

ELECRAFT K3 CONNECTIONS TO THE YAESU VL-1000 QUADRA AMPLIFIER

*COMMENTARY BY
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K3 Serial No. 00021*

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- 1) Be sure you have performed the Elecraft hardware mod entitled, "K3 External ALC Modification & Band Data Pull-up Resistor Modification" (Revision A4, February 14, 2009). If your rig was manufactured prior to December 10, 2008 (approximately s/n 2362 and earlier) you must do this modification before activating the External ALC feature in the K3, otherwise damage could occur to the K3 DSP module (per Elecraft warning). More recent K3s already incorporate this mod. If you are not sure, check with Elecraft to determine if your particular K3 (KIO3 specifically) included the Band Data Pull-up Mod.
- 2) You **MUST** use updated firmware versions... MCU version 1.99 (or later) and DSP version 1.76 (or later). Actually, you should already be using the most current Beta version.
- 3) After the above modifications have been done, set the External ALC menu setting to negative 4 volts (CONFIG: EXT ALC ON ... -4). You must have TECH MODE enabled in order to access this menu entry.
- 4) *Now the bad news.* **You MUST connect your exciter to INPUT 1, not INPUT 2.** To date, no one has been able to figure out how to use two transceivers to excite the Quadra by utilizing the exciter RF inputs at INPUT 1 and INPUT 2. Because of internal changes made by Yaesu during final design planning (literally "at the last minute") to accommodate other features, INPUT 2 is simply not usable. Forget it's even there. In the half dozen or more years that the Quadra has been around, Yaesu has yet to address the INPUT 2 problem.
- 5) Although the K3 is now my primary rig, I want to maintain the ability to use my FT-1000D with the Quadra. I leave the original Yaesu control cabling connected at all times to the FT-1000D. When I want to use the 1000D with the Quadra, I manually connect these control cables to BAND-DATA 1. When I want to return to the K3, I manually disconnect the Yaesu cables from the Quadra and connect the homebrewed K3 cabling, again, to BAND-DATA 1 and BAND-DATA2. It takes all of 15 seconds, so it's really not much of an inconvenience. I designed my rig-table such that I can walk around behind the gear to do this kind of hand-switching if necessary. With the Quadra and two exciters, it's necessary!

- 6) CAREFULLY EXAMINE whatever DIN8-262 plug you purchase. We went through several DIN-8s that looked identical to the Yaesu plug, but discovered, under magnification, that the bottom two pins were closer together than the bottom two on the Yaesu plug, and those plugs simply wouldn't mate with the Quadra's jack.
- 7) Homebrew the cabling exactly as printed on Tom's chart. Note the TX INH issue. If you don't want to install the resistor (tedious to do), insulate and let that lead float. Don't connect it to the pin. Furthermore, as a back-up safety feature, be sure the K3's menu item CONFIG: TX INH is set to OFF (the default). As Tom explains in the chart, the K3 can only handle 5 volts on this line, while the Quadra is producing 12 volts. In practice, the TX INH is generally not needed anyway.
- 8) To utilize all of the Quadra's features (SWR detection, tuner activation, F-Set, etc.), the K3 will need to run at 80-100 watts output with the Quadra's ALC backing down the K3's output as necessary. While this is contrary to the ALC philosophy advocated by Elecraft engineers, it is the only way the Quadra will operate as Yaesu intended. Running the transceiver at full output is the procedure recommended by Yaesu in the Quadra's operating manual. So far I have encountered no problems doing it this way. Both scope and on-the-air tests have shown no splatter, IMD, or key clicks.
- 9) You MUST connect pin 1 on the Quadra's 8-pin DIN to the K3's +12 volt DC jack. At first, we thought the Quadra's pin 1 was a spare output point for 12 volts. It is just the opposite -- it is an input for 12 volts, and it is absolutely needed to energize one or more relays so the transceiver has a connection to the antenna when the Quadra is turned off (but plugged into the wall, obviously). As I write this, I'm listening to the K3 barefoot (Quadra's RF deck turned off) on twenty meters, but I need the power switch (labeled "MAIN") on the Quadra's power supply (VP-1000) turned ON in order to do so (turning the VP-1000's power switch off takes the K3 out of the antenna loop. This was a real head-scratcher until we tumbled to the requirement for the 12-volt input to the Quadra.
- 10) As you probably know, you can set the output power of the K3 on a per band basis. As you work through the bands, you may discover that you can back the K3 output power down a bit (80W or a bit lower) on certain bands and still get full Quadra output. This would be preferable since the less ALC action required, the happier everyone seems to be. However... understand that the Quadra manual states that for accurate SWR detection, the Quadra requires a minimum of 50 watts drive; for tuner activation a minimum of 70-80 watts drive; and for full output a minimum of 60-80 watts drive. I am leaving the K3 at 100 watts output (since we have detected no splatter or key clicks) and letting the Quadra's ALC circuit handle it from there.

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