R-ADAT Digital Optical Interface Kit Installation Instructions for E4 Ultra

6866

The R-ADAT digital optical I/O card adds 16 digital output channels and 8 digital input channels to the Emulator Four Ultra with an R-FX card installed. The interface adds 8 digital output channels (sub 4-7) in addition to 8 digital channels which duplicate the 8 analog outputs (main, sub 1-3).

The modification is fairly easy to install, however if you are unsure of your abilities, please contact E-MU for referral to an authorized service center.

This kit **cannot be installed in older Non-Ultra E4's** due to hardware constraints.

Before you Begin: *The RFX card MUST be installed first in order to install the ADAT card!*

Also… *This RFX-based ADAT card cannot coexist with an older ADAT card.*

Tools Needed:

Phillips head screwdriver #2

Kit Contents:

(1) These installation instructions
(1) ADAT interface board
(1) 34-pin ribbon cable
(1) Optical interface cable

These instructions are not provided as a guarantee against improper installation. When in doubt, contact: E-MU Customer Service at (831) 438-1921. Contact E-mu UK at +44 (0) 131-653-6556.

WARRANTY MAY BE VOIDED IF DAMAGE IS CAUSED BY IMPROPER INSTALLATION, IMPROPER OR INADEQUATE MAINTENANCE, ACCIDENT, ABUSE, MISUSE, ALTERATION, UNAUTHORIZED REPAIRS, TAMPERING, OR FAILURE TO FOLLOW PROCEDURES OUTLINED IN THESE INSTRUCTIONS.

-————————————> WARNING <————————————

UNPLUG THE AC CORD BEFORE DOING ANY WORK!

Groundwork

Before you begin, find a clean, well lit place in which to work. This procedure requires that you periodically "Ground" yourself, by touching a grounded object such as a water pipe or a grounded piece of equipment. Grounding yourself prevents the static charge in your body from damaging the sensitive memory chips. When you are asked to "Ground" yourself, simply reach over and touch the grounded metal. Do not walk across the room or a rug, as this will defeat the purpose of grounding.

Remove the Top Cover

To gain access to the interior of the unit, the top panel must first be removed. The top panel is attached to the main chassis by means of (7) screws. There are three screws along the back of the unit and two on each side. When all the screws are removed, slide the metal top backwards and up off the unit, exposing the main circuit board. Set the top cover aside in a safe place and put the screws into a cup so they will not get lost. The power supply is covered by a metal box. Do not remove this metal cover!

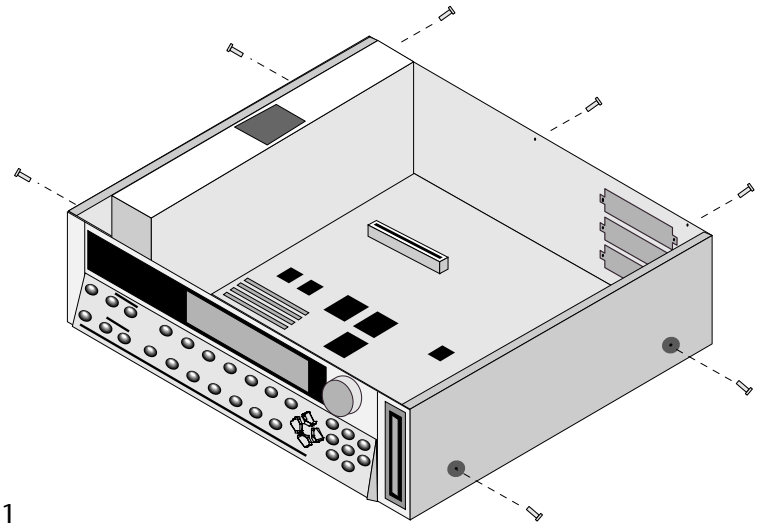


FIG. 1

Remove the Metal Cover Plate

Before you install the ADAT Interface board, you need to make a place for it. On the back of the unit there are three metal cover plates covering the three option card slots. Choose a slot and remove the two screws from the plate. Put these screws in a cup and save them for later reassembly. Remove the cover plate and store it with other “useful” things which don't seem to have any particular use.

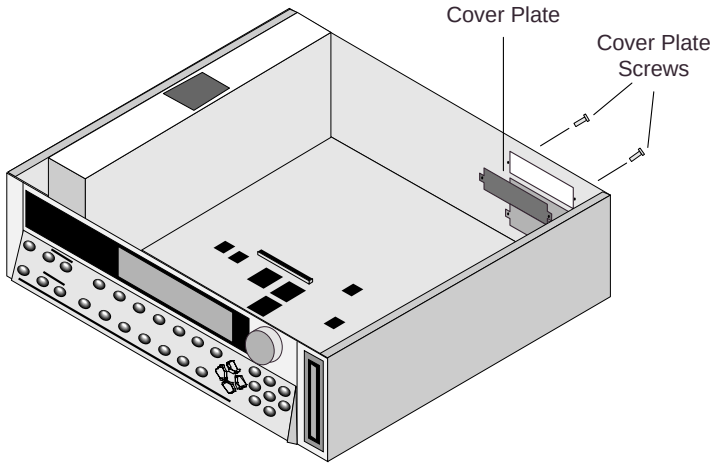


FIG. 2

Install the ADAT Interface Board

The ADAT Interface Board is easy to install. Ground yourself again, by touching a grounded object, then remove the board from its protective bag.

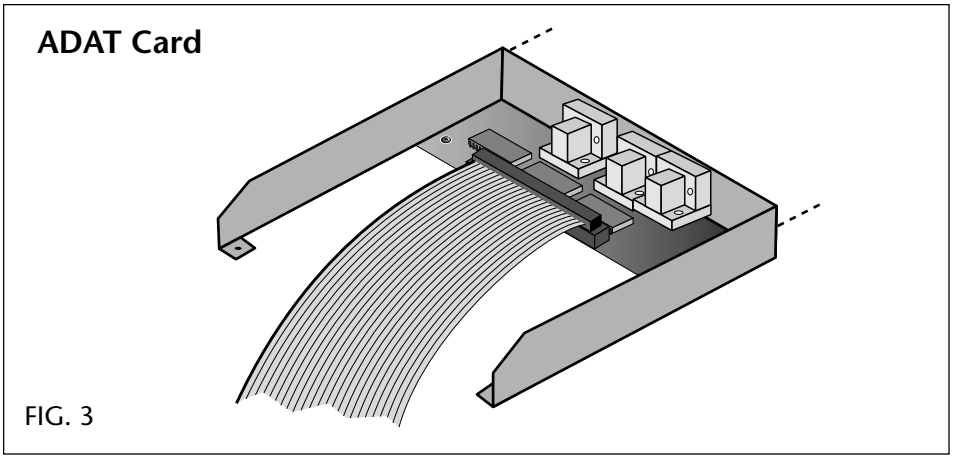
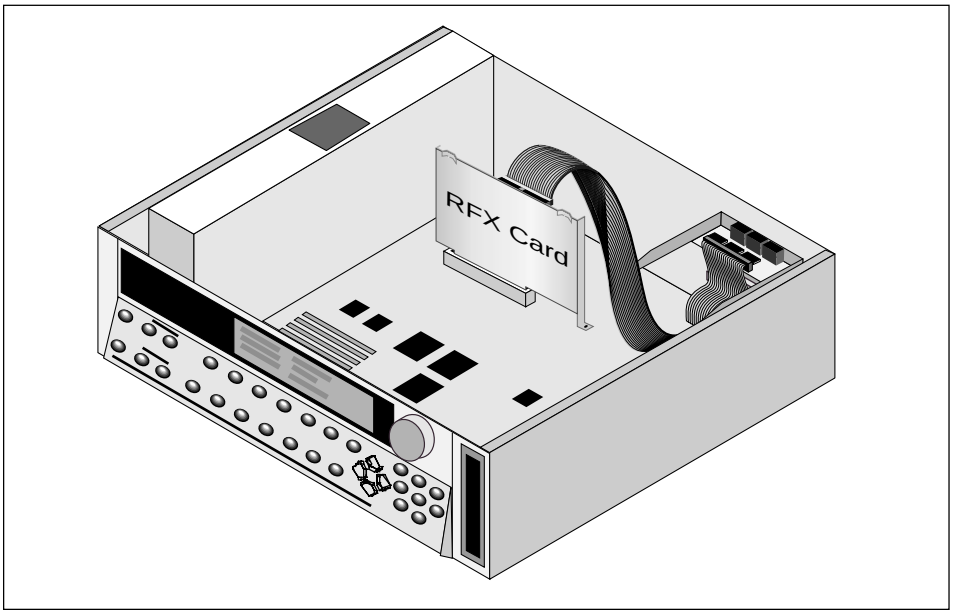


FIG. 3

Install the ADAT Optical board from the inside of the unit (see the diagram below). While holding the card with one hand, secure with one screw from outside the unit. Use the same screws that were holding the cover plate.

Next install the second screw and then tighten both screws. The installed card should appear as in the diagram below.



Connect the Ribbon Cable

Connect one end of the wide 34-pin ribbon cable to the card and the other to a connector on the RFX Card labeled “ADAT”, which is right on top of the card. BOTH ends of the cable should always be connected. **The cable only connects one way so you shouldn’t have any problems.** Be sure not to disconnect any other cables in the unit.

Reassembly

1. Check for any loose cables or loose screws inside.
2. Take the top cover and tilt down the front edge. Carefully insert the front edge of the top panel between the front panel and the top of the metal enclosure. Next lay the top cover down flat on top of the enclosure.
3. Make sure all the screw holes line up and reinstall the seven screws. The screws are all the same.

Power On

At this point, the installation is almost finished. The Ultra should boot up normally when power is applied. It does? Great! During the boot-up process,watch for the display, "ADAT Option Card Installed". This verifies that EOS recognizes the ADAT card.

Problems?

If the unit doesn't power up normally or doesn't show the "ADAT Option Card Installed" display, disconnect power immediately and try the following:

- Are you running EOS version 4.0 (or higher) software? You should be.
- Open the unit, and verify all cable connections.
- Try returning the unit to it's original configuration.

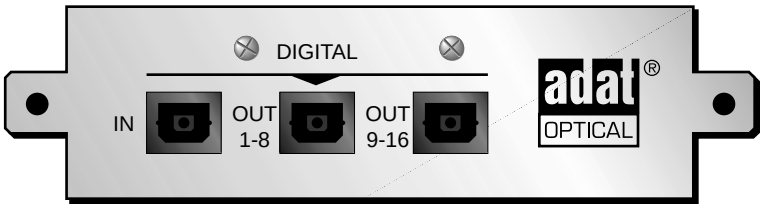
If all else fails, call E-mu Customer Service at (831) 438-1921. Telephone support hours are 8:00-5:00 PST, Monday through Friday.

Operation

Inputs & Outputs

Digital In

When the ADAT Digital Optical card is installed, four additional sampling sources are available in the Create Sample screen. You can choose: ADAT in



1 & 2, ADAT in 3 & 4, ADAT in 5 & 6, or ADAT in 7 & 8.

When sampling from ADAT, set the Default Clock to match the sample rate of the ADAT input. The Emulator input automatically locks to the ADAT embedded data clock no matter what the Default Clock setting and will sample correctly. However, the sound you are monitoring will be distorted if the Default Clock doesn't match the incoming sample rate.

The display shows "No ADAT" when ADAT input is not detected.

Digital Out 1-8

The signals available on this output are identical to the 8 analog outputs.

The analog and digital outputs can be used simultaneously.

Digital Out 9-16

When the ADAT Digital Optical card is installed, four new output destinations are available in the RFX Output Map screen. Outputs 5-8 correspond to ADAT outputs 9-16 since the outputs are stereo.

Clock

ADAT Optical can be used as a Word Clock source on the Ultra series. In a digital audio system, there must be only one Master Clock. For example, when recording into an ADAT you must switch the ADAT to receive external clock *OR* connect another lightpipe from the ADAT out to Ultra and set Ultra's Word Clock In (Master, Setup, In/Out) to ADAT.

The master clock in a digital system depends on your setup. All Emulator models have an extremely stable clock source and can be confidently used as a Master Clock.

An Ultra can be either a master or slave. Older Emulators MUST be the master in an ADAT setup as they cannot synchronize to an external Word Clock.

Dither

ADAT Output Dither

Dither is a technique used in digital systems to improve audio performance by adding noise to the least significant data bits. In general, dither is used whenever a digital number is converted to a smaller number (for instance when converting 20 bits to 16 bits).

As an example, suppose you were transferring ADAT optical data from the Ultra to an older ADAT recorder. The ADAT output is 20 bits wide while the older ADAT only receives data 16 bits wide. In this case you would turn Output Dither On because the receiving device has fewer bits. If you were sending data to a new ADAT which receives 20 bit data, you would turn Output Dither Off.

◩ When to Dither?

Add Dither *- When sending ADAT data to a 16 bit device which doesn't dither at the input.*

Don't Add Dither *- When sending ADAT data to a 20-24 bit device.*

Sample Input Dither

Dither is also an option in the Create Sample screen. EOS machines sample at 16 bit linear, so dither should be turned On when digitally sampling from a source that has more than 16 bits, for example when sampling a 24 bit AES signal or when sampling from a 20 bit ADAT machine. Dither can be either On or Off when analog sampling (the audio performance is the same).

Live Sample™ mode

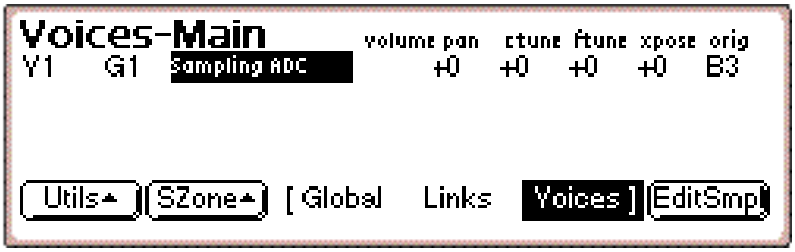
This is one of the coolest features ever. The external inputs can be assigned and processed just as if they were samples in the Emulator. Remember that each voice can have 4 programmable effect sends and the levels of these four sends can be modulated by any modulation source. The external inputs are routed through Ultra's Z-plane filters and VCAs before being passed on to the RFX system. Remember that this is for each voice!

With a different voice assigned to each key on the keyboard, you can "play" the Live Samples through different synth voices and RFX routings. Although each external input can only be assigned to one key at a time, you can velocity crossfade or switch between several external inputs using the Voice Key, Velocity and Realtime windows.

Each External Input is assigned to one "hidden" voice. Only one key at a time can trigger an External Input.

To Program the External Inputs in a Voice:

1. **Press the Preset Edit key.** The LED illuminates and the Voices-Main screen appears.



2. **Move the cursor to the Voice Select field** using the cursror keys (as shown above).
3. The External Inputs are located below S000. You are now presented with severalchoices for Live Sampling inputs — Sampling ADC, AES/EBU Input, External ADC 1. External ADC 2, **ADAT chan 1-2, ADAT chan 3-4, ADAT chan 5-6, ADAT chan 7-8.**

The Sampling ADC has adjustable gain and is perfect for use with low level signals such as guitars and basses.

4. **Select a Live Sample input.** The voice must be keyed in order to hear the input. Use "Latch Mode" if you want the voice to remain on.
5. **Select the RFX Bus for any of the external inputs.** If you don't have any of the RFX option cards, you can use the Sampling ADC or the AES/EBU port.

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