

ALS-600 Mods

QSK and Increased Gain for Low Power Input

QSK Mod.

Details modifying the ALS-600 for QSK operation are described at www.ad5x.com/images/Presentations/QSKals500als600RevA.pdf. It involves replacing the stock open frame relay with miniature relays with a 5ms set time.

The stock open frame relay has a set time of 15 - 25 ms. The K3 has a key to RF delay of approximately 8ms. The KX3 has a key to RF delay of 12ms.

A transceiver key to RF delay faster than the amp key relay set time can result in problems such as random faulting of the amp and possibly damage the transceiver. Before the mod my ALS-600 would frequently randomly fault seemingly for no reason (no doubt due to the slow set time of it's open frame relay.) I used Panasonic relays with a set time, measured, of 3ms .

The ALS-600 works perfectly after the QSK mod with no random faulting. The 3ms set time of the newly installed relays is far less than the key to RF delay of the transceiver even at high speed CW.

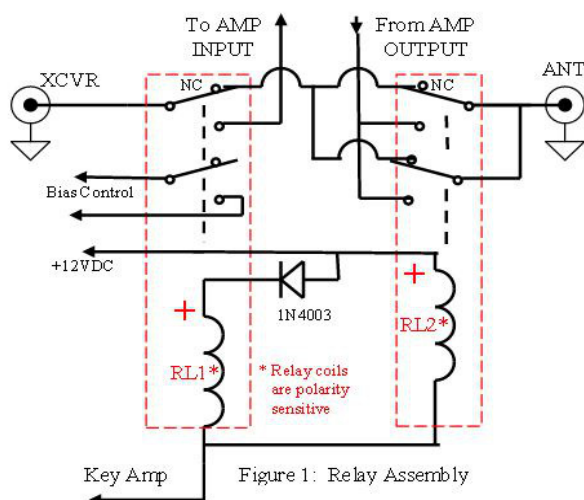
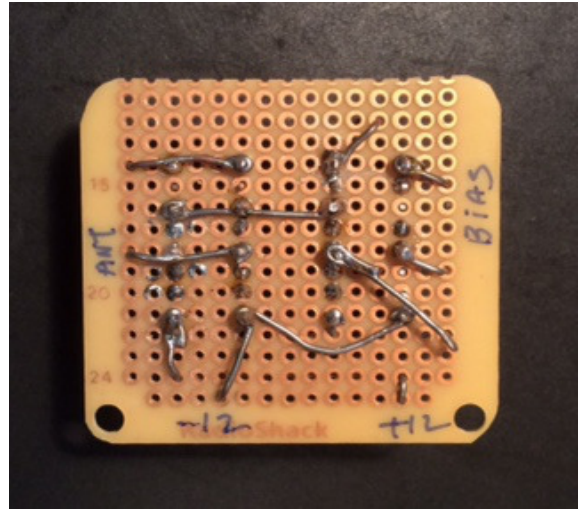
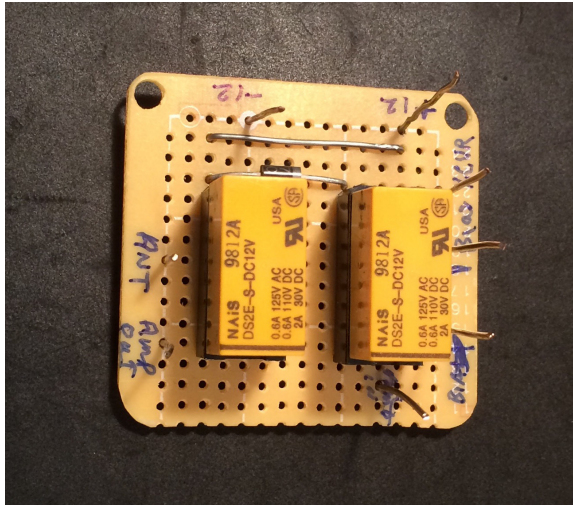


Figure 1. Relay circuit



Figures 2 & 3. QSK Relay Board – Top and Bottom

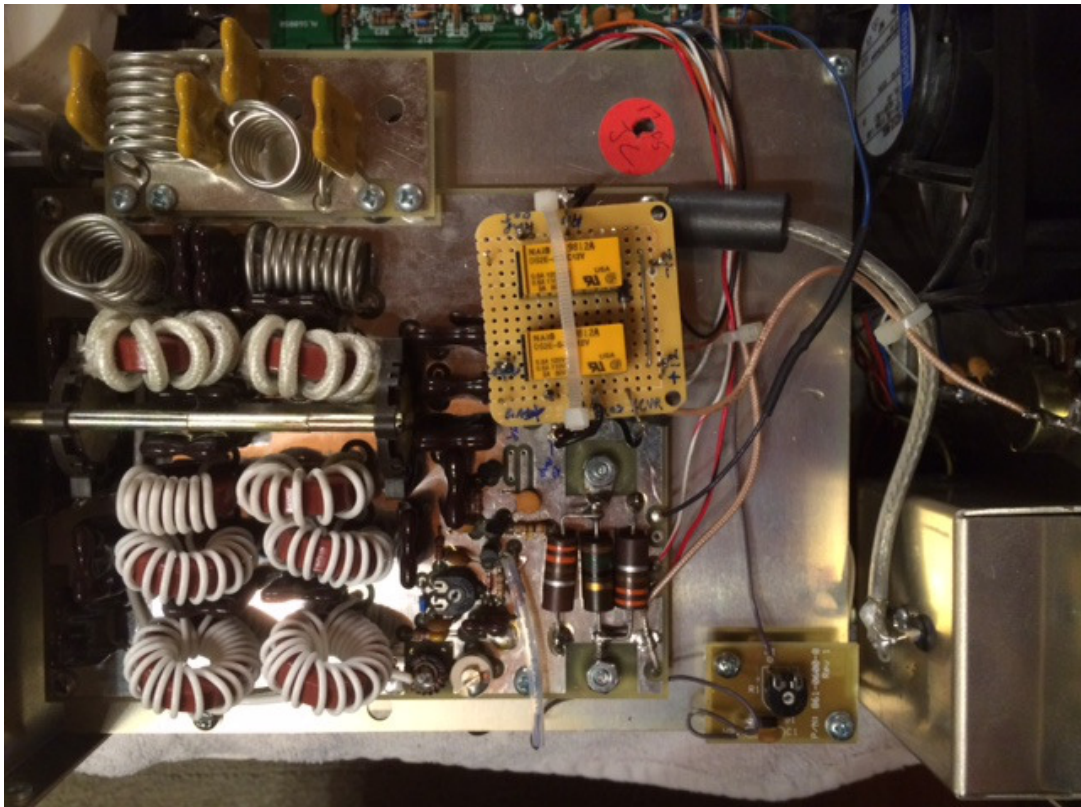


Figure 3. ALS-600 with mod installed

Low Power Mod

Modification to increase the gain for low power drive consists of removing the 35 Ohm 50 Watt resistor in the series with the Rfinput along with the 3 100Ohm parallel resistors across the input transformer. The input transformer primary, 1 turn, is rewound to 3 turns. In this configuration 5-6 watts will drive the amp to full output, a gain of 20dB. A 2.6dB 50 Ohm Pi pad (Figure 3, the 2 330 Ohm and single 15 Ohm resistor at the bottom of the figure) was placed in the input circuit to increase the power required for full output to 10-12 watts, providing better power adjustment resolution.

Examples of amplifier gain with the modification:

| 18069 kHz, T8 Ant: | out/in | gain | gain-dB |
|--------------------|--------|--------|---------|
| | 70/2 | = 35 | 15.4 |
| | 260/6 | = 43 | 16.3 |
| | 400/8 | = 50 | 17.0 |
| | 562/10 | = 56.2 | 17.5 |

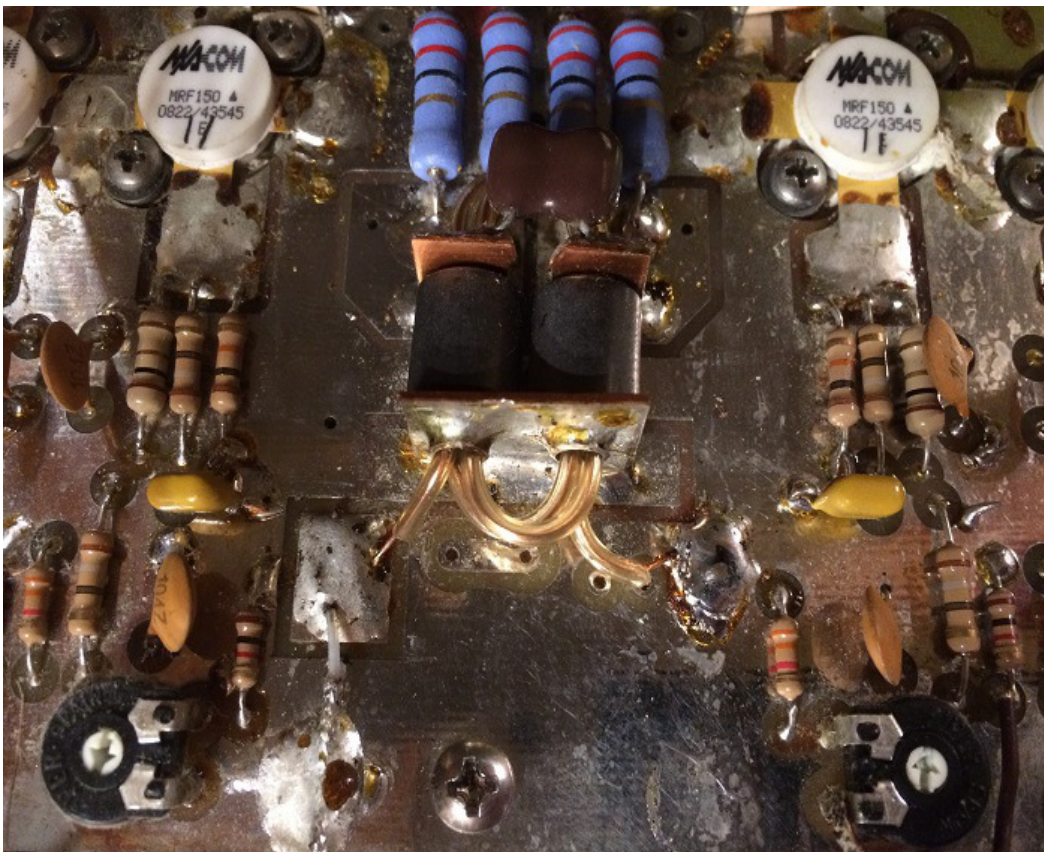


Figure 4. Input circuit turns modification, 3 turns.