

# Elecraft KXPA100

## Operation with External Power Amplifiers

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### Introduction

The KXPA100/KX3 combination is designed to interface with the KPA500 amplifier. If another power amplifier is used that presents more than +5V on the keying line, damage may occur to KXPA100 amplifiers with serial numbers less than 0700. This modification adds a protective diode that will prevent this damage with amplifiers using up to 30V on their keying line. Note that the driving transceiver's switch handles the full voltage and current of any external amplifier; there is no buffer circuit inside the KXPA100.

### Parts and Tools Required

You will need a temperature-controlled ESD-Safe soldering station, fine solder, and your normal hand tools such as needle nose pliers and diagonal cutters.

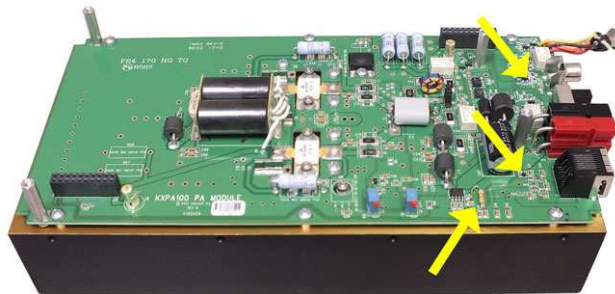
A kit containing the required parts is available from Elecraft. Order KXPAMDKT2.

QUANTITY	DESCRIPTION	ELECRAFT PART NUMBER
1	Resistor, 4.7k, 1/4W, 5%	E500158
1	Diode, BAV19WSTPMS	E560076

### Procedure

**⚠ CAUTION:** This modification requires the removal of two surface-mount (SMD) components. If you have any concern about your ability to do this, please obtain help from someone who has worked with SMDs, or send the amplifier to Elecraft to perform the rework. A grounded wrist strap and ESD dissipating mat are recommended whenever you work inside your KXPA100. Optionally, touch a bare metal ground frequently while working.

1. Remove the KXPA100's bottom cover. Refer to the *KXPA100 Kit Assembly Manual* for details.
2. Remove the front and rear panel. Unplug the coaxial cables with TMP jacks from the SO-239 Antenna connections from the boards.
3. If you do not have the KXAT100 Automatic Antenna Tuner, remove the four 4-40 machine screws holding the LPF board and skip to step 4. Otherwise, remove the four 4-40 machine screws and remove the antenna tuner board. Remove the four standoff supports holding the antenna tuner to the LPF board. A 1/8" nut driver may be useful for removing the standoffs. Remove the LPF board.

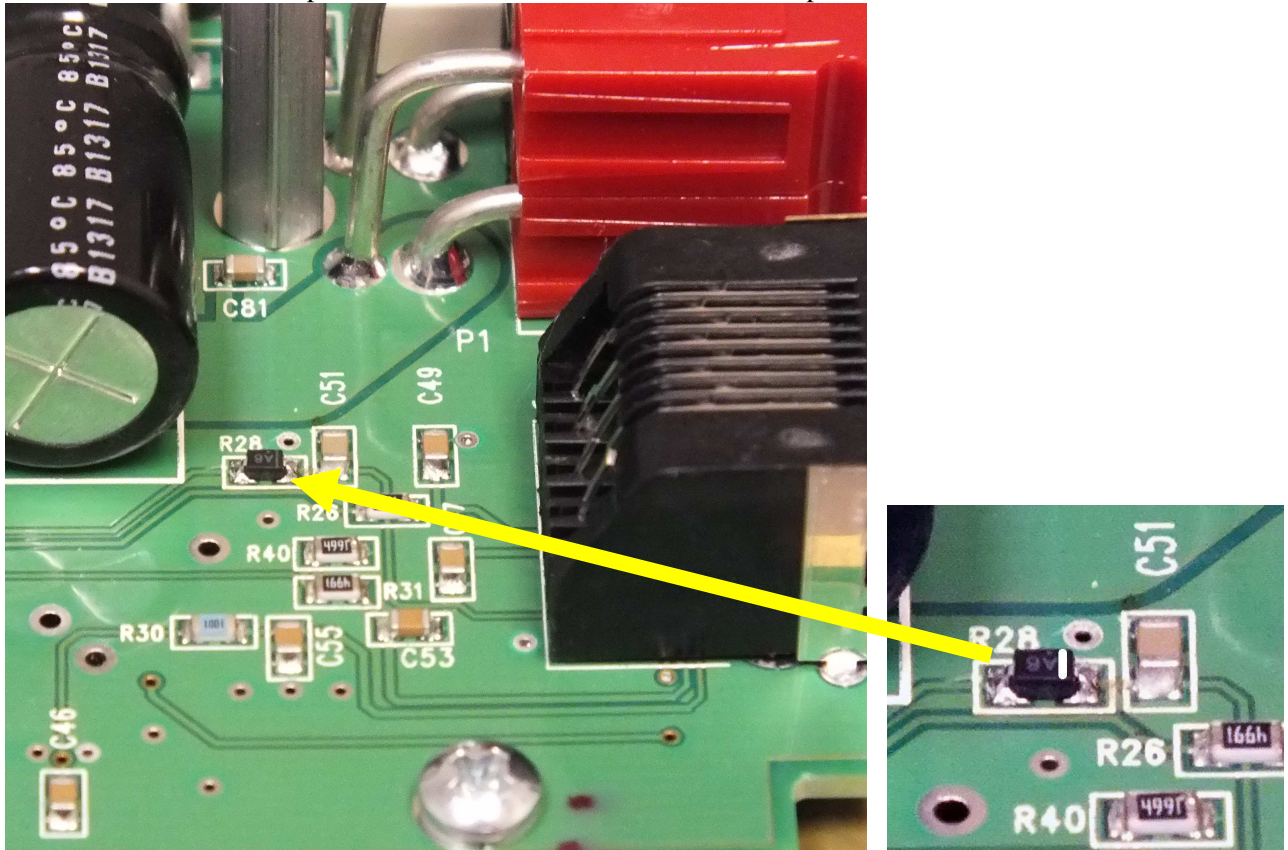


**KXPA100 PA Board Rework Locations**

4. Unsolder and remove R28 and R36 from the PA board. R28 is located next to the large electrolytic capacitor, C60. R36 is next to the center pin of J7, the phono jack.

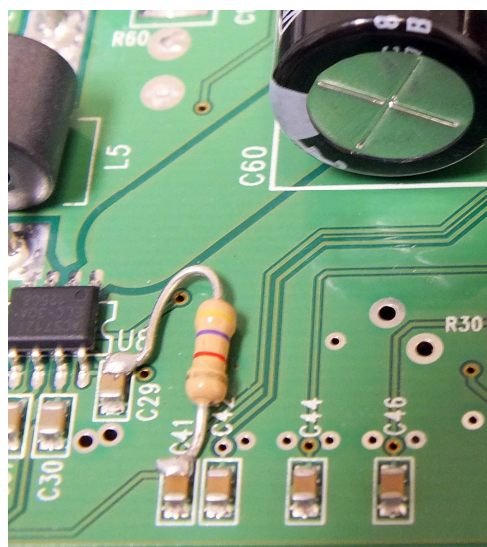
**⚠** If you do not have access to specialized SMD removal equipment, you may find it helpful to use two (2) fine-tipped soldering irons, placed at each end of the SMD to be removed, so you can melt the solder at both ends of the device at the same time. Do not apply heat to the PC board for any longer than necessary to remove the original device and to reinstall the new device.

5. Install the diode in place of R28. Note that the cathode band is positioned toward C51 and P1.



**Installing diode in place of R28. Note that the cathode must be on the C51 end.**

6. Bend the leads of the 4.7k $\Omega$ , 1/4W resistor into a “hairpin” shape. Solder one lead to the U8 side of C29 and the other to the silkscreen end of C41, as shown in the photograph. Carefully inspect your work.



### Install the 4.7k $\Omega$ leaded resistor

- 7. Replace the LPF board. Use caution to ensure all pins of P and P are inserted into J and J. Rotate the amplifier and look between the boards to confirm the pins are correctly seated and none are outside the connector.
- 8. If you have the KXAT100, install the four standoffs with your fingers. Do not overtighten! Standoffs are soft aluminum and subject to breaking if overtightened. Otherwise install the four 4-40 x 1/4" machine screws and split lock washers and skip to step 12.
- 9. Reinstall the KXAT100 Antenna Tuner board using the four 4-40 machine screws and four split lockwashers that you removed earlier.
- 10. Connect the TMP plug from the rear panel ANT 2 to the ANT 2 TMP jack on the rear of the KXAT100 board.
- 11. Connect the TMP plug from the rear panel ANT 1 to the ANT 1 TMP jack on the rear of the KXAT100 board.
- 12. Connect the TMP plug from the rear panel RF IN to the RF IN TMP jack on the rear of the LPF board.
- 13. If you do NOT have the KXAT100, connect the TMP plug from the rear panel ANT 1 to the ANT OUT TMP jack on the rear of the LPF board. *Note that ANT OUT is not used when the KXAT100 is installed.*
- 14. Replace the bottom cover, taking care to replace all of the screws into the heat sink.
- 15. Replace the front panel, taking care to align the LED bar graph(s). Replace all of the screws.
- 16. Replace the front panel. Replace the feet and all hardware. Check that all machine screws are secure. This completes the modification.