trim ranges for each type of Traveler-mk3 input:

<table>
<thead>
<tr>
<th>Input</th>
<th>Trim cut</th>
<th>Trim boost</th>
<th>Trim Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic/Guitar</td>
<td>0 dB</td>
<td>53 dB</td>
<td>53 dB</td>
</tr>
<tr>
<td>TRS analog inputs</td>
<td>0 dB</td>
<td>+12 dB</td>
<td>12 dB</td>
</tr>
<tr>
<td>AES/EBU (XLR)</td>
<td>0 dB</td>
<td>+12 dB</td>
<td>12 dB</td>
</tr>
<tr>
<td>SPDIF (RCA)</td>
<td>0 dB</td>
<td>+12 dB</td>
<td>12 dB</td>
</tr>
<tr>
<td>ADAT optical</td>
<td>0 dB</td>
<td>+12 dB</td>
<td>12 dB</td>
</tr>
<tr>
<td>SPDIF (TOSLink)</td>
<td>0 dB</td>
<td>+12 dB</td>
<td>12 dB</td>
</tr>
</tbody>
</table>

Once you adjust the trim levels, you can save them as a file on disk for future instant recall. See “Saving and loading hardware presets” on page 103 and “Configurations menu” on page 104.

**Input EQ and dynamics**

The Traveler-mk3 lets you apply 7-band parametric EQ and dynamics processing (DSP) to any input, analog or digital.

The controls in the EQ/Compression section of the Inputs tab (Figure 11-3) let you edit EQ and compression settings within the context of the channel strip. This is ideal when you are comparing settings among neighboring channels, or perhaps even applying the same setting across all inputs. However, for more detailed editing of EQ and compression settings for an input channel, you can click its Focus button and view the settings in the Channel Section of the CueMix FX window (Figure 11-1). This section even provides graphical editing of EQ curves and the compressor graph, allowing you to click and drag directly on the graphic. For details see “The channel settings section” on page 86.

**The EQ/Dynamics graph**

The EQ/Dynamics graph for each input channel strip (Figure 11-3) provides a thumbnail view of the EQ curves or Compressor graph for the channel. This graphic is for display purposes only; it cannot be edited directly. To change the EQ settings in this graph, use the two or three knobs below, as explained in the following sections. If, however, you would like to edit the EQ curves graphically, you can do so in the EQ tab (Figure 11-10 on page 88).

**EQ/Dynamics selectors**

The EQ/Dynamics selector buttons along the right-hand edge of the EQ/Dynamics section (Figure 11-3) allow you to choose what you are viewing and editing in the EQ/Dynamics section.
Click the selector (Figure 11-4) for the desired EQ band, low-pass (LP) filter, high pass (HP) filter or compressor to view it across all channels.

Shortcut: hold down the option key while clicking an EQ selector button to show just that band of EQ in the graphs. Click any selector again to return to viewing all bands.

Using the EQ/Dynamics knobs
Once you have chosen the desired EQ band, or the compressor, you can modify its settings using the two or three knobs below the graph. The knobs match the color of the currently selected effect, to help remind you of which effect you are currently editing.

Important: before you can modify the settings of an EQ band using the three knobs below the graph, the EQ band must be enabled. This is done in the EQ tab (Figure 11-10), as explained in “Enabling EQ” on page 88.

EQ/Dynamics enable/disable buttons
Click the EQ or Dynamics button at the bottom of the input channel (Figure 11-3) to toggle the effect on or off. Note that you can program EQ and compressor settings, even when the effect is currently disabled. (You just won’t hear the result until you enable it.)

Reverb send
The input reverb send (Figure 11-3) feeds the input signal to the Traveler-mk3’s global reverb processor, where it is merged with any other signals being fed to the reverb. The reverb’s output can then be fed back into a mix or output pair. The send occurs after all other settings in the input channel strip (phase invert, EQ, compression, etc.)

THE OUTPUTS TAB
The Outputs tab (Figure 11-6) lets you apply EQ, dynamics and reverb to any output pair, just before the signal leaves the Traveler-mk3. This is processing that occurs at the very end of the signal flow, after everything else (host based effects, Traveler-mk3 input or bus processing, mixing, and so on). Processing is done in the digital domain, just before the signal goes analog through the D/A converter. Output tab processing is applied to the entire output mix (all signals being mixed to the output from various sources).

Signal flows from top to bottom
Settings in each Output tab channel strip are applied to the signal in order from top to bottom. For example, EQ occurs before Dynamics, which is applied before the reverb send and return.

Output channel focus
Click the channel focus button (Figure 11-6) to view and edit parameters in the channel settings section of the CueMix FX window (Figure 11-7 on page 86).
Output EQ and Dynamics
The EQ/Dynamics section in the Outputs tab (Figure 11-6) works identically to the EQ/Dynamics section for the Inputs tab (Figure 11-3). See “Input EQ and dynamics” on page 83.

Output reverb send/return
The output reverb send (Figure 11-6) feeds the signal for the output to the Traveler-mk3’s global reverb processor, where it is merged with any other signals being fed to the reverb. The reverb's output can then be fed back into the mixer at any output, including the same output from which it was sent (discussed below). The output reverb send is disabled (grayed out) when the reverb Split Point is set to Mixes to eliminate the possibility for feedback loops created by reverb send/return loops. See “Split point” on page 99.

The output reverb return (Figure 11-6) feeds the output of the Traveler-mk3’s global reverb processor directly to the output. This includes any other signals currently being fed to the reverb.

Both the send and return occur after EQ and dynamics processing, but before listenback and talkback.

Talkback/Listenback
Click the Talkback or Listenback buttons (Figure 11-6) to toggle whether the output pair is included in the Talkback or Listenback group. See “Talkback and listenback” on page 101.

Monitor group assign
Click the Monitor buttons (Figure 11-6) to toggle whether the output pair is included in the Monitor group. See “The Monitor Group” on page 100.
THE CHANNEL SETTINGS SECTION
The channel settings section in the CueMix FX window (Figure 11-1) displays three tabs for Channel, EQ and Dynamics settings for the channel with the current focus. There are also two global tabs: the Meter Bridge and the Reverb Processor, as shown below.

![Figure 11-7: The Channel Settings section.](image)

The Channel tab
The Channel tab (Figure 11-8) displays settings for input channels. Click any focus button in the Inputs tab to view the Channel tab settings for the channel.

![Figure 11-8: The Channel tab.](image)

Signal flow
Settings in the Channel tab occur just before the EQ, dynamics and reverb sends in the Input tab channel strip (Figure 11-3 on page 82). Input channel signal flow is as follows: pad/reference level, trim, overload protection, phase, stereo versus M/S decoding, width, L/R swap, EQ, dynamics and reverb send.

Pad and reference level
The Pad and Reference Level section (Figure 11-8) lets you control the pad switch for mic inputs and the +4/-10 dB reference level for TRS inputs. If a mic input is currently in focus, the pad switch is enabled and the reference level switches are grayed
out. Conversely, if a TRS input is currently in focus, then pad switch is grayed out and the reference level switches are enabled.

**Stereo settings**
Inputs that have been grouped as stereo pairs in the Inputs tab (Figure 11-3) provide two stereo modes (Figure 11-8): Normal and M/S. M/S mode provides decoding for a mid-side microphone configuration.

The *Width* knob (Figure 11-8) provides control over the stereo imaging, going from a full stereo image to mono (both channels panned equally). See “*Width*” on page 81.

The *Swap L/R* button (Figure 11-8) lets you switch the left and right channels.

**Overload protection (mic/guitar inputs only)**
The Overload Protection section (Figure 11-8) provides two features that help prevent digital clipping on the four mic/guitar inputs. These options are only available on these four preamp-equipped inputs.

*V-Limit*™ (Figure 11-8) is a hardware limiter that helps prevent digital clipping from overloaded input signals. With V-Limit engaged, signals can go above zero dB (with limiting applied) to as high as +12 dB above zero with no distortion due to digital clipping. Click the *Lookahead* option for even better protection against sharp transients.

Additional or alternative protection can be applied to the mic/guitar inputs by enabling *Soft Clip* (Figure 11-8). When enabled, Soft Clip engages just before clipping occurs and helps further reduce perceptible distortion.

**Talkback section**
Click the *Talkback* or *Listenback* button (Figure 11-8) to toggle whether the input is the Talkback or Listenback input. Only one input can be the talkback input, and only one input can be the listenback input. See “*Talkback and listenback*” on page 101.

**Reverb section**
The *Send* in the reverb section (Figure 11-8) is the same control as the reverb send in the Input tab channel strip (Figure 11-3). See “Reverb send” on page 84. If the input is currently not grouped as a stereo pair in the Input tab (it is operating as a mono input), use the reverb *Pan* knob (Figure 11-8) to pan the mono signal for the stereo reverb processor.

**Input meter and bus activity LEDs**
When the Channel tab is active (Figure 11-8), the display above the tab provides a horizontal level meter and eight *bus activity LEDs* (Figure 11-9).

![Input meter and bus activity LEDs](image)

The *input level meter* (Figure 11-9) is the same as the input meters in the Meters tab (Figure 11-27 on page 98) with the *Pre FX* button engaged, which shows the input level on the physical input itself, before any processing of any kind occurs within the Traveler-mk3. This meter gives you the most accurate reading of the actual signal level hitting the input, regardless of any other settings (such as V-Limit, Soft Clip and so on). The clip indicator, however, happens after V-Limit and/or Soft Clip. This allows you to see when clipping occurs, even with these overload protection features engaged.

The *Bus Activity LEDs* (Figure 11-9) show you which mix busses the input signal is being fed to. For example, LED #6 will glow under the following
conditions: the input is unmuted in mix bus 6, its fader is up, and there is signal activity from the input going into the mix bus.

The EQ tab
The EQ tab (Figure 11-10) displays the EQ settings for the input or output channel that currently has the focus. Click any focus button in the Inputs or Outputs tab to view the EQ tab settings for the channel.

Vintage EQ
Inspired by legendary British large console EQs, the Traveler-mk3 Vintage EQ section (Figure 11-10) gives you the look, feel and sound of the most sought-after classic equalizers. Five bands of center frequency parametric EQ filtering are provided, each with four EQ types that provide current popular EQ styles and vintage analog EQ styles alike. Two bands include shelf filtering. Two additional bands of variable slope low pass and high pass filtering are provided. The filter response display provides comprehensive control and visual feedback of the EQ curve being applied. With 64-bit floating point processing, the Traveler-mk3 Vintage EQ has been carefully crafted and meticulously engineered to produce musical results in a wide variety of applications.

Enabling EQ
Each input and output channel has a global EQ enable/disable button (Figure 11-3 and Figure 11-6). This button enables or disables all bands of EQ for the channel. In addition, each
individual band of EQ has a Filter enable/disable switch (Figure 11-10), allowing you to enable as few or as many bands as needed for each individual channel.

**Vintage EQ Quick reference**

**Filter response display:** Shows the response curve for the current settings.

**Vertical scale:** Lets you zoom the vertical scale of the filter response display.

**Parameter display:** Shows the precise numbers of the parameter you are adjusting (or hovering over with the arrow cursor). The labels (frequency, gain, etc.) match the color of the filter being displayed. When a filter handle is not selected and when the cursor is not hovering over the display, the parameter display shows the name of the current channel being edited (the channel that currently has the focus), as shown below:

![Figure 11-11: When a filter handle is not selected and when the cursor is not hovering over the display, the parameter display shows the name of the current channel being edited (the channel that currently has the focus).](image)

**EQ filter:** one of five center bands of EQ that can be independently enabled and programmed.

**Filter type:** Lets you choose from one of four or five EQ styles for each independent band of EQ.

**Low/High Pass filter:** Both a low pass and high pass filter are supplied with six different slope settings.

**Slope:** Lets you choose the slope (fall off) characteristics of the low pass and high pass filter.

**Q handle:** Drag the Q handle lines to graphically adjust the Q setting for the currently selected filter. To select the filter, click its filter handle.

**Filter handle:** Drag this handle to graphically adjust the filter’s boost/cut and/or frequency.

**Composite curve (white line):** shows the overall response curve of the current settings in the window.

**Individual filter curve:** Each filter has a color (indicated by its knobs). When filter curves are being displayed (the filter curve option is turned on), each individual filter’s response curve is displayed in the filter’s color.

**Filter display options menu:** Provides several options for controlling the filter display.

**Filter enable/disable:** Turns the filter on or off.

**How the vintage EQ works**

The Vintage EQ operates like a standard EQ filter, but with much more sophisticated processing algorithms “under the hood”. There are five bands of EQ, each with their own unique knob color, plus additional low pass and high pass filters. Each filter can be set to any center frequency you wish.

Each filter can be independently turned on or off with the enable/disable button (Figure 11-10). Each filter can be set to one of four different filter types (I, II, III or IV). The two top-most filters (orange and green) provide an extra low and high shelf setting, in addition to the four standard band settings. The additional low pass and high pass filters (lower left) have gray cutoff frequency knobs and six settings for slope (in octaves/dB).

**Frequency response display**

The frequency response display at the top of the window displays the response curve of the current settings in the window. The (horizontal) frequency range is from 10 hertz to 20 KHz. The (vertical)
amplitude scale is in dB and is adjustable between 3 and 24 dB using the vertical scale buttons (Figure 11-10).

**Adjusting filters in the display**

To view a filter in the display, turn on the filter. The shape of the filter, according to its current settings, is shaded in the same color as the filter’s knob(s). Each filter has a handle, displayed as shown below in Figure 11-12 (in the filter’s color), for adjusting its boost/cut and/or frequency:

![Filter display](image)

For the EQ filters, when you click the handle, you’ll also see lines on either side for adjusting the Q parameter, as shown above.

**Filter display options**

The Filter display options menu (Figure 11-10) provides several options for the EQ filter display:

<table>
<thead>
<tr>
<th>Menu option</th>
<th>What it does</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show no analysis</td>
<td>Turns off both the FFT and Spectrogram in the Filter display.</td>
</tr>
<tr>
<td>Show FFT</td>
<td>Shows/hides a real-time FFT analysis of the current signal being EQ’d, post EQ filter.</td>
</tr>
<tr>
<td>Show Spectrogram</td>
<td>Shows/hides a real-time spectrogram “waterfall” in the background of the filter display, post EQ filter.</td>
</tr>
<tr>
<td>Show Band Response</td>
<td>Shows/hides the colored area below EQ filter points.</td>
</tr>
<tr>
<td>Show/Hide Full Window Analysis</td>
<td>Shows/hides the enlarged filter display in the CueMix FX window.</td>
</tr>
</tbody>
</table>

**FFT display**

Choose Show FFT from the Filter display options menu (Figure 11-10) to superimpose a real-time Fast Fourier Transform (FFT) frequency measurement curve over the EQ filter display, as demonstrated in Figure 11-13:

![FFT display](image)

The FFT curve is post-filter. Therefore, the FFT shows the results of the EQ filter(s) being applied. Use the global EQ button for the input or output channel (Figure 11-3 and Figure 11-6, respectively) to toggle between the EQ’d and non-EQ’d FFT display.

**Spectrogram**

Choose Show Spectrogram from the Filter display options menu (Figure 11-10) to superimpose a real-time spectrogram “waterfall” display in the background of the EQ filter display, as demonstrated in Figure 11-14:

![Spectrogram](image)

The spectrogram scrolls from top to bottom, where the top edge of the display represents what you are hearing “now”. Color represents amplitude along
the left/right frequency spectrum. The amplitude color scale runs from black (silence) to red (full scale) as follows:

![Color Scale](image)

**Figure 11-15: Spectrogram color-to-amplitude spectrum.**

**Using the full window filter display**
Choose *Show Full Window Analysis* from the Filter display options menu (Figure 11-10) to fill the entire CueMix FX window with the filter EQ display for detailed inspection and adjustment of the EQ filter, as shown in Figure 11-16.

You can show and hide the FFT display, spectrogram or EQ band response curves as desired using the *Display Options* menu options (Figure 11-16). These settings are independent of the small graph display options (Figure 11-10), so you have the flexibility to display different combinations in each graph.

**The info box**
The Show Info Box item in the full graph display options menu (Figure 11-16) lets you display the coordinates of any EQ filter point as you drag it in the graph (Figure 11-17):

![Info Box](image)

**Figure 11-17: The Info Box.**

The info box includes the industry standard scientific note (pitch) name when the control point is located at a frequency that resides within a prescribed note range, where C4 is middle C. The note number is accompanied by the number of cents (±50) above or below the exact frequency for the note. If the control point is dragged outside the note range, only the frequency is shown.

**EQ filters**
The EQ filters have three parameters:

<table>
<thead>
<tr>
<th>Control</th>
<th>Unit</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>dB</td>
<td>-20.00 to +20.00</td>
</tr>
<tr>
<td>Frequency</td>
<td>Hertz</td>
<td>20 Hz to 20 kHz</td>
</tr>
<tr>
<td>Q</td>
<td>n/a - see note below</td>
<td>0.01 to 3.00</td>
</tr>
</tbody>
</table>

**Q**
The Q setting does not have a unit of measurement. Rather, it is the ratio of the filter’s center frequency to the bandwidth of the filter. In addition, the
actual Q value for the EQ curve being applied is dependent on three factors: the gain setting, the filter style, and the Q setting.

Filter types
Each filter can be independently set to one of four different filter types: I, II, III and IV. These, and the additional shelf filters for the LMF and HMF band, are discussed in the section "EQ filter styles".

Returning to zero (or nominal frequency)
To return a knob to zero, or its nominal frequency, double-click it.

EQ filter styles
EQ is one of the most widely used processing tools and can be applied to many different situations, from minor corrective tasks to highly creative applications. Over the years, many EQs have been engineered for specific applications or to achieve a certain sound. The Vintage EQ has been designed to be flexible enough to cover a broad range of applications. To that end, several different filter types are supplied, varying mostly in the way they handle the dynamic interaction between Gain and Q. This crucial relationship has been modeled to emulate the smooth and musical character of classic analog EQ circuits, in which the Gain/Q dependency was dictated by the actual circuit design and electrical components used.

The following sections describe the character of each type of EQ filter and their suggested applications. In the illustrations for each filter style (Figure 11-18 through Figure 11-21), the settings for the three example curves are the same for the purpose of comparison:

- Frequency = 1.00 kHz
- Q = 1
- Gain = +3, +10 and +20 dB

The **Type I** EQ filter has the least amount of Gain/Q interaction, providing the most precision and control of all the EQ filter types. Even small adjustments in gain or reduction produce relatively high Q. This EQ style is best for situations that call for precise EQ adjustments requiring the maximum amount of individual parameter control. For more general shaping (e.g. full mixes) or subtle control (e.g. vocals), the other styles discussed in the following sections might be more appropriate. This filter type is the most similar to a standard parametric EQ.
The Type II EQ filter produces constant Q response during boost or cut. The Type II style emulates several classic legacy EQs and produces good results for resonance control on drums and percussion because it provides relatively high Q values with more extreme gain or cut settings.

The Type III EQ filter increases Q as boost is applied. Therefore, lower amounts of boost provide a softer, “wider” EQ effect (since the affected frequency range widens), while higher boost tends to sound louder and more “up front”, due to the increase in Q as the gain is increased. The more gentle Q curve at lower settings is well suited for overall EQ fills and more subtle corrections in instrument and vocal sources. Boosting or cutting by small amounts will seem to produce the effect that your ear expects, without the need to adjust Q. As a result, this filter style, and similar EQs with this characteristic behavior, are often referred to as being more “musical”. More specifically, this style emulates the classic Neve EQs, their modern derivatives and later SSL G series EQs. Many current popular outboard “boutique” EQs exhibit this same gain/Q relationship.
The **Type IV** EQ filter is a more extreme form of the Type III filter. It exhibits a high degree of interaction between Q and gain in order to maintain as closely as possible an equal amount of area under the response curve as gain is adjusted. Type IV is the most gentle of the four EQ styles and is ideal for large scale EQ adjustments, especially on sub-mixes and complete mixes. This EQ style is also ideal for any applications where subtle changes in the overall character of the sound are desired. For example, it can be used for mastering applications, such as the overall adjustments that must often be applied to entire tracks to match other tracks on the album.

When two top-most bands in the EQ tab are set to their shelf filter setting (Figure 11-10), the Q parameter controls the amount of overshoot applied to the response curve, as illustrated in Figure 11-22. When Q = 0.01 (the lowest setting), normal shelving is applied with no overshoot. This produces the response provided by a first order shelf. When Q = 1.0 (the default setting), the
response corresponds to a second order shelf, still with no overshoot. This is the same response as conventional parametric EQs. In some situations, this form of accurate, clean shelving can sound harsh, especially when compared to legacy analog EQs. To soften the results, the overshoot is increased as Q is increased, as shown Figure 11-22 for Q values of 1.00, 2.00 and 3.00. This overshoot region produces a boost in frequencies just above the cutoff, which compensates in a smooth, more pleasing fashion for the perceived drop in low frequencies being cut.

Conversely, when shelving boost is being applied, overshoot cuts frequencies just above the cutoff to again compensate in a smooth and pleasing fashion for the perceived boost in low frequencies:

Overshoot tends to produce more of what one would expect to hear when applying shelving and is therefore considered to be more musical than shelving without overshoot. This effect, which has gained tremendous popularity among audio engineers, was first made popular in original Neve series EQs and later in the SSL G series.

At the maximum Q setting of 3.00, the overshoot peaks at half the total boosted (or cut) gain. For example, with a max gain setting of +20dB, the loss in the overshoot region is -10 dB. Overshoot curves are symmetrical for both cut and boost.

**Low pass and high pass filters**

The Vintage EQ low and high pass filters are similar to those found in most conventional parametric EQs (which usually have a fixed slope of 12 dB per octave), except that Vintage EQ provides six different slope (roll off) settings: 6, 12, 18, 24, 30 and 36 dB per octave. This control over the shape of the “knee” gives you a great deal flexibility and control for a wide variety of applications.

Overshoot is also applied to high shelf boost and cut:
The Dynamics tab
The Dynamics tab (Figure 11-26) displays the Dynamics processing settings for the input or output channel that currently has the focus. Click any focus button in the Inputs or Outputs tab to view the Dynamics tab settings for the channel.

Figure 11-26: The Dynamics tab.

Enabling Dynamics
Each input and output channel has a global Dynamics enable/disable button (Figure 11-3 and Figure 11-6). This button enables or disables all dynamics processing for the channel. In addition, the Dynamics tab has two different dynamics processors, the Compressor and Leveler, which can be individually enabled or disabled (Figure 11-26) for the channel.

Compressor
The Compressor (Figure 11-26) lowers the level of the input when it is above the threshold. The amount of attenuation is determined by the Ratio and the input level. If the input is 6 dB above the Threshold and the Ratio is 3:1, then the output will be 2 dB above the Threshold. When the input level goes above the threshold, the attenuation is added gradually to reduce distortion. The rate at which the attenuation is added is determined by the Attack parameter. Likewise, when the input level falls below the Threshold, the attenuation is removed gradually. The rate at which the attenuation is removed is determined by the Release parameter. Long Release times may cause the audio to drop out briefly when a soft passage follows a loud passage. Short Release times may cause the attenuation to pump when the average input level quickly fluctuates above and below the Threshold.

These sorts of issues can be addressed by applying the Leveler instead.

Graphic adjustment of the Threshold
The Threshold can be adjusted by turning the Threshold knob or by dragging the Threshold line directly in the compressor graph (Figure 11-26).

Input level meter
The Input Level meter (Figure 11-26) shows the level of the input signal before it enters the compressor. It shows either the peak level or the RMS level, depending on which mode is currently chosen.

Gain reduction (GR) meter
The Gain reduction (GR) level meter (Figure 11-26) displays the current amount of attenuation applied by the compressor.
Output level
The Output Level meter (Figure 11-26) displays the peaks of the output signal. Trim is applied before the Output Level meter.

Peak/RMS modes
In RMS mode the compressor uses RMS values (a computational method for determining overall loudness) to measure the input level. In Peak mode, the compressor uses signal peaks to determine the input level. RMS mode will let peaks through because the detector sidechain is only looking at the average signal level. Peak mode will react to brief peaks. Peak mode is generally used for drums, percussion and other source material with strong transients, while RMS mode is mostly used for everything else.

The input meters show either the peak level or the RMS level, depending on the mode.

Leveler
The Leveler™ (Figure 11-26) provides an accurate model of the legendary Teletronix™ LA-2A® optical compressor, known for its unique and highly sought-after Automatic Gain Control (AGC) characteristics. The Traveler-mk3 Leveler faithfully models the LA-2A using the on-board DSP with 32-bit floating point precision.

A model of an optical compressor
The simplest description of an optical leveling amplifier device is a light shining on a phototransistor. The intensity of the light to the audio signal, and the resistance of the phototransistor is in turn inversely proportional to the intensity of the light. Phototransistors respond quite quickly to increases in light intensity, yet return to their dark resistance very slowly. Thus, incorporation of the phototransistor into an attenuator followed by an amplifier which provides make-up gain produces a signal which maintains a constant overall loudness.

Automatic gain control using light
The Automatic Gain Control (AGC) circuit of the LA-2A uses a vintage opto-coupler known by its model number (T4). The T4 contains an electroluminescent panel (ELP) and photoresistor mounted so that the emission of the panel modulates the resistance. An ELP consists of a thin layer of phosphorescent material sandwiched between two insulated electrodes to form a capacitor. Making one of the electrodes transparent allows the light to escape. These devices are essentially glow-in-the-dark paint on a piece of foil covered by metalized glass or plastic, and are the same devices used in low-power night lights. Unfortunately, these devices need high voltages to operate, and are best driven by tube circuits which can supply voltage swings of several hundred volts.

Response characteristics
Once the light has faded away, the photoresistor then decays back to its dark state. The shape of the decay curve varies depending on how bright the light was, and how long the light lasted. A general rule of thumb is that the louder the program, the slower the release. Typically, the release can take up to and over one minute. One thing to keep in mind when using these types of devices is that the typical concepts of compression ratio, attack, release, and threshold do not apply. The light intensity is determined by the highly non-linear interactions of the input signal, AGC circuit, and ELP, and thus exhibit a strong program dependence that is impossible to describe without the mind-numbing mathematics of statistical mechanics. The actual results, however, can be almost mystical: even when you feed the same material (a loop perhaps) through the Leveler twice, you'll often see a new response the second time through a loop, complete with unique attack times, release times and compression ratios. Furthermore, two different input signals with the same RMS levels may be leveled in a drastically different manner.
It is precisely this self-adjusting behavior that makes optical compressors the tool of choice for smoothing out vocals, bass guitar and full-program mixes without destroying perceived dynamics.

**Compressor/Limit buttons**
The *Comp* and *Limit* buttons (Figure 11-26) model the original LA-2A Limit/Compress mode switch. The effect is very subtle, with the Limit option behaving only slightly more like a limiter than a compressor. The switch increases the level of the input to the AGC model and runs the attenuator at a slightly lower level. The Leveler then responds more strongly to transients, but otherwise still behaves like a leveling amplifier.

**Gain Reduction**
*Gain Reduction* (Figure 11-26) sets the strength of the signal sent to the AGC model. The Gain Reduction meter (Figure 11-26) shows the amount of gain reduction being applied to the input signal.

**Makeup Gain**
*Makeup Gain* (Figure 11-26) amplifies the output signal to make up for gain reduction.

**Enabling or disabling the Leveler**
The Leveler models the LA-2A so closely, it also models the time it takes for an actual LA-2A to “warm up” after it is turned on. Therefore, when you enable the Leveler, give it a moment to “settle” before you begin processing signals with it.

**The Meters tab**
The *Meters* tab (Figure 11-27) serves as a comprehensive meter bridge for all inputs, outputs and mix busses in the Traveler-mk3. This tab gives you a “bird’s-eye” view of all signal activity in the Traveler-mk3; it is ideal for confirming your signal routing programming and for troubleshooting.

**Channel meter display**
The *channel meter display* (Figure 11-27) provides a long-throw meter for the input or output that currently has the focus in the Input/Output tabs.

**Bus activity LEDs (inputs only)**
The *Bus activity LEDs* (Figure 11-27) are present only for inputs. See “Input meter and bus activity LEDs” on page 87.

**Pre/post processing switch**
The *pre/post processing switch* (Figure 11-27) affects all input meters (and the meter in the channel meter display above the tab, if this area is displaying an input meter). Click *Pre* to view levels before any input channel processing besides trim; click *Post* to view levels after all channel processing (EQ, compression, M/S decoding, L/R swap, etc.)
The Reverb tab
The Reverb tab (Figure 11-28) provides access to the Traveler-mk3’s single, global reverb processor, which provides high-fidelity reverberation and graphic control over its parameters.

Enabling reverb
Use the enable/disable button (Figure 11-28) to turn the reverb processor on or off. Since reverb uses considerable DSP resources, it is best to leave it off when you are not using it.

Routing inputs, busses and outputs to the reverb processor
The reverb processor is a single, independent unit that provides stereo reverb. You can route multiple signals to it from various points (sends) in the CueMix FX mixer, but all incoming signals to the reverb processor are merged and processed together. The resulting stereo output from the reverb can then be inserted into a mix bus or output using stereo returns.

Reverb sends
The following signals can be sent to the reverb processor via their corresponding sends (discussed earlier in this chapter):
- Mono or stereo inputs (Figure 11-3 on page 82)
- Mix bus output (Figure 11-2 on page 80)
- Outputs (Figure 11-6 on page 85)

Reverb returns
The stereo output from the reverb processor can be sent to the following destinations via their corresponding returns (discussed earlier in this chapter):
- Mix bus outputs
- Outputs
- The computer (via the Reverb Return bus)

Split point
The Split Point (Figure 11-28) prevents feedback loops that would be caused by a signal being sent to the reverb processor and then returned to the same signal path.

Mix
When the Split Point is set to Mixes, the returns in the Mix bus tab become active and the sends in the Output tab gray out. This allows you to send from inputs and mixes and return to mixes and outputs.

Output
When the Split Point is set to Outputs, the sends in Output tab become active and the returns in the Mix bus tab gray out. This allows you to send from inputs, mixes and outputs and return to outputs.
**Primary controls**
The Primary Controls section (Figure 11-28) in the Reverb tab provides the following basic parameters for programming the reverb.

**Reverb Time**
*Reverb time* determines the length of decay, or *tail*, of the reverb. This is a global setting for the reverb processor. You can further refine the tails by independently setting the reverb time of three separate frequency bands, as discussed below in the Reverb Design section.

**PreDelay**
*PreDelay* is the amount of time before you hear the very first reflections. If you are in a large room, it takes a while before the first reflections return. PreDelay is useful for clarifying the original sound. For example, with vocals, the reflections won’t start until after the initial sound of a word has been sung.

**Shelf Filter**
The *Shelf Filter* is a low-pass filter that controls the high frequency characteristics of the overall effect. *Frequency* sets the cutoff frequency for the filter and *Cut* sets the amount of signal attenuation applied by the filter.

**Early reflections**
Initial reflections give a space its unique sound. The shape of the room, the angles of the walls, even furniture in the room will produce a series of Initial Reflections. Think of the early reflections and room type as the “flavor” of the reverb. You can choose between several types of rooms. These are acoustic models for simulating these different types of spaces. The *Size* and *Level* parameters let you control the size of the room and the strength of the initial reflections.

 fauna: Here’s a tip: try using initial reflections without any subsequent reverb (turn the reverb time down as far as it will go). You’ll hear interesting and unusual effects.

**Reverb design**
The Reverb Design section allows you to independently control the reverb time for three separate frequency bands (*Low, Mid and High*) with adjustable cross-over points between them (*Low and High*). The *reverb time* for each band is specified in percent of the overall reverb time in the Primary Controls section at the top of the tab.

You can edit these parameters graphically by dragging the handles in the graphic display (Figure 11-28).

**Width** does what its name implies: if you turn this control all the way up, the result is maximum stereo imaging. A position of 12 o’clock produces essentially a mono image. Turning the control all the way down completely swaps the stereo image.

**THE MONITOR GROUP**
The *monitor group* is a set of Traveler-mk3 outputs that can be controlled with the master Monitor Level knob in upper right corner of the CueMix FX mixer window (Figure 11-29), as well as the MASTER VOL knob on the Traveler-mk3 front panel.

![Figure 11-29: Monitor group volume control from CueMix FX and the front panel MASTER VOL knob.](image-url)
Assigning outputs to the monitor group
Any combination of outputs can be assigned to the monitor group. To include an output pair in the monitor group, click its Monitor button in the Outputs tab (Figure 11-6 on page 85).

Monitor group preset menu
The monitor group presets menu (Figure 11-29) provides several presets for commonly used monitor groups:

<table>
<thead>
<tr>
<th>Monitor group preset</th>
<th>Output assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Outs</td>
<td>Analog 1-2</td>
</tr>
<tr>
<td>Quad</td>
<td>Analog Out 1-4</td>
</tr>
<tr>
<td>5.1</td>
<td>Analog Out 1-6</td>
</tr>
<tr>
<td>7.1</td>
<td>Analog Out 1-8</td>
</tr>
</tbody>
</table>

If you program your own monitor output group, the presets menu displays the word Custom.

Monitor group meters
The monitor group meters (Figure 11-1 on page 78) show levels for any/all output pairs that are currently included in the monitor group. The width of the meters scales proportionally so that all current monitor group outputs will fit within the prescribed space for the meters. If many outputs are included, then the meters will look fairly thin, but they will all be included in the meter.

DSP METER
The DSP meter (Figure 11-1) shows how much of the available DSP processing power is currently being used by the Traveler-mk3 for effects processing. DSP resources are allocated in channel order from the first input to the last output. If there aren’t enough DSP resources for all effects to be enabled on a channel, none of them are allocated on that channel or any following channel.

EQ on a stereo channel requires approximately twice the DSP resources as the same EQ on a mono channel. The Compressor (2.5 x 1 EQ band) and Leveler (4 x 1 EQ band) require about the same DSP resources for a mono or stereo channel.

SOLO LIGHT
The Solo light (Figure 11-1) illuminates when any input in the current (active) mix bus is soloed (even if it is currently scrolled off-screen).

TALKBACK AND LISTENBACK
CueMix FX provides Talkback and Listenback buttons. Talkback allows an engineer in the control room to temporarily dim all audio and talk to musicians in the live room. Conversely, Listenback allows musicians to talk to the control room.

Hardware setup
Figure 11-30 below shows a typical hardware setup for Talkback and Listenback. For Talkback, set up a dedicated mic in your control room and connect it to a mic input on your MOTU audio interface. For Listenback, set up a dedicated listenback mic in the live room for the musicians and connect it to another mic input (or just use one of the mics you are recording from). For talkback output, set up a headphone distribution amp or set of speakers in the live room, and connect it to any Traveler-mk3 output, as demonstrated below in Figure 11-30.
Figure 11-30: Typical hardware setup for Talkback and Listenback.

**Talkback / Listenback Mic Input**
To configure the talkback mic in CueMix FX, go to the Inputs tab (Figure 11-3 on page 82) and click the Focus button for the input that the talkback mic is connected to. Click the Channel tab (Figure 11-8 on page 86) and enable the **Talk** button. Repeat this procedure for the Listenback mic, except click the **Listen** button in the Channel tab.

**Talk / Listen output**
To configure the talkback and listen back outputs, go to the Outputs tab (Figure 11-6 on page 85) and enable the **Talk** button for any output pair on which you’d like to hear the talkback mic. Similarly, enable the **Listen** button for any output pair on which you’d like to hear the listenback mic.

**Talkback / Listenback Monitor Dim**
Use the knobs next to the **Talk** and **Listen** buttons (Figure 11-31) to determine the amount of attenuation you would like to apply to all other audio signals (besides the talkback/listenback signal) when Talkback and/or Listenback is engaged. To completely silence all other CueMix audio, turn them all the way down. Attenuation only occurs when talkback or listenback is engaged. Audio playing back from disk (your host software) is not affected.

Figure 11-31: The Talkback/Listenback controls.

**Engaging/disengaging Talkback and Listenback**
To engage Talk back or Listenback, press on the Talk or Listen buttons (Figure 11-31) and then release to disengage. Talkback and/or Listenback is engaged for as long as you hold down the mouse button. Option-click to make the buttons “sticky” (stay engaged until you click them again — so you don’t have to hold down the mouse). Or use the Talkback menu items.

If you would like to engage both Talkback and Listenback at the same time, enable the **Link** button (Figure 11-31).

**Controlling Talkback and Listenback volume**
To control the volume of the Talkback and/or Listenback mics, adjust their input trim in CueMix FX.
SHORTCUTS
Hold down the following general modifier keys as shortcuts:

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift key</td>
<td>Applies your action to all inputs or all outputs in the mix.</td>
</tr>
<tr>
<td>Command key</td>
<td>Applies your action to the stereo input pair, even when it is currently configured as mono.</td>
</tr>
<tr>
<td>Option key</td>
<td>Applies your action to all busses.</td>
</tr>
<tr>
<td>Shift-Option</td>
<td>Applies your action to all inputs and mixes.</td>
</tr>
<tr>
<td>Double-click</td>
<td>Returns the control to its default value (pan center, unity gain, etc.)</td>
</tr>
</tbody>
</table>

Hold down the following modifier keys as shortcuts for the EQ tab and controls:

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift click</td>
<td>Applies EQ button change to all input or outputs.</td>
</tr>
<tr>
<td>Option-click</td>
<td>Applies EQ enable button changes to all bands in that input or output.</td>
</tr>
<tr>
<td>Shift-Option-click</td>
<td>Applies EQ enable button changes to all bands and all inputs or outputs.</td>
</tr>
</tbody>
</table>

FILE MENU

Saving and loading hardware presets
The Traveler-mk3 can store up to 16 presets in its on-board memory. A preset includes all CueMix FX settings for all for mix busses, but it excludes global settings like clock source and sample rate.

The Load Hardware Preset and Save Hardware Preset commands in the CueMix FX file menu let you name, save and load presets in the Traveler-mk3.

Peak/hold time
In CueMix FX, a peak indicator is a line (representing a virtual LED) displayed in a level meter that indicates the maximum signal level registered by the meter. The Peak/hold time setting (File menu) determines how long this indicator remains visible before it disappears (or begins to drop). To disable peak/hold indicators altogether, choose Off from this sub-menu.

Mix1 return includes computer output
The Mix1 return includes computer output File menu item applies to other MOTU interfaces products and has no effect on the Traveler-mk3.

Hardware follows CueMix Stereo Settings
This File menu item applies to other MOTU interfaces products and has no effect on the Traveler-mk3.

EDIT MENU

Undo/Redo
CueMix FX supports multiple undo/redo. This allows you to step backwards and forwards through your actions in the software.

Copying & pasting (duplicating) entire mixes
To copy and paste the settings from one mix to another:

1 Select the source mix (Figure 11-1) and choose Copy from the Edit menu (or press command-C).
2 Choose the destination mix and choose Paste from the Edit menu (or press command-V).

Clear Peaks
Choose Clear Peaks from the Edit menu to clear all peak indicators in all CueMix FX meters.

DEVICES MENU

If you are working with more than one MOTU audio interface product, this menu displays all interfaces that are currently on line. Choose any device from the menu to edit its settings using the CueMix FX software.
CONFIGURATIONS MENU
A configuration is a “snapshot” of all settings in CueMix FX (and therefore the Traveler-mk3 hardware itself). The commands in the Configurations menu let you create, save, load, import, export and otherwise manage as many configurations as you wish.

Here is a summary of Configurations menu operations:

<table>
<thead>
<tr>
<th>Configurations Menu item</th>
<th>What it does</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create New</td>
<td>Lets you name and save a new configuration, which appears at the bottom of the Configurations menu.</td>
</tr>
<tr>
<td>Save</td>
<td>Overwrites the current configuration (checked in the list at the bottom of the menu) with the current settings in CueMix FX.</td>
</tr>
<tr>
<td>Save To</td>
<td>Same as Save above, except that it lets you first choose the configuration you wish to save to (instead of the current one).</td>
</tr>
<tr>
<td>Delete</td>
<td>Lets you choose a configuration to permanently remove from the menu.</td>
</tr>
<tr>
<td>Import</td>
<td>Loads all configurations from a configuration file on disk.</td>
</tr>
<tr>
<td>Export</td>
<td>Saves all current configurations as a file on disk.</td>
</tr>
<tr>
<td>Configuration list</td>
<td>Choose any configuration to load it. The current (last loaded or saved) configuration has a check mark next to it.</td>
</tr>
</tbody>
</table>

TALKBACK MENU
Choose the commands in the Talkback menu to engage or disengage Talkback or Listenback.

PHONES MENU
The Phones menu allows you to choose what you will hear on the headphone output, just like the Phones Assign setting in MOTU Audio Setup. However, this menu provides one extra option that is exclusive to CueMix FX: Follow Active Mix. This menu item, when checked, causes the headphone output to mirror the output of the current mix being viewed in CueMix FX. For example, if you are currently viewing mix bus 3, the headphones will mirror the mix bus 3 output (whatever it is assigned to).

CONTROL SURFACES MENU
CueMix FX can be controlled from an automated control surface such as the Mackie Control™. Use the commands in the Control Surfaces menu to enable and configure this feature.

Application follows control surface
When checked, the Application follows control surface menu command makes the CueMix FX window scroll to the channel you are currently adjusting with the control surface, if the channel is not visible when you begin adjusting it. The same is true for the bus tabs: if you adjust a control in a bus that is not currently being displayed, CueMix FX will jump to the appropriate tab to display the control you are adjusting.

Share surfaces with other applications
When the Share surfaces with other applications menu command is checked, CueMix FX releases the control surface when you switch to another application. This allows you to control your other software with the control surface. Here’s a simple way to understand this mode: the control surface will always control the front-most application. Just bring the desired application to the front (make it the active application), and your control surface will control it. When you’d like to make changes to CueMix FX from the control surface, just bring CueMix FX to the front (make it the active application).

When this menu item is unchecked, your control surface will affect CueMix FX all the time, even when CueMix FX is not the front-most application. In addition, you will not be able to control other host audio software with the control surface at any time (because CueMix FX retains control over it at
all times). This mode is useful when you do not need to use the control surface with any other software.

CueMix Control Surfaces
CueMix FX includes support for the following control surface products:

- Mackie Control™
- Mackie HUI™
- Mackie Baby HUI™

Use the sub-menu commands in the CueMix Control Surfaces menu item to turn on and configure control surface support, as described briefly below.

Enabled
Check this menu item to turn on control surface operation of CueMix FX. Uncheck it to turn off control surface support.

Configure…
Choose this menu item to configure your control surface product. Launch the on-line help for specific, detailed instructions on configuring CueMix FX for operation with your control surface product.

Figure 11-32: Refer to the extensive on-line help for details about configuring CueMix FX for operation with your control surface product.

Other HUI-compatible control surfaces
Any control surface that has the ability to emulate a HUI should be compatible with CueMix FX. Just add a Mackie HUI to Audio MIDI Setup and put the control surface hardware into HUI emulation mode. Consult the control surface manual for details about how put it into HUI emulation mode.

Other control surface hardware products
If you install other control surface drivers written for CueMix FX, they will appear as separate menu items at the bottom of the Control Surfaces menu, with the same sub-menu items described above.
CHAPTER 12  MOTU SMPTE Console

OVERVIEW
The Traveler-mk3 can resolve directly to SMPTE time code via any analog input, without a separate synchronizer. The Traveler-mk3 can also generate Longitudinal Time Code (LTC) to any analog output. Whenever time code is running, the Traveler-mk3 can also transmit MIDI Time Code (MTC) to host software running on the computer.

The Traveler-mk3 provides a DSP-driven phase-lock engine with sophisticated filtering that provides fast lockup times and sub-frame accuracy. Direct time code synchronization is supported by AudioDesk and Digital Performer on Mac OS X.

MOTU SMPTE Setup
The included MOTU SMPTE Setup™ software provides a complete set of tools to generate SMPTE for striping, regenerating or slaving other devices to the computer.

CLOCK/ADDRESS
The Clock/Address menu (Figure 12-1) provides the same global Clock Source setting as in MOTU Audio Setup (“Clock Source” on page 39), but it includes additional information: each setting shows both the clock and the address (time code or sample location), separated by a forward slash (/). To resolve the Traveler-mk3 to SMPTE time code,
choose the SMPTE / SMPTE setting in the Clock/Address menu. This means that the system will use SMPTE as the clock (time base) and SMPTE as the address.

FRAME RATE
This setting should be made to match the SMPTE time code frame rate of the time code that the system will be receiving. The Traveler-mk3 can auto-detect and switch to the incoming frame rate, except that it cannot distinguish between 30 fps and 29.97 fps time code, or 23.976 and 24 fps time code. So if you are working with either of these rates, make sure you choose the correct rate from this menu. The Traveler-mk3 driver updates the frame rate setting in Digital Performer and AudioDesk for you.

READER SECTION
The Reader section (on the left-hand side of the window in Figure 12-1) provides settings for synchronizing the Traveler-mk3 to SMPTE time code.

Status lights
The four status lights (Tach, Clock, Address and Freewheel) give you feedback as follows.

Tach
The Tach light blinks once per second when the Traveler-mk3 has successfully achieved lockup to SMPTE time code and SMPTE frame locations are being read.

Clock
The Clock light glows continuously when the Traveler-mk3 has successfully achieved lockup to an external time base, such as SMPTE time code or the optical input.

Address
The Address light glows continuously when the Traveler-mk3 has successfully achieved lockup to SMPTE time code.

Freewheel
The Freewheel light illuminates when the Traveler-mk3 is freewheeling address (time code), clock or both. For details about Freewheeling, see “Freewheel Address” and “Freewheel clock” below.

SMPT source
Choose the analog input that is connected to the time code source. This is the input that the Traveler-mk3 “listens” to for time code.

Freewheel Address
Freewheeling occurs when there is a glitch or drop-out in the incoming time code for some reason. The Traveler-mk3 can freewheel past the drop-out and then resume lockup again as soon as it receives readable time code. Choose the amount of time you would like the Traveler-mk3 to freewheel before it gives up and stops altogether.

The Traveler-mk3 cannot freewheel address without clock. Therefore, the Freewheel Address setting will always be lower than or equal to the Freewheel Clock setting, and both menus will update as needed, depending on what you choose.

Keep in mind that freewheeling causes the system to keep going for as long as the duration you choose from this menu, even when you stop time code intentionally. Therefore, if you are starting and stopping time code frequently (such as from the transports of a video deck), shorter freewheel times are better. On the other hand, if you are doing a one-pass transfer from tape that has bad time code, longer freewheel times will help you get past the problems in the time code.

The ‘Infinite’ freewheel setting
The Infinite freewheel setting in the Freewheel Address menu causes the Traveler-mk3 to freewheel indefinitely, until it receives readable time code again. To make it stop, click the Stop Freewheeling button.
Freewheel clock
Freewheeling occurs when there is glitch or drop-out in the incoming SMPTE time code for some reason. The Traveler-mk3 can freewheel past the drop-out and then resume lockup again as soon as it receives a stable, readable clock signal.

The Traveler-mk3 cannot freewheel address without clock. Therefore, the Freewheel Address setting will always be lower than or equal to the Freewheel Clock setting, and both menus will update as needed, depending on what you choose.

The ‘Infinite’ freewheel setting
The Infinite freewheel setting in the Freewheel Clock menu causes the Traveler-mk3 to freewheel indefinitely, until it receives readable time code again. To make it stop, click the Stop Freewheeling button.

Stop Freewheeling
The Stop Freewheeling button stops the system if it is currently freewheeling.

GENERATOR SECTION
The Generator section (on the right-hand side of the window in Figure 12-1) provides settings for generating SMPTE time code and MIDI Time Code.

Level
Turn the level knob to adjust the volume of the SMPTE time code being generated by the Traveler-mk3. The level knob disappears when the Destination is set to None.

Tach light
The Tach light blinks once per second when the Traveler-mk3 is generating SMPTE time code.

Destination
In the Destination menu, choose either SMPTE (to generate time code) or None (to turn it off).

Strip
Click this button to start or stop time code. To set the start time, click directly on the SMPTE time code display in the Generator section and type in the desired start time. Or drag vertically on the numbers.

Figure 12-2: Setting the time code start time.

Regenerate
This option, when enabled, causes the generator to generate time code whenever the Traveler-mk3 is receiving SMPTE time code.

Generate from sequencer
This option, when enabled, causes the generator to generate time code whenever you are running AudioDesk or Digital Performer. Time code begins at the time specified by the AudioDesk or Digital Performer main transport.

SETTING UP FOR SMPTE TIME CODE SYNC
To set up direct SMPTE time code synchronization, see “Syncing to SMPTE time code” on page 28.
RESOLVING DP OR AUDIODESK TO SMPTE TIME CODE
To resolve your Digital Performer/Traveler-mk3 system directly to SMPTE time code with no additional synchronization devices, use the setup shown in Figure 3-17 on page 28. Choose Receive Sync from the Setup menu and choose the Sample accurate option. Then make sure that the Slave to External Sync command in the Studio menu is checked. Make sure the Clock Source setting in the MOTU Audio Setup window is set to SMPTE. Also, make sure that you've connected an LTC input signal to the Traveler-mk3 Time Code input, and that you've specified that input in the SMPTE Setup.

RESOLVING OTHER APPLICATIONS TO SMPTE TIME CODE
To resolve Logic, Cubase, Nuendo or other host applications that support MIDI Time Code (MTC) sync, use the setup shown in Figure 3-17 on page 28. The Traveler-mk3 provides a Sync MIDI port to the host application. This port supplies MIDI Time Code generated by the Traveler-mk3 as it resolves to (or generates) LTC. So set up your host application to resolve to MTC via the Traveler-mk3’s MIDI Sync port.
CHAPTER 13  Troubleshooting

Slaving directly to time code in AudioDesk or Digital Performer
To slave Digital Performer or AudioDesk directly to time code, be sure to go to the Receive Sync preferences in Digital Performer or AudioDesk and switch from “MTC” to “Sample-accurate.”

Traveler-mk3 inputs and outputs are not visible in Cubase
You probably need to enable them in Cubase.

Can't authenticate AudioDesk
When installing software off the CD-ROM, the OK button does not become active until you have entered in your name and a valid keycode. Your name must contain at least 3 characters, and you must enter the keycode provided with your AudioDesk installer CD.

Clicks and pops under word clock sync
Many problems result from incorrect word clocking. It is essential that all digital devices in the system be word locked. Consult “Making sync connections” on page 26 for detailed information on how to word clock your gear. Whenever there is any weird noise or distortion, suspect incorrect word lock.

Clicks and pops due to hard drive problems
If you have checked your clock settings and you are still getting clicks and pops in your audio, you may have a drive related problem. Set your Clock Source to Internal and try recording just using the analog inputs and outputs of the Traveler-mk3. If you encounter the same artifacts you may want try using another drive in your computer. Clicks and pops can also occur when the drive is severely fragmented, the disk drivers are outdated, or other drive-related issues. If you are using a FireWire drive on the same bus as the Traveler-mk3, it could be that the FireWire bus is overloaded (too many devices on the same bus). Try removing all devices except the Traveler-mk3.

Connecting or powering gear during operation
It is not recommended that you connect/disconnect, or power on/off devices connected to the Traveler-mk3 while recording or playing back audio. Doing so may cause a brief glitch in the audio.

No optical inputs or outputs are available in host audio application
Check to make sure you have the desired optical inputs and/or outputs enabled in the MOTU Audio Setup.

Monitoring - How to monitor inputs?
Please refer to the documentation for the audio application that you are using. If your application does not support input monitoring, you will need to use the Traveler-mk3’s hardware-based CueMix FX monitoring feature. Please see chapter 10, “Reducing Monitoring Latency” (page 71).

Controlling monitoring latency
See chapter 10, “Reducing Monitoring Latency” (page 71).

I have a MIDI controller connected to the MIDI in port, but I hear weird “flanging” when I play it, and I am experiencing other strange MIDI symptoms
Is the MIDI Thru feature turned on? (See “MIDI Thru in standalone” on page 48.) If so, and you are also running MIDI software that is also patching MIDI input to output, you are getting doubled MIDI data (notes, controllers, etc.) Turn off MIDI thru in the Traveler-mk3 or turn it off in your host software.
CUSTOMER SUPPORT
We are happy to provide customer support to our registered users. If you haven't already done so, please take a moment to register on line at motu.com, or fill out and mail the registration card included with your Traveler-mk3. Doing so entitles you to technical support and notices about new products and software updates.

REPLACING DISKS
If your Traveler-mk3 software installer CD becomes damaged and fails to provide you with fresh, working copies of the software, our Customer Support Department will be glad to replace it. You can request a replacement disc by calling our business office at (617) 576-2760 and asking for the customer service department. In the meantime, you can download the latest drivers from www.motu.com.

TECHNICAL SUPPORT
If you are unable, with your dealer's help, to solve problems you encounter with the Traveler-mk3 system, you may contact our technical support department in one of the following ways:

- Tech support hotline: (617) 576-3066 (Monday through Friday, 9 AM to 6 PM EST)
- Tech support 24-hour fax line: (617) 354-3068
- Online support: www.motu.com/support

Please provide the following information to help us solve your problem as quickly as possible:

- The serial number of the Traveler-mk3 system. This is printed on a sticker placed on the bottom of the Traveler-mk3 rack unit. You must be able to supply this number to receive technical support.
- A brief explanation of the problem, including the exact sequence of actions which cause it, and the contents of any error messages which appear on the screen.
- The pages in the manual which refer to the parts of the Traveler-mk3 or AudioDesk with which you are having trouble.
- The version of your computer's operating system.

We're not able to solve every problem immediately, but a quick call to us may yield a suggestion for a problem which you might otherwise spend hours trying to track down.

If you have features or ideas you would like to see implemented, we'd like to hear from you. Please write to the Traveler-mk3 Development Team, MOTU Inc., 1280 Massachusetts Avenue, Cambridge, MA 02138.
Symbols

+4dBu 86
.kext 33
-10 dBV 86
1394 connector 6, 11, 18
192kHz multiple interfaces 32
operation 38
AES/EBU disabled 11
24-bit AudioDesk 61
Digital Performer 57
optical 6, 11
recording 13
4-pin FireWire 23
6-pin FireWire 23
R26/R28mkII connecting to Traveler-mk3 32
896mk3 connecting to Traveler-mk3 32

A
Ableton Live 65
Activity LEDs 5, 11
ADAT optical 6, 11
clock source setting 39, 40
connecting 20
SMUX Type 48
trim 83
AES/EBU 11
clock source setting 39
connecting to 21
disabled at 192kHz 11
meters 5
sync 29
All Notes Off (LCD) 48
Analog inputs/outputs 6
activity lights 5, 12
making connections to 19
trim 83
Apple GarageBand 65
Logic Pro/Express 64
Soundtrack Pro 65
Application follows control surface 104
ASIO2 sync 28, 69
Attack compressor 96
Audio
bit resolution 38
MIDI Setup utility 34
Audio menu (LCD) 48
Audio Setup software 33
AudioDesk 14, 33, 35, 59
accessing 8pre settings 37
Main Outs Assign 60
optical input/output 60
Phones setting 60
reverb return 61
synchronization 61
AutoSave Status 48
B
Balance 81
Balanced analog 19
Battery power 13, 24
jack 6
Bit depth 6, 9, 10, 13
Buffer Size 56, 60
Built-in Audio (clock source setting) 40
Bus activity LEDs 87, 98
fader 80
Bus power 12, 23
enable/disable switch 6, 24
examples 24
requirements 23
C
Cardbus adaptors 23
Channel Names 7, 42
Channel tab 86
reverb settings 87
Clear Peaks 103
Clip Hold Time 7, 42
Clock 192kHz operation 38
Clock LEDs 5, 12
Clock source 7, 27, 39
AudioDesk 60
SMPTE setting 40
Coax 11
Comp button 98
Compressor 96 enabling 96
Condenser mic input 5, 6
Configurations menu 104
Configure Hardware Driver 37
Configure interface 31
Connecting multiple Traveler-mk3s 30
Control Surfaces menu 104
Controller connecting 22
Converter mode setup/example 26
Converters 6
Copy/Paste 103
Core Audio defined 33
Core MIDI Audio MIDI Setup 34
benefits 34
Cubase 37
Audio Buffer Size 66
clock source 63
Mac OS X 66
Main Outs Assign 64
optical I/O 64
phones 64
Return Assign 64
reverb return 64
sample rate 63
syncing to time code 110
troubleshooting 111
CueMix FX 74, 77-105
Application follows control surface 104
AudioDesk 61
Channel Names 7
Configurations menu 104
clock sources 105
Control Surfaces menu 104
CueMix control surfaces 105
Devices menu 103
Digital Performer 57
Edit menu 103
File menu 103
focus 79
installation 78
listenback explained 101
listenback settings 102
Mac OS X software 68
Mixer 43
output jacks 20
overview 77, 79
Phones menu 104
Share surfaces with other applications 104
shortcuts 103
signal flow 82
stand-alone operation 78
Talkback menu 104
talkback settings 101, 102
CueMix menu (front panel) 49
Customer support 112
D
Daisy-chaining 32
DAT connecting 25
DC power supply 24
Deltal Stero Input/Output 7, 40
Devices menu 103
Digital converter (see Optical converter)
Digital Performer 14, 55
accessing 8pre settings 37
clock source 56
Main Outs Assign 56
Optical input/output 56
phones 56
reverb return 57
sample rate 56
synchronization 58
Digital Precision Trim 12
Disc replacing 112
DP (see Digital Performer)
Drivers installing 33
Drivers (installing) 33
DSP meter 78, 101
resources 78, 101
Dynamics enabling 84, 96

INDEX
Mix bus
  activity LEDs 87, 98
  level meter 81
  master fader 80
  mute 81
Mix1 return includes computer output 103
Mutes tab 80
Monitor group 100
  assigning outputs 101
  assigning outputs to 85
  level 100
  meters 101
  presets menu 101
Monitoring 71
  thru main outs 20
Mono button 83
MOTU
  MIDI driver 33
  MOTU Audio Setup 33, 37
  Channel Names 42
  MOTU SMPTE Setup 107
MTC 28, 69, 110

N
Naming
  inputs 82
Normal 87
Nuendo 37
  clock source 63
  Mac OS X 66
  Main Outs Assign 64
  optical I/O 64
  phones 64
  Return Assign 64
  reverb return 64
  sample rate 63
  syncing to time code 110

O
Optical
  2x mode 48
  choosing format (ADAT or TOSlink) 41
  connectors 6, 20
  LEDs 5, 12
  overview 11
  trim 83
Optical converter mode 48
  setup/example 26
Optimization 73
OS X audio software
  clock source 63
  Main Outs Assign 64
  optical I/O 64
  phones 64
  Return Assign 64
  reverb return 64
  sample rate 63
Output level (meter in Dynamics plug-in) 97
Outputs
  analog 6
  dynamics 85
  EQ 85
  optical 6
  reverb send/return 85
  S/PDIF (TOSLink) 6
  signal flow 84
  tab 84
  Overload Protection 87

P
Packing list 15
  Pad 19, 86
  Paste 103
Patch thru latency 73
  PCMCLA adaptors 23
  Peak Hold Time 7, 42, 103
  Peak mode 97
  Performance 73
  Phantom power 5, 12, 18
  Phase 83
  Phase-lock 27
  Phones 5, 12, 44, 67, 68
  menu 104
  Phones 1-2 output 3rd party software 64
  Phones Assign 7, 41
  AudioDesk 60
  Digital Performer 56
  Presets naming/saving in LCD 47
  Propellerhead Reason 66
  RMS mode 97

S
S/MUX 48
S/PDIF 31
  clock source setting 39
  connection 21
  lights 5, 12
  meters 5
  optical 6, 11
  RCA 6
  sync 29
  trim 83
  Sample rate 3, 38
  92kHz operation 38
  AudioDesk 60
Samplers
  connecting 25
  Save Hardware Preset 103
  Setup menu (LCD) 47
  Share surfaces with other applications 104
  Shelf Filter 100
  Shortcuts 103
Show
  Band Response 90
  FFT 90
  no analysis 90
  Spectrogram 90
  Show/Hide Full Window Analysis 90, 91
  Signal flow (CueMix FX mixer) 82
  SMPTE
    LOCK LED 5
    MIDI Time Code sync 110
    overview 107
    Setup application 107
    source setting 108
    sync 27, 107
    TACH LED 5
  Soft Clip 10, 87
  Solo
    light 81, 101
  Sound module connecting 22
  Soundtrack Pro 85
    clock source 63
    Main Outs Assign 64
    optical I/O 64
    phones 64
    Return Assign 64
    reverb return 64
    sample rate 63
  Split Point 99
Stand-alone operation 43, 53, 78
Stereo button 83
Stereo settings (Channel tab) 87
Stop Freewheeling 108
Swap L/R 87
Synchronization 26
  AudioDesk 61
  Digital Performer 58
  Mac OS X software 68
  MIDI Time Code 28, 69, 110
  multiple interfaces 31
  sample-accurate 28, 69
Synths
  connecting 25
System preferences
  sound input/output 7, 40
System requirements
  minimum 15
  recommended computer 15
T
  TACH
    LED 5
    light (SMPTE Setup Console) 108
  Talkback
    button (Channel tab) 87
  button (Outputs tab) 85
  explained 101
  menu 102, 104
  settings 102
  Technical support 112
  Threshold
    dynamics 96
  Time code sync 107
  Tip positive/negative 24
  TOSLink 6, 11
    clock source setting 40
    connecting 20
    trim 83
  Traveler-mk3
    connecting multiple interfaces 32
    expansion 30
    installing 17
    rear panel overview 10
    SMPTE setting 40
    summary of features 9
    tab (MOTU Audio Setup) 37
    Word Clock In setting 39
  Trim 18, 83
  Troubleshooting
    EQ knobs don’t work 84
    feedback loop 57, 61, 64
    TRS connectors 19
  Type I, II optical mode 48
U
  UltraLite
    connecting to Traveler-mk3 32
  Unbalanced analog 19
  Undo/Redo 103
  User def. (monitor group menu) 101
V
  Video sync 27, 107
  V-Limit 87
  Volume
    headphone 12
W
  Width 81
  reverb 100
  Width knob 87
  Word clock 6, 11, 27, 29
  In setting 39
  sync setting 39
  Synchronization
    word clock 32
  Word Out setting 7, 42