Pro Audio Engineering

PAE-Kx22 Heatsink

for the Elecraft™ KX2 Transceiver

Installation and Owner's Manual

Rev 1.2
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Thank you for purchasing the PAE-Kx22 Heatsink for the Elecraft™ KX2 Transceiver.

We designed this heatsink to allow extended transmit time at the KX2's full-power settings, which is especially useful while using digital modes.

No passive heatsink can allow unlimited key-down time on the KX2, however the PAE-Kx22 has been engineered using thermal CAD modeling techniques as well as KX2 transmit testing for maximum performance with a minimum of increase in overall size. This is the heatsink of choice for those who want enhanced transmit time and still retain low weight and size.

The PAE-Kx22 has been designed using thermal CAD and it is the absolute maximum footprint with minimum mass. This allows the KX2 user to retain the portability which is the prime reason Elecraft designed the KX2. With this in mind it has been engineered to be fully compatible with the GEMS products mobile mount and matching the GEMS KX2 End Panels.

For more information on this heatsink and its design and performance capabilities, please visit:

www.proaudioeng.com

Howard Hoyt - WA4PSC
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IMPORTANT NOTES:

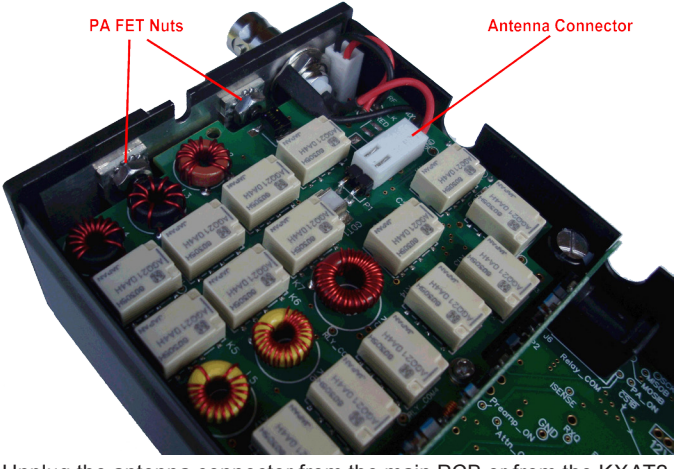
1. The KX2 owner is responsible for all modifications and by installing this heatsink agrees to hold Howard Hoyt and Pro Audio Group, LLC blameless and harmless for any issues which arise as a result.

Installation:

Tools required: #1 Phillips screwdriver, small needle-nosed pliers, 12 MM or adjustable wrench, 1/16" (1.6 mm) wide or smaller jeweler's screwdriver or single-edge blade.

Step 1) Remove the stock factory right end panel.

Remove the bottom panel by loosening the two thumbscrews slightly. Unplug the speaker lead and set the bottom panel aside. Remove the two #4-40 x 1/4" screws holding the PA FETs to the panel. The nuts on the screws holding the PA FETs must be held with small needle nose pliers:

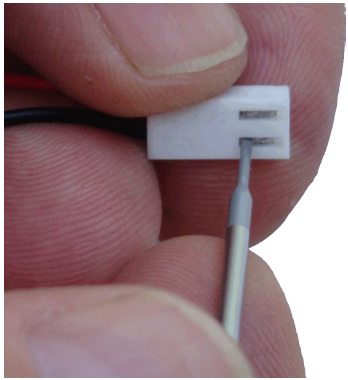


Unplug the antenna connector from the main PCB or from the KXAT2 board if so equipped.

Remove the three additional #4-40 x 1/8" flat head screws from the right end panel, but do not remove the small #2 screw near the front edge of the panel yet. The panel should now be free of the KX2.

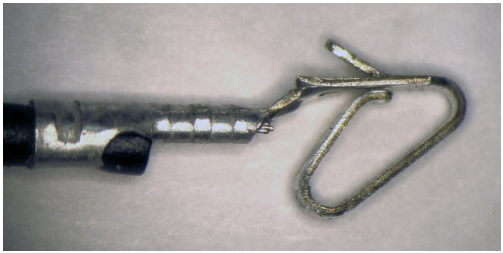
Step 2) Disassemble the antenna connector.

There are two terminals in the white antenna connector, and the terminal connected to the black wire must be removed to dismount the BNC jack. This is easily accomplished using a needle or 1/16" (1.6 mm) jeweler's screwdriver. Referring to the picture below, locate the side of the white plug housing with the two locking tangs:



Depressing the tang of the black wire while ***very gently*** pulling the wire back will allow the wire to be retracted easily. If it does not retract easily, the lock tang is not fully retracted. Try to depress the tang as close to the bottom of the slot as possible, where the tang is catching.

Once the black wire and terminal are free of the plug housing, closely examine the terminal. In the act of depressing the lock tang, it may have been pressed flat with the terminal. It must be raised slightly in order to regain it's locking function in the housing. This can be easily accomplished using the corner of a single-edged blade or X-Acto knife from the front or back of the terminal. Be careful not to bend it back up too far or it may break, this picture shows the maximum angle which you should bend it back:



If you do not want to attempt this connector disassembly, contact us for other options.

Step 3) Dismount the BNC Jack.

Note the orientation of the ground lug on the BNC jack, you will want to reinstall it in the same orientation. Using a 12 mm open-end or adjustable wrench, remove the nut from the BNC jack. You may have to bend the ground lug down slightly to clear the wrench. Once the nut is removed, disassemble the BNC jack, washer and ground lug from the stock end panel.

Step 4) Mount the BNC Jack on the Kx22.

Reassemble the BNC jack, ground lug and washer onto the Kx22 heatsink, and paying attention to the ground lug orientation, tighten the nut. Re-insert the terminal on the black wire into the white plug housing with the lock tang on the side with the opening. Ensure it is engaged, you should hear and feel a slight click as the lock tang engages the slot. If the terminal does not fully engage the housing and click into place, revisit Step 2 again to readjust the locking tang on the terminal.

Step 5) Apply thermal compound to the PA FETs.

Knead the included thermal compound packet for 20 seconds to reintegrate the grease, making sure there are no lumps left in the packet. Tear the end of the packet off at the pre-cut line and apply a small match-head size ($1/8^{2"}$, $3mm^2$) drop of thermal compound to the back of each PA FET. Using the single-edge blade, spread the compound to a thin, almost transparent film and discard any excess.

Step 6) Mount the Kx22 to the KX2.

Attach the Kx22 to the KX2 using the screws removed in step 1. When installing the two PA FET screws, hold the nuts on the FETs with your needle-nosed pliers and tighten firmly (15 in-lbs / 17 kg*cm max) to ensure good thermal contact.

Remove the small #2-56x1/4” screw left in the stock plate and mount it in the Kx22. Do not tighten it very tight, as it has few threads to hold it. Just tighten until it bottoms and then 1/8 turn additional will be sufficient.

Plug the antenna plug into the main PCB jack or KXAT2 jack, being careful to orient it with the black wire towards the Kx22 in either case. Additionally the correct orientation is printed on the PCBs.

Use & Cleaning:

For maximum performance and component life, whenever possible operate and store the KX2/Kx22 in a cool place out of direct sunlight. To clean the PAE-Kx22, use only a dry or damp cloth and cotton swabs. Do NOT use any solvents or cleaners!

Thermal Performance

Thermal CAD programs were used in the design of the PAE-Kx22. There is only a ~4°C differential between the hottest and coldest parts of the heatsink modeled while being cooled only by natural (not forced) convection air flow. Tests in a draft-free laminar airflow box have confirmed the models predicted performance.

If you are operating the KX2 in warm weather or unavoidably in the sun, the rig may become very hot, since the case is entirely black and efficient at absorbing solar radiation. In these situations it will help to keep the rig cool to position a small fan to blow air at the Kx22 end of the rig.

Specifications:

Size: width - 2.86” (72.6 mm)
depth - 0.5” (12.7 mm)
height - 2.57” (65.3 mm)

Surface Area: 15.3 inches^2 (3420 mm^2)

Weight: 1.36 oz (38.7 g)

Thermal Resistance:: <6°C/W

Key-down Transmit Time Improvement over stock:
80M-250%
40M-250%
20M-250%
15M-250%
10M-200%

Color: Dyed black to match the Elecraft™ KX2.

Warranty: The Kx22 is warrantied against all manufacturing defects.