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K2 Troubleshooting Note: INFO 80 on Power Up

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INFO 80 indicates that the main microprocessor on the control board (U6) is not talking to the I/O processor, IOC, on the RF board (U1).

If you are getting an INFO 80 error message upon powering up the K2 you may need to adjust the 4 MHz crystal trim capacitor (C22 on the control board) about 45 degrees from its initial position.

INFO 80 can occur when the main microprocessor (U6) is not running at the correct speed. It appears that this capacitor is shipped from the manufacturer in its minimum capacitance position, which can cause the crystal oscillator to run erratically. Moving C22 slightly, as recommended in the K2 manual, will usually solve this problem.

If adjusting C22 doesn't work (try several settings), check to make sure that C22 and the 4 MHz crystal, X2, on the control board have both pins soldered in and that there are no shorts between them. Also check to make sure C21 on the control board is the correct value (33 pF) and that it is soldered in properly. Also check pins 15 and 14 of U6 on the control board for poor solder joints.

Sometimes folks incorrectly swap X1 and X2 on the control board. **Make sure X2 is a 4 MHz crystal.** (If it reads 5.06 then you have them swapped..) If the main processor is running with the wrong crystal at 5.06 MHz the front panel will work, but it will be running too fast to communicate with the IOC on the control board.

You should be able to hear the 4 MHz oscillator by listening to X2 on a general coverage receiver. (Hold the receiver's antenna wire close to U6 while tuning.)

Note: You will not be able to hear the 4Mhz oscillator on the I/O Controller (U1, RF) because it only operates briefly when an AUX Bus command is sent from the main processor.

If you have any question about the quality of a solder joint, quickly reheat it with your soldering iron to reflow the solder.

If this doesn't correct the problem, you may have a problem with the I/O controller (RF board, U1) or the AUX bus line going between the control board and U1.

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To trouble shoot the continuity of the AUX bus between the main processor (U6 on the control board) and the I/O controller, IOC, (U1 on the RF board.), do the following:

1. Measure the resistance between pin 28 of U1 on the RF board and pin 40 of U6 on the control board. It should measure between 900 and 1000 ohms. If it reads open, check R6 on the Control board (near U6) and R64 on the RF board (near U1). Both should be 470 ohm resistors. Also check to make sure these parts are soldered in and that the pins on both micro- controllers are soldered.

2. Make sure the AUX bus is NOT shorted to ground. Check both sides of R6 on the Control board and R64 on the RF board.

As a final step, check to make sure the I/O controller (U1,RF) is programmed. There is a small chance that this part left the factory in the unprogrammed state. To do this, measure the voltage on pin 28 of U1 with the K2 power on. The following measurements can vary +/- 0.2v.

~5.5V indicates U1 is programmed OK and the AUX bus is OK.

~6V indicates U1 is programmed OK but the AUX Bus is open.

~5V indicates U1 is NOT programmed, but the AUX bus is OK.

~0V indicates U1 is NOT programmed and the AUX Bus is open.

If you determine U1 is not programmed, please contact us immediately at radios@elecraft.com and request a new U1. Let us know you followed this trouble shooting procedure.

Also, you can follow the troubleshooting chart for INFO 80 on page 4 of the trouble shooting guide, Appendix E, in the K2 manual.

IMPORTANT NOTE (After fixing your INFO 80 problem):

The first time the K2 is powered up it initializes its nonvolatile memory and displays an INFO 201 message. If you receive an INFO 80 message (indicating the main processor is not talking to the I/O controller) when doing the first building test on your K2, this step is skipped.

After you fix the cause of the INFO 80 you will also need to force a hard reset to initialize the K2's nonvolatile memory.

To do this, press the 4-5-6 keys together while powering up the K2. This will generate another info message, INFO 201, which indicates the memory is being initialized.

(If this doesn't work, you have an earlier K2 firmware release. For earlier releases a hard reset is done by pressing the STORE key for one second and then directly programming the K2's frequency as '57575'. When you enter this password you will see INFO 249, which indicates an INFO 201 - memory initialize - will take place upon the next K2 power up. Cycle power on the K2 to finish the reset.)

 If you do not reset the K2 after getting this initial INFO 80 a number of strange things will occur. Most frequently failure to initialize memory results in strange characters showing up on the K2's display, odd tuning rates and general unreliable operation.