

# 3d Installation Guide for ULN-2

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# **ULN-2 3d Upgrade Installation Guide**

Metric Halo

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# 1. ULN-2 3d Upgrade Installation Guide

## Introduction

A video version of this guide is available [here](#).

You will be working with electronic equipment so we strongly advise you to take the necessary steps to ground yourself and to work in an environment with minimal static to avoid the potential for electrostatic discharge.

Please familiarize yourself with the parts and instructions before proceeding with installation.

## Required Tools

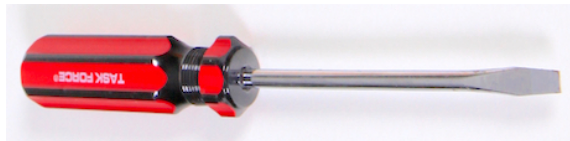
You will need the following tools to do the installation:

- #2 Phillips Head Screwdriver



**Figure 1.1: #2 Phillips Head Screwdriver**

- Flat Head Screwdriver



**Figure 1.2: Flat Head Screwdriver**

- 7/64" Hex Wrench (included with upgrade kit)



**Figure 1.3: 7/64" Hex Wrench**

- Needlenose Pliers



**Figure 1.4: Needlenose Pliers**

- (Optional) Power Screwdriver



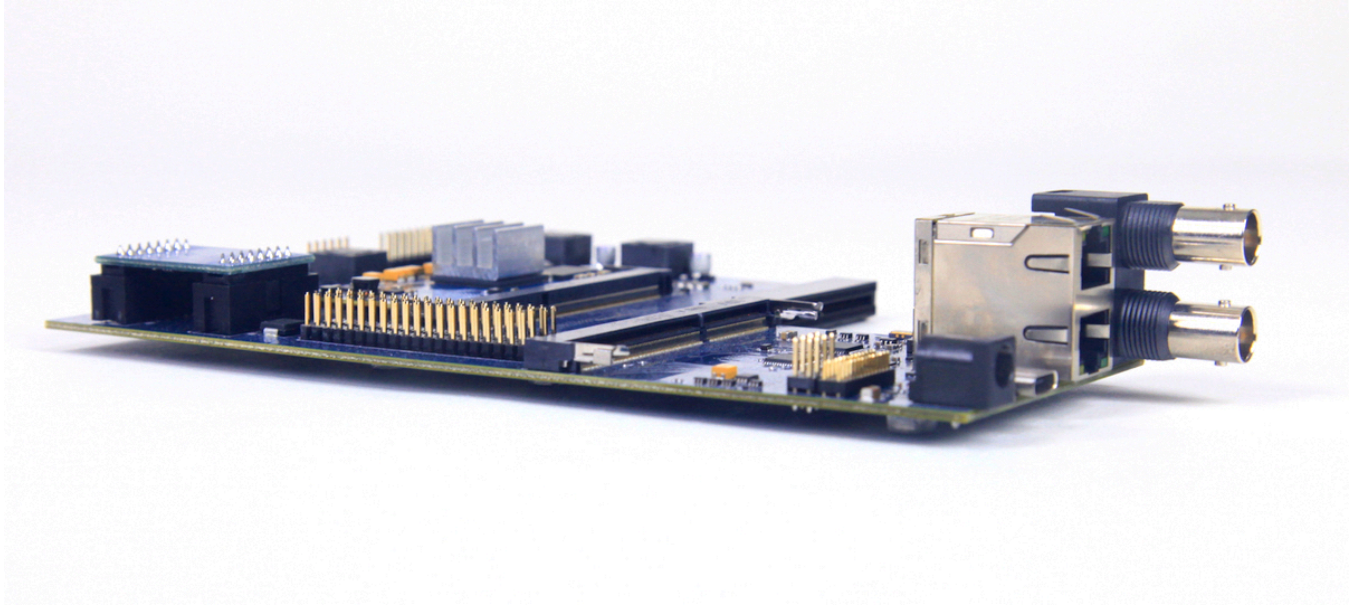
**Figure 1.5: (Optional) Power Screwdriver**

If you choose to use a power screwdriver, set it to the lowest drive setting possible when replacing screws.

## Installation Kit Components

The ULN-2 3d Upgrade Installation kit includes the following parts:

- 3d Upgrade Board Set



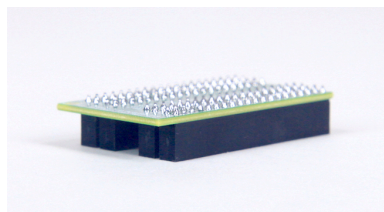
**Figure 1.6: 3d Base Board with Pre-installed CPU Module, MH Clock Board, Rubber Feet on the bottom**

- New Back Panel



**Figure 1.7: ULN-2 3d Back Panel**

- Bridge Board



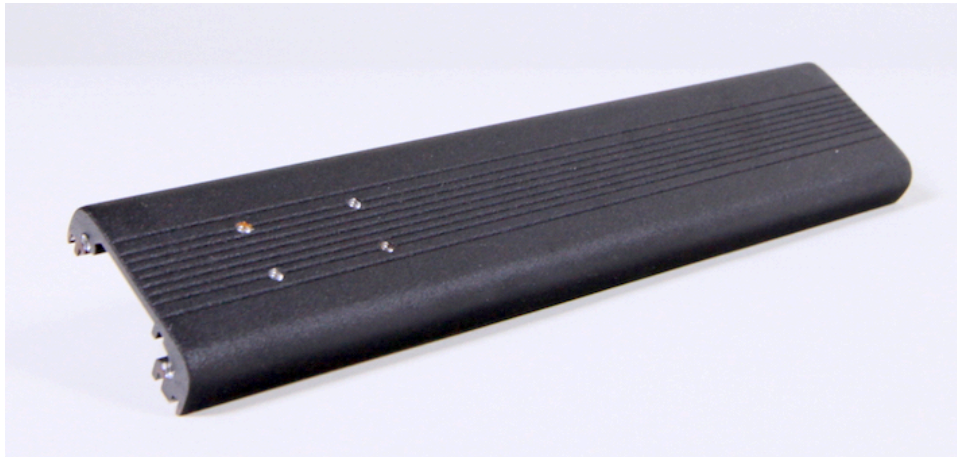
**Figure 1.8: Bridge Board**

- Foam Cap for Bridge Board



**Figure 1.9: Foam Cap for Bridge Board**

- One (1) new side panel extrusion with grooves for accommodating EdgeCards



**Figure 1.10: Side Panel Extrusion**

NOTE: The side panel extrusions on your interface may already have the proper configuration.

- Optional EdgeCard



**Figure 1.11: AES/SPDIF EdgeCard**



- 7/64" Hex Wrench



**Figure 1.12: 7/64" Hex Wrench**

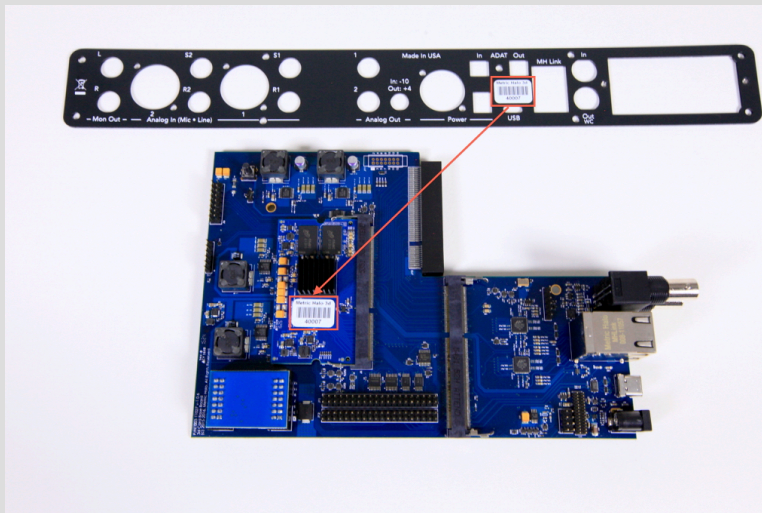
- Replacement MH Logo Dome Tag

Please familiarize yourself with the parts and instructions before opening your interface.

Be sure to discharge any static energy on your body before touching the interior of the interface.

Each individual upgrade kit has components that are uniquely serialized. Please upgrade one unit at a time.

*Make sure that the serial number on 3d card matches the serial number on your back panel.*



**Figure 1.13: 3d Upgrade Kit Matching Labels**

## Installation

1. Fully power off, disconnect power supply and all other connections to the unit.
2. Remove any rack ears connected to the unit, and set them aside together with their screws.
3. With needlenose pliers, loosen the ring nut around the headphone jack, and twist it off.
4. Pull off the 6 front panel knobs. If they do not come off easily by hand, gently coax a flat head screwdriver behind the knob as you pull it forward, then slowly pry the knob off.



**Figure 1.14: Remove Knobs**

5. With needlenose pliers, loosen and twist off the 6 hex nuts that sit behind the rubber knobs.



**Figure 1.15: Remove Front Panel Hex Nuts**

6. With 7/64" hex wrench, remove the 8 screws for the side panel extrusions - these are the hex screws in the four corners of the unit, front and back.

If using a power screwdriver, the torque may need to be raised to remove and replace these longer screws.

*IMPORTANT: When replacing these longer screws, they must be placed in the corners and not in the middle of the unit to avoid damaging the meter board. Keep these longer case screws separated from the rest.*

7. Pull off the two side panel extrusions, discard one of them and set the remaining one aside together with the new extrusion.
8. With 7/64" hex wrench, remove the remaining screws that hold the top cover panel - these are the four smaller hex screws across the top front of the unit, and the two on the top back of the unit.
9. Remove and set aside the top panel.



Figure 1.16: Remove Top

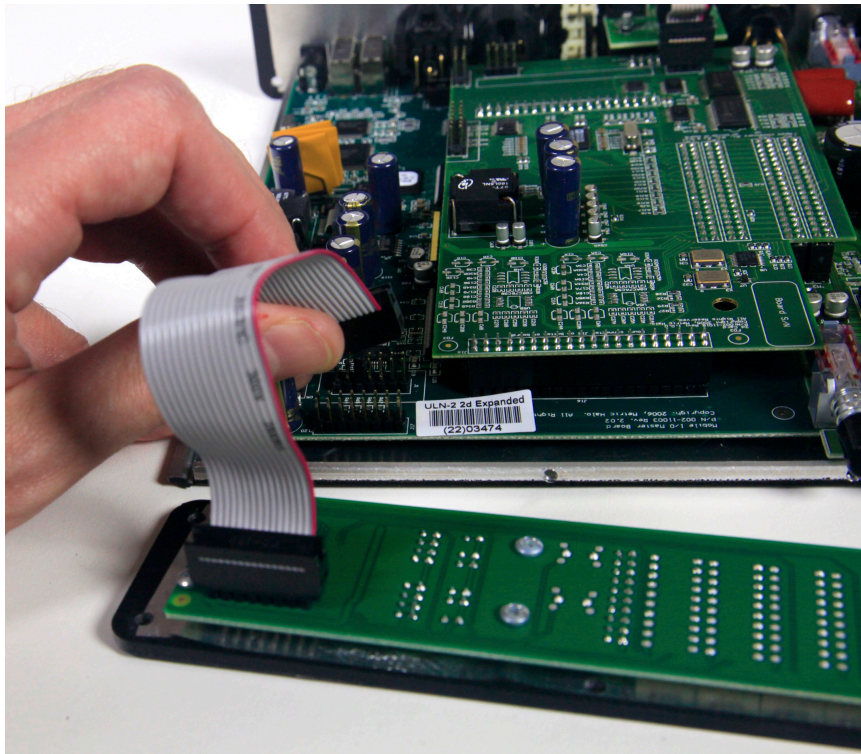
10. Remove the remaining screws that hold the front panel - these are the four hex screws on the bottom front of the unit.
11. Pull the front panel and meter assembly forward off of the front ledge of the unit. It will come off easier if all of the switches are pushed in. You may need to tilt the top of the front panel slightly and lift it so that the bottom of the meter board clears the lip on the front edge of the bottom metal.



Figure 1.17: Remove Front Panel

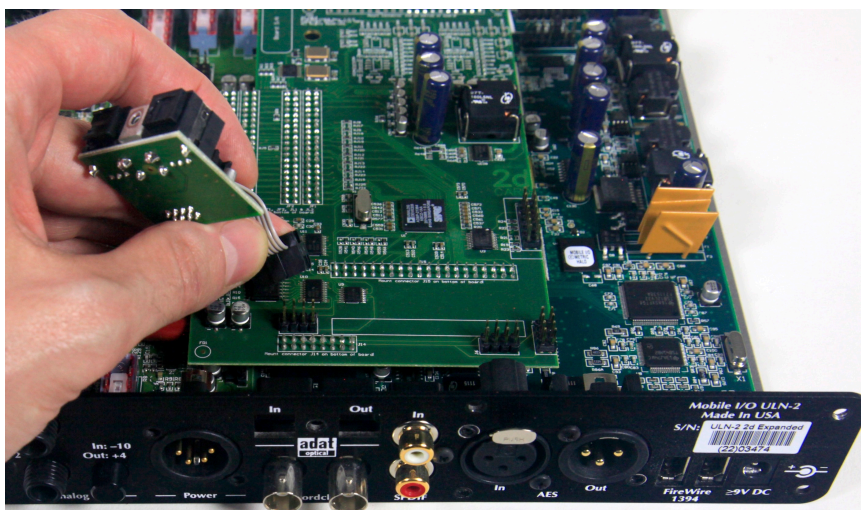


12. Detach the front panel ribbon cable from the master board, and set the front panel and meter board assembly aside.



**Figure 1.18: Detach Ribbon Cable**

13. With 7/64" hex wrench, remove the remaining two hex screws on the bottom of the back panel, and one more hex screw in between the two ADAT ports.
14. Detach the ADAT opto board and ribbon cable from the 2d board, and set aside.



**Figure 1.19: ADAT Opto Board and Ribbon Cable**



15. With needlenose pliers, loosen and twist off the 8 ring nuts on the back panel.

16. For the 3 steps to follow, refer to the figure and use a Phillips screwdriver.



**Figure 1.20: Screws and Nuts to Remove from Back Panel**

17. -Remove the four screws around the analog input jacks.

18. -Remove the two screws around the 4-pin XLR power connector.

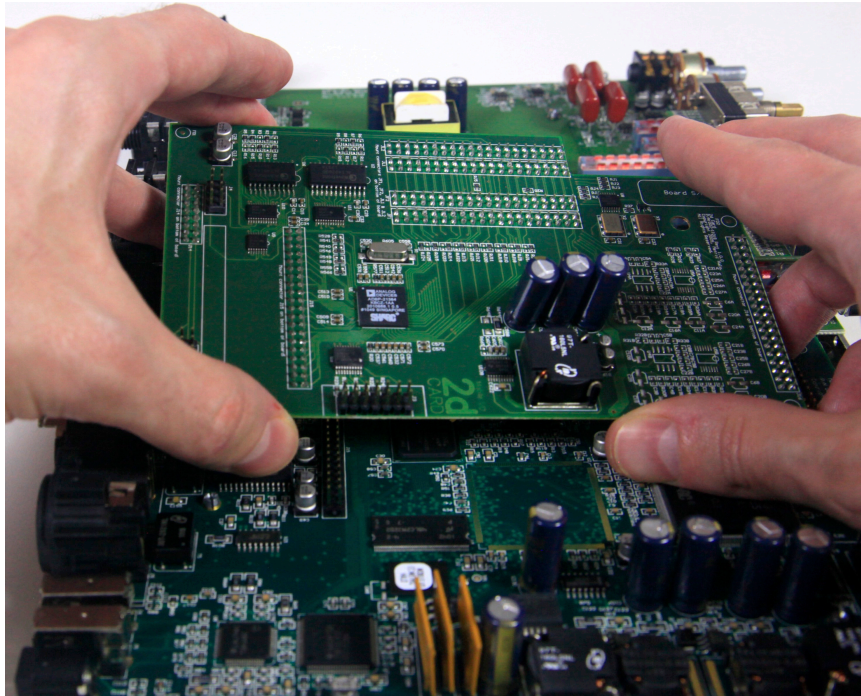
19. -Remove the five screws around the SPDIF and AES connectors - these five screws will not be needed later.

20. Slide off the old back panel. Tilt it up from the bottom to lift over the XLR release tabs.

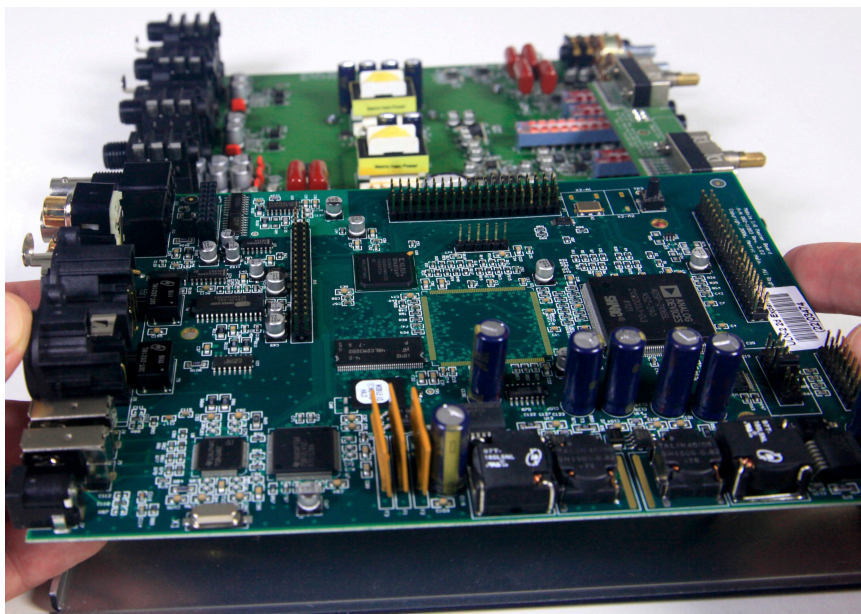


**Figure 1.21: Remove Back Panel**

21. The Legacy master board and 2d board need to be removed from the unit. They may be removed individually, or you may find they will come out as a cluster. Rock the 2d board back and forth to loosen it from the pins on the analog board, pulling upward. The master board may begin to pop off of the metal posts on the bottom metal. Place a hand underneath the master board to pop it off the remaining posts. Set the Legacy Master board and 2d card aside.



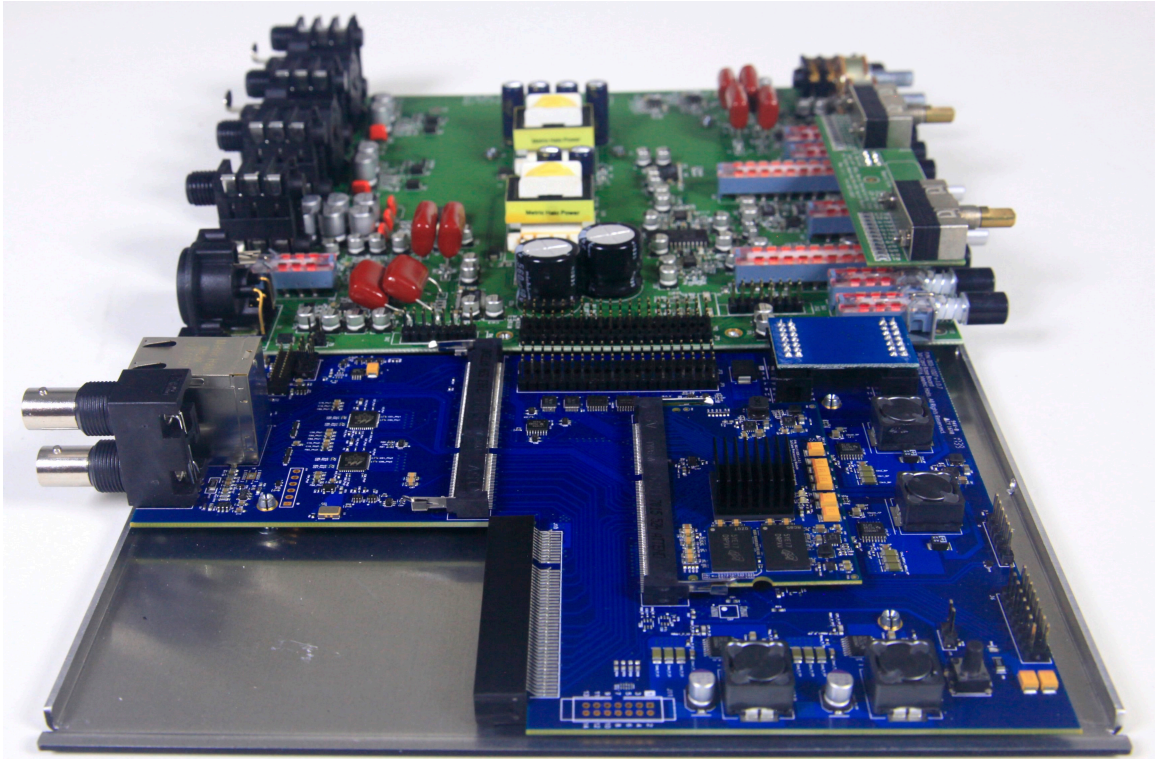
**Figure 1.22: Remove 2d Board**



**Figure 1.23: Remove Legacy Master Board**

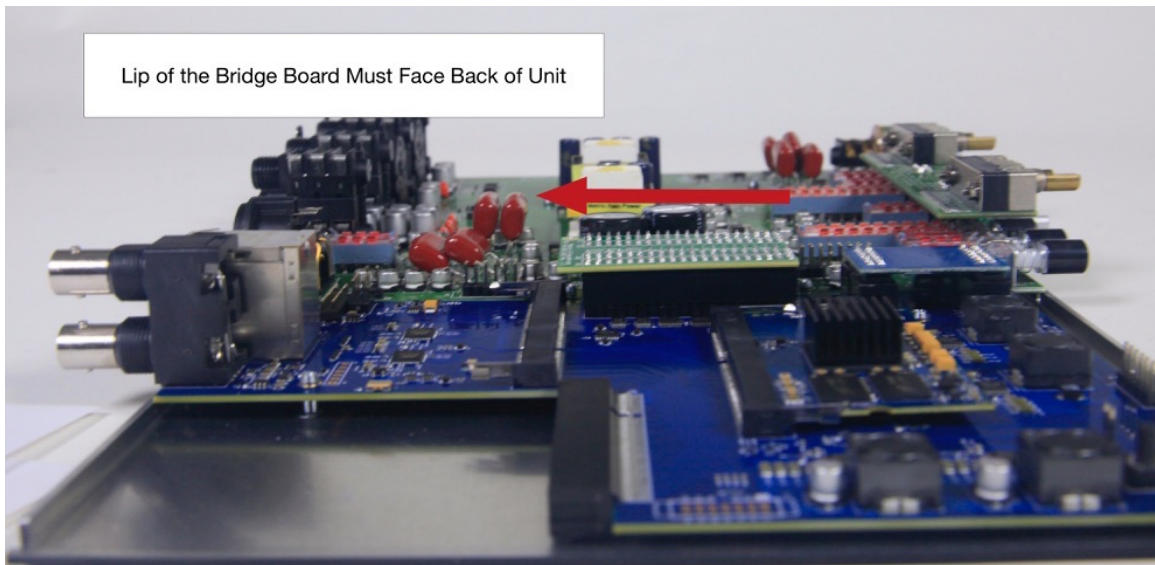


22. Place down the 3d assembly, lining up the three holes in the base board with the 3 posts in the bottom metal. There is a small metal tab hanging over the edge of the analog board. As you down the 3d assembly, tilt it so that the side that abuts the analog board goes in first and clears this tab. Press into place so the base board snaps down on all three posts. If there are rubber feet present on the bottom metal that were supporting the original master board, peel them off if they get in the way of the rubber feet under the 3d base board.



**Figure 1.24: 3d Assembly Installed**

23. Place down the bridge board with the extended lip pointing to the BACK of the unit. Very carefully line up all pins on both the 3d base board and analog board with the bottom holes of the bridge board. Once lined up, firmly press down.



**Figure 1.25: Bridge Board Installed**

IMPORTANT: The orientation and alignment of the bridge board is critical. The lip must be facing toward the back of the unit. The bridge board needs to line up exactly, without any bent or misaligned pins.

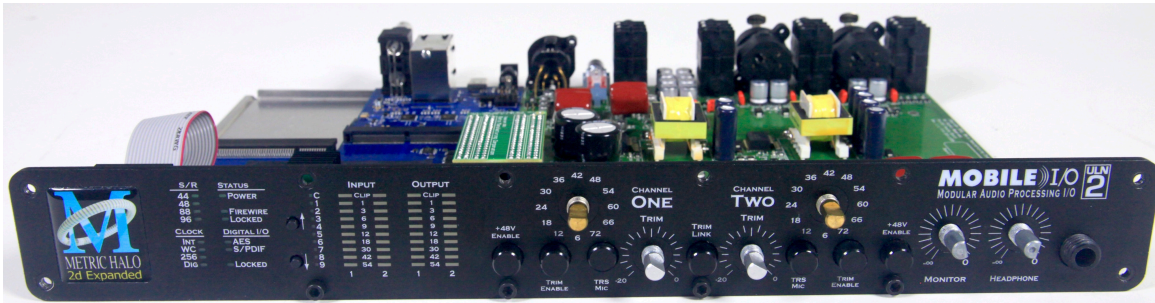
24. Reattach the ribbon cable from the meter board to the matching set of pins on the 3d board toward the front of the unit.



**Figure 1.26: Reattach Meter Board**



25. Slide the front panel over the front posts and replace the four small hex screws on the bottom.



**Figure 1.27: Front Panel Meter Board Assembly Replaced**

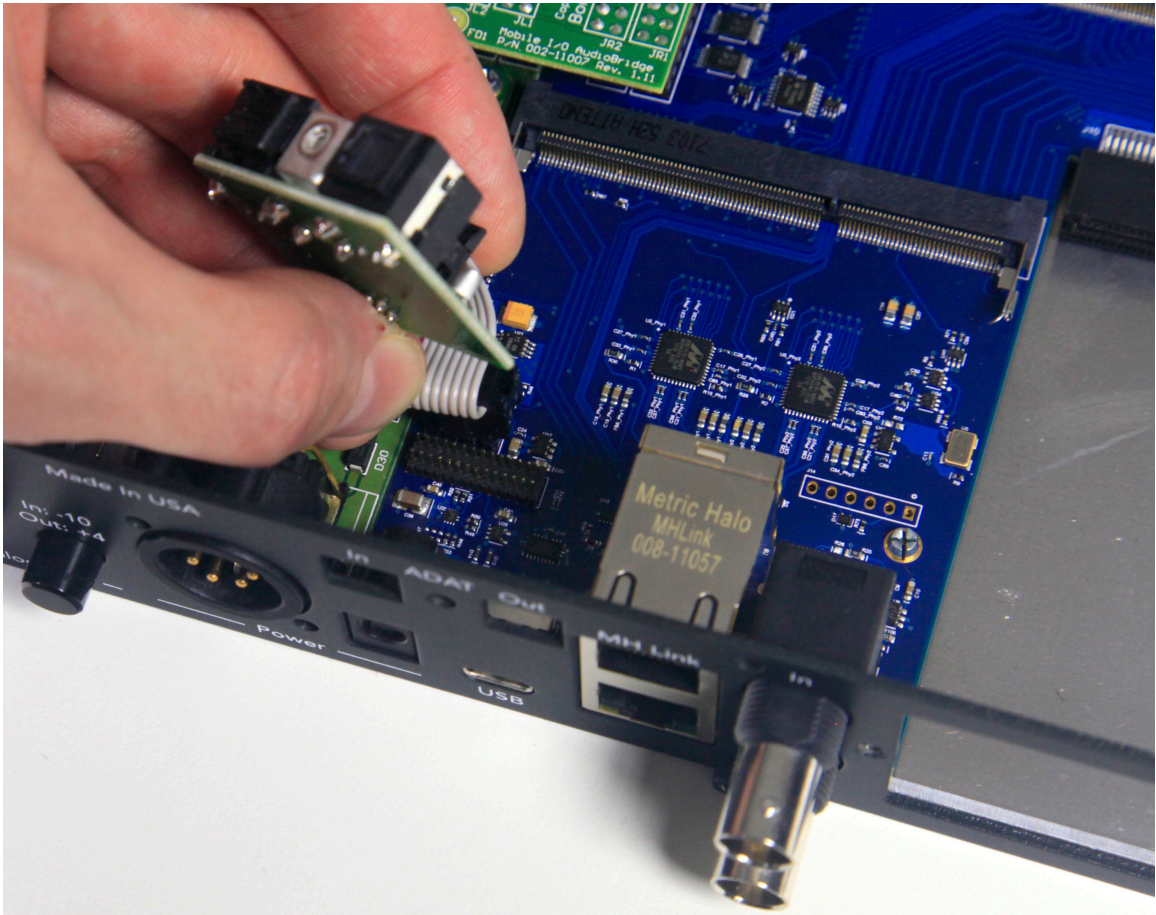
26. Attach the new back panel, first looping it over the XLR release tabs.  
Replace the two small hex screws on the bottom.

Make sure the MH Link Ethernet stack is flush with its window on the back panel.



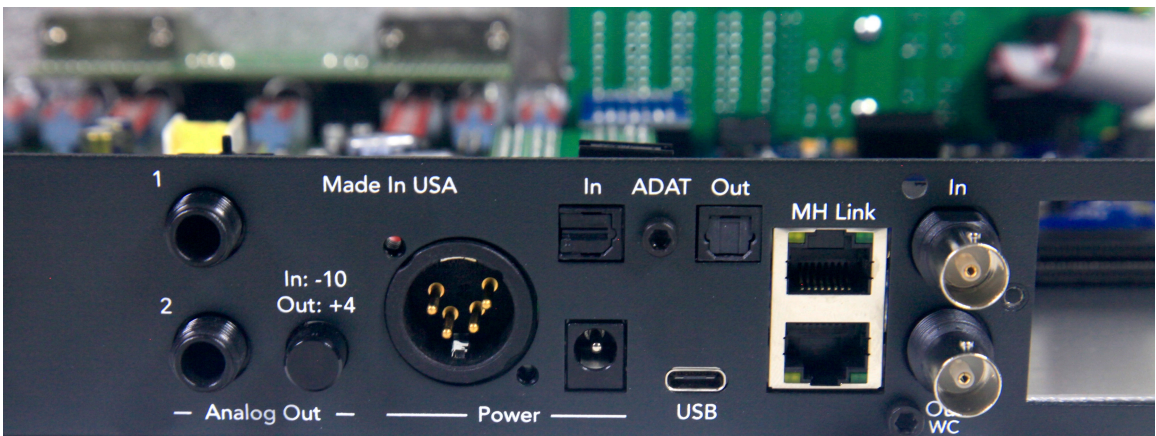
**Figure 1.28: New Back Panel Placement**

27. Attach the ADAT opto board ribbon cable to the matching pins behind the ADAT back panel windows.



**Figure 1.29: ADAT Opto Board Reconnected**

28. Replace small hex screw between the ADAT ports.



**Figure 1.30: ADAT Opto Board Bolted**

29. Attach the power supply, and confirm that the front panel Power and Internal Clock Source LEDs turn on.

**Figure 1.31: The LED indications shown on power up indicate that the 3d installation is successful**

30. Detach the power supply.
31. With a Phillips screwdriver, replace two threaded Phillips head screws on either side of the 4-pin XLR power connector.  
With a Phillips screwdriver, replace four threaded Phillips head screws around the analog input connectors.  
Replace the 8 ring nuts. These may be tightened slightly with needlenose pliers.

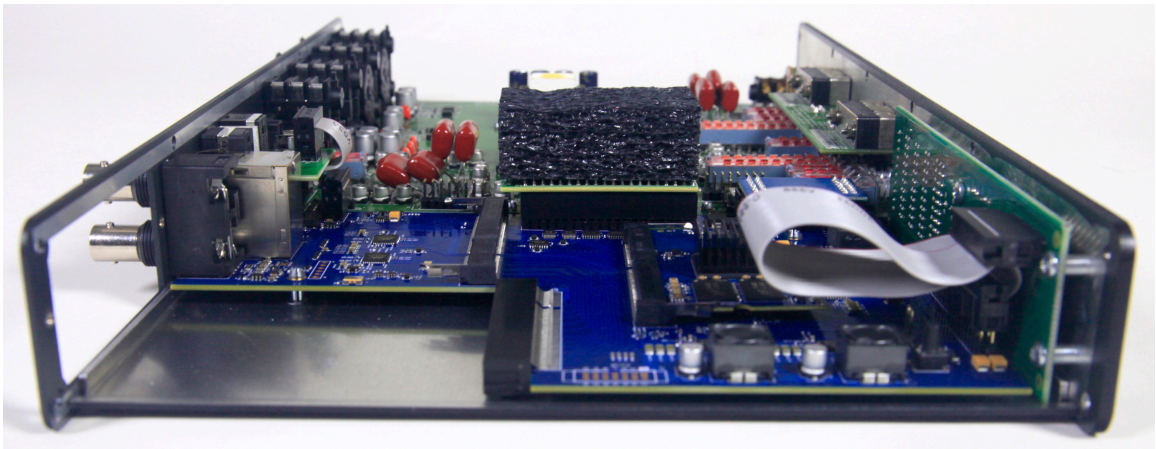


**Figure 1.32: Screws and Nuts to Replace on New Back Panel**

32. On the front panel posts, replace the 6 hex nuts that will sit behind the rubber knobs. These may be tightened slightly with needlenose pliers.  
Replace the ring nut around the headphone jack.  
Push the knobs onto the front panel posts, lining up the semi circle shape inside the knob to that of the post.



33. Peel the paper strip from the Foam Cap to expose adhesive, and place adhesive side face down on top of the bridge board, pressing slightly so it sticks.



**Figure 1.33: Foam Cap Applied to Bridge Board**

34. Replace the top panel, lining up the two holes to the back and four holes to the front. Use 6 small hex screws to secure the top panel.
- DO NOT use the longer case screws here, as they would damage the front panel meter board!*
35. Orient the side panel extrusions so that the holes for the rack ears are facing the front of the unit. For the side of the unit that the EdgeCard slot is on, the thicker grooved interior portion of the extrusion must be toward the top, and the narrower interior portion on the bottom.



**Figure 1.34: Side Panel Orientation**

36. Screw the 8 longer hex screws into the four corners, front and back, to secure the side panel extrusions. If using a power screwdriver, you may need to raise the torque for these screws.



37. Place the optional EdgeCard inside the hole in the back. Let the rubber feet under the EdgeCard track along the inside then push into the Edge bus slot on the 3d card so the EdgeCard inserts into its slot. Turn the two retention screws to tighten it in place. The EdgeCard metal should be flush to the back panel metal.



**Figure 1.35: Installing the EdgeCard**

The installation is finished!

If you have any questions about the installation process, contact [support@mhsecure.com](mailto:support@mhsecure.com) with the subject "3d Field Upgrade".