

## ARI-500 Modifications – Phil Salas AD5X

### Introduction

The ARI-500 Automatic Band Switch is a great addition to the ALS-600 amplifier, however some simply added features can make it much more versatile. First, my MFJ-998 high power auto-tuner includes amp-key IN/OUT connectors so it can break the amp-key line to automatically take the amplifier off-line when tuning starts, or if a high SWR target value is exceeded. It would be nice if the ARI-500 had an amp-key in/out set of connectors so I could easily route this line through the MFJ-998. You can, of course, break this out of the ARI-500 transceiver interface cable, but this complicates the cable.

And next, the ARI-500 is perfect for remotely locating the ALS-600 since you don't need access to the band control or the reset control on the amplifier. However, it would be nice if there were amplifier TX and O/L indicator lamps on the ARI-500 so you could monitor the amplifier's status.

Finally, the ARI-500 automatically puts your ALS-600 in OPERATE whenever your transceiver is keyed, regardless of the position of the OPERATE/STANDBY switch on the ALS-600. This means that you need to turn the amplifier power off if you want to check your drive level or operate your transceiver bare-foot.

As you've seen in the past, I enjoy modifying equipment. So since I wanted these features bad enough, I decided to modify my ARI-500 to add these features (and more).

### Modifying the ARI-500

I modified the ARI-500 to include TX and O/L LEDs, a STANDBY/OPERATE switch, and a piezo alarm with disable switch that is triggered by the O/L (fault) line. I also added RCA jacks on the back of the ARI-500 to bring out the amp-key line so it could be passed through the amp-disable jacks on my MFJ-998 auto-tuner.

The first task is to bring out the amp-key line. To do this, remove D1, a SMD 1N914 diode on the pc board, and add a new leaded 1N914 diode placed and oriented as shown in Photo A. Solder wires to the pc board and diode as shown, and connect these wires to two new RCA jacks mounted on the back of the ARI-500 as seen in Photo B.

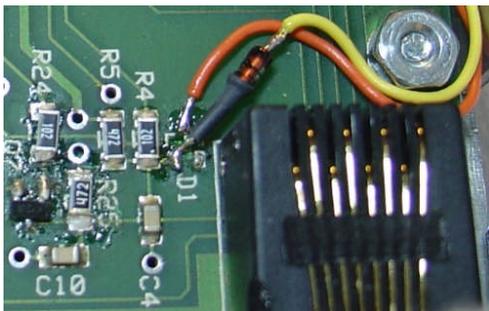


Photo A: Amp-key rework.  
Note diode position.



Photo B: Back of modified ARI-500

Next add the circuitry shown in the Figure 1 schematic. You can pick up the 5VDC from U1 pin 20, or directly from the output of U3, the 5-volt regulator. Photo C shows the internal details of my modification. Add the two LEDs and two miniature toggle switches to the front panel as shown in Photo D. I bought all parts (Table 1) from All Electronics ([www.allelectronics.com](http://www.allelectronics.com)).

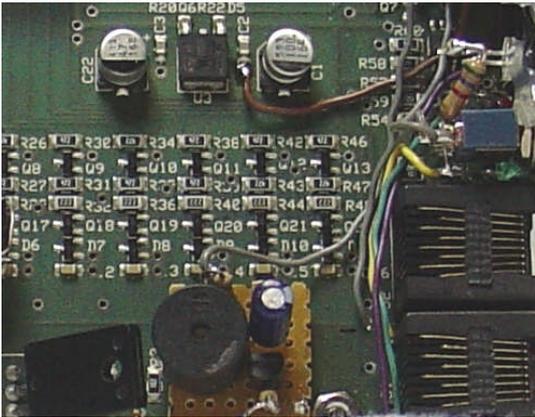


Photo C: Piezo circuit in middle. Switches and LEDs upper right.



Photo D: Front of modified ARI-500

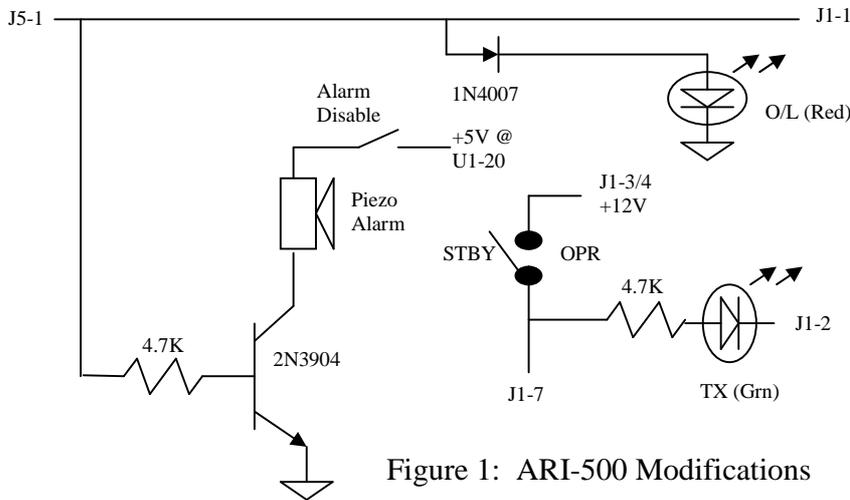


Figure 1: ARI-500 Modifications

### Operation

Strap the ARI-500 as though the ALS-500RC is connected (JMP2 strapped 2-3). The OPERATE/STANDBY switch must be in the OPERATE position for the ARI-500 to provide transceiver tracking. The modified ARI-500 still provides the auto-reset feature if so desired, or you can just do a manual reset using the OPERATE/STANDBY switch. When the switch is placed in the STANDBY position, you can check your transceiver drive level or use this switch to choose between barefoot and full-power operation. And if the ALS-600 is mounted out of sight, you can still monitor TX and O/L status. The piezo FAULT alarm (which you can switch off) lets you know when a fault has occurred and been reset.

Table 1 – Parts for the ARI-500 modifications. All Electronics part numbers.

QTY	Description	Part Number	Price ea.
1	1.5-6V piezo alarm	SBZ-140	\$1.25
2	Subminiature toggle switch	SMTS-4	\$1.35
1	Ultra-bright green LED	LED-57	\$2.00
1	Ultra-bright red LED	LED-94	\$0.55
1	2N3904 NPN transistor	2N3904	5/\$0.75
2	RCA jack	RCMJ	\$0.40
1	1N4007 diode	1N4007	6/\$1.00
1	1N914 diode	1N914	15/\$1.00
2	4.7K ¼-watt resistor	4.7K-1/4	5/\$0.50