

Elecraft AF1 Audio Filter Enclosure

by W8FGU



Elecraft AF1 Audio Filter Mounted in the AF1 Enclosure

(Courtesy of Ron D'Eau Claire).

The AF1 enclosure is made of Lexan®, a polycarbonate, which is very strong. It also has a UV blocking coating on one side and was assembled carefully with this side on the outside of the enclosure. Lexan® is more shatterproof than acrylic (Plexiglas® etc.) but is more prone to scratching than acrylic. Since my design goal was to use the AF1 for portable applications, being exposed to dropping and falling off a table, I decided to go with the strength of a polycarbonate material.

The power LED is clearly visible in the enclosure and the knobs for the rotary switch and filter pots may be adjusted for uniform height just above the enclosure top. The power and audio jacks are accessed through holes in the side of the enclosure for each.

The enclosure is constructed in a box fashion with the AF1 PCB mounted to the top panel. The top panel and lower box are secured together via Elecraft custom 2-D fasteners and black

anodized 4-40 screws. The top contains the AF1 PCB mounted to it via standoffs. The bottom box contains the sides, ends and back of the assembly. Access to the inside of the enclosure is made by removing the four screws on the sides. Pulling the top and AF1 PCB straight out of the enclosure, allows for changing the battery or access to the PCB. There are four soft plastic feet mounted to the bottom of the enclosure to prevent the enclosure from moving around on a solid flat surface.

During initial installation, be aware that the enclosure has been designed with tight tolerances with regard to the internal size of the enclosure as it relates to the size of the AF1 PCB. Keeping the mounting hardware loose until everything is lined up will help make sure the PCB is oriented properly. There is enough tolerance built into the size of the mounting holes to allow for slight adjustments during installation and insure that all of the enclosure edges are square and seams tight.

It should be noted that two hole side of the custom 2-D fasteners are drilled slightly off center. The holes in the enclosure for mounting the 2-D fasteners are aligned so that the thicker side of the 2-D fastener is positioned at the outside edge of the enclosure half.

All mounting hardware is provided for mounting the AF1 into the enclosure as well as the externalized power switch. All parts are listed below:

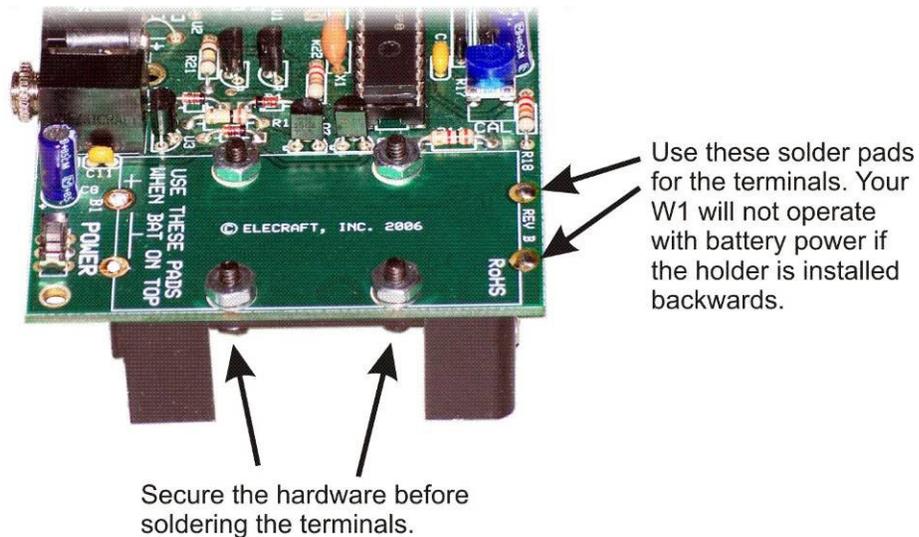
- 4 – 7/8" hex standoffs
- 4 – 4-40 lock washers
- 4 – 4-40 1/4" screws
- 4 – custom 2-D fasteners
- 16 – black anodized 3/16" screws
- Top of enclosure with standoffs mounted
- Bottom of enclosure with access holes for power and audio jacks

The enclosure is shipped assembled with the 2-D fasteners and black anodized screws.

Pre-Installation Notes

Battery Holder

It is strongly recommended to mount the battery holder on the back of the AF1 PCB. Even if you've already mounted the battery holder on top, it may be easily removed and placed on the bottom. Care should be taken to insure that the terminals for the battery holder are mounted to the clearly marked holes on the back of the PCB and not the holes for mounting it on top.



(W1 PCB shown for demonstration purposes. The AF1 battery holes are positioned the same way).

Before soldering the terminal connections, secure the battery holder with the mounting screws and properly align the holder on the PCB, then solder the terminals in place.

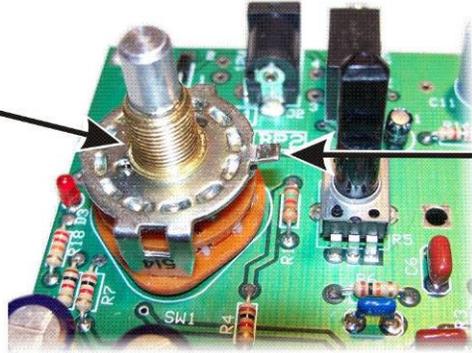
Rubber Feet

If you previously built your AF1 with the rubber feet installed, they will need to be removed to expose the PCB mounting holes for installation with the provided standoffs and hardware.

Preparing the Rotary Switch

There is a tab on the collar of the rotary switch that may come in contact with the top of the enclosure and should be bent down to prevent scratching or bowing of the top panel. Also remove the mounting nut and washer from the threaded ferrule if present prior to installation. They may be used to secure the rotary switch to the top, but in not necessary to secure the PCB to the top.

If present, remove the nut and washer from the threaded ferrule.



Bend the tab down flush with the frame of the switch.

Installation

- Separate the enclosure by removing the four side screws. Place the halves on something soft to prevent scratching them.
- Remove the Enclosure PCB mounting screws and standoffs from the top half.
- Separate the standoffs from their PCB mounting screws and lock washers.
- Mount the standoffs to the top side of the PCB in the four mounting holes. Place the lock washers between the standoff and the PCB and screw from the bottom of the PCB.
- Secure the PCB to the enclosure with four black anodized screws in their respective mounting holes. Do not tighten the screws at this time.
- You may also want to install the battery at this time.
- Carefully slide the AF1 PCB and top into the bottom angling the PCB if necessary to put the power and audio jacks into their respective holes.
- Secure the top and bottom together with the four side screws. Insure that all of the seams of the enclosure are tight and that all of the edges of the enclosure line up. Hand tighten each of the side screws.
- Now hand tighten the PCB mounting screws on the face insuring that the PCB is squared inside the enclosure.
- The installation is now complete.
- To replace the battery or gain access to the PCB, simply remove the four side screws and pull the top and PCB out of the bottom.

