

D700 Keyboard Interface Assembly Instructions and Operating Tips

August 6, 2009

by

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Assembly Instructions

Congratulations on your purchase of a D700 keyboard interface. This manual is designed to provide some tips on building and using it.

Construction of the unit is fairly straightforward. A listing of the resistor numbers and values is included below. If you have any doubts about the color bands on the resistors, use a VOM to verify that you are placing the correct values for each part.

R3, R4, R5, R8, R9, R10	10K (brown, black, orange)
R7, R12	22K (red, red, orange)
R6, R11, R13	100K (brown, black, yellow)
R14	1K (brown, black, red)

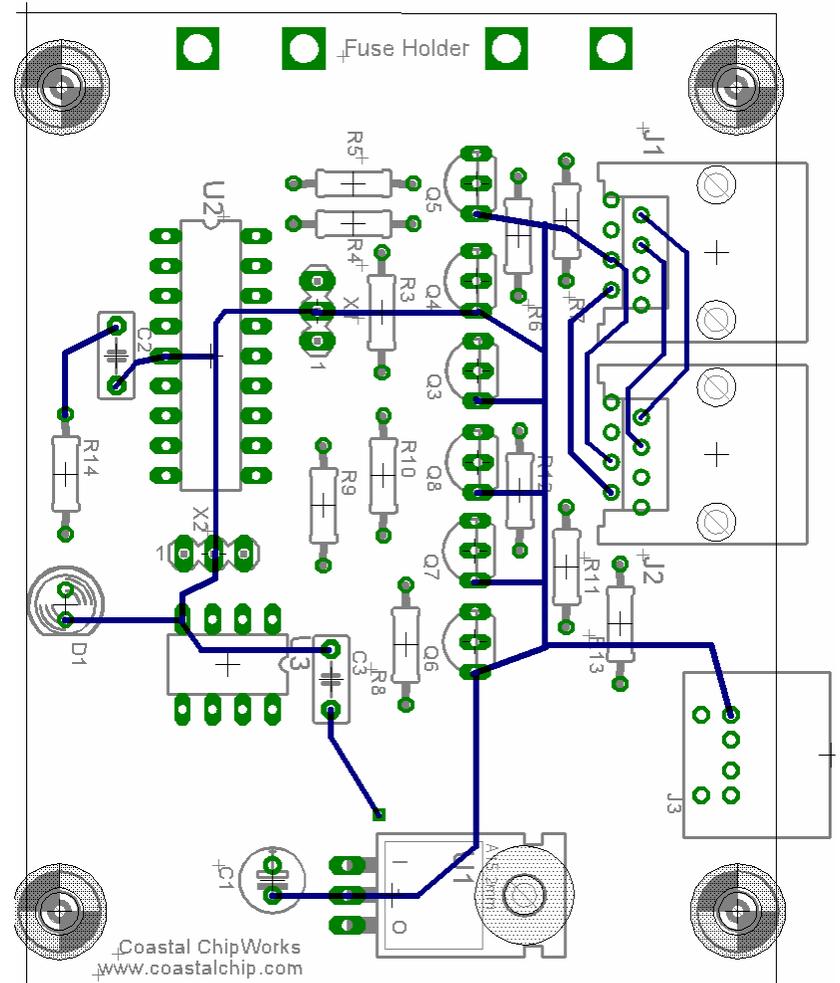
There are six transistors that are all NPN type. They should be installed so that the flat side lines up with the long side of the part outline on the PC board. The electrolytic capacitor is polarized... make sure that the longer lead goes in the + side. Aside from the electrolytic capacitor, the other capacitors are non-polarized and interchangeable. The two ceramic resonators (brown or blue, three pin devices) are also interchangeable and non-polarized.

Careful attention should be paid to mounting the fuse and the two associated PC board mount fuse holders. Place the fuse in the holders so that it is properly seated. Solder it in place. Mounting the fuse in the holders before soldering will ensure a good fit after soldering is done.

The mounting of the jacks on the PC board is pretty straightforward. The mini DIN jack (for the keyboard) may have a flat terminal sticking out of it in addition to the 6 pins that fit in the PC board. If so, clip this flat terminal off as close to the part as possible. It is not used and will simply get in the way. Pay close attention to make certain that the IC's are inserted the correct way. The voltage regulator is also polarized... The longer side of the regulator should be flat against the PC board (no heat sink is required and there is no screw needed in the hole in the regulator). The LED is polarized as well. Insert it so the longer lead is connected to R14. Before soldering the LED, size it up in the box so that you can determine how long to make the leads. LED leads that are too long are obviously preferable to those that are too short.

The keyboard interface and the keyboard are powered from the 8 volt pin on the D700 microphone line. Kenwood says that this line is capable of supplying 200 ma, but I've found that this is an optimistic estimate. The microphone that comes with the radio generally draws 20 – 23 ma. Thus, there should be about 177 to 180 ma left for the interface and the keyboard. Most keyboards draw substantially less current than this. However, users have found that drawing this much current through the microphone begins to draw the voltage down on the mic jack.

If you find that the LED dims when you plug in the keyboard, you may have to use a keyboard that draws less current. Contact W2FS for suggestions.



Operating Instructions

Operating the keyboard interface is pretty simple. Plug the keyboard (an IBM compatible PC keyboard with a mini-DIN plug is required) into the mini-DIN jack, and connect a RJ-45 straight through jumper cable between one of the RJ-45 jacks and the radio's microphone connector. The microphone can then be plugged into the other RJ-45 jack on the unit. These two jacks are connected in parallel, so it doesn't matter which one is used for which purpose.

Set up the radio as follows: Go to radio menu 1- 8-1 (it will say PF1(PF)) and set it to CTRL. Go to radio menu 1-8-2 (it will say PF2(MR)) and set it to MUTE. Go to menu 1-8-3 (it will say PF3(VFO)) and set it to MSG. Go to menu 1-8-4 (it will say PF4(CALL)) and set it to LIST. These function buttons must be set up to work this way in order for all of the keyboard functions described below to work properly.

The up/down cursor arrows will mimic the functions of the up and down buttons on the microphone. You can enter text simply by typing on the keyboard. If you are typing punctuation, you may have to type a bit more slowly than usual. In particular, after you type the @ sign (as in an e-mail address) pause a second to let the radio catch up to you. Other than that, the keyboard interface should be able to keep up at touch typing speed.

The keyboard's function keys are used for common functions. Push F2 and you will be taken directly to the send a message screen. You can then type the callsign of the station the message is going to, push return, and type the message. Hitting return again will send the message, while pushing the esc key will cancel the message and return you to the radio's main screen. Pushing the F3 key will bring up the recently

heard stations list. You can scroll up and down this list using the up/down cursor keys or the PgUp/PgDn keyson the keyboard. Hitting return will bring up the details of the currently highlighted station. Similarly, pushing F4 will bring up the messages list and allow you to scroll through them. To exit either list, push the escape key. If you press the F1 key while in either of these menus, you can compose a response to the person who sent it.

Function keys F5 through F8 can be used as nonvolatile storage for text buffers up to 31 characters in length each. To record text in a buffer, first make sure that you are in the message entry screen. Then hold down the CTRL key and tap the function key of the buffer you wish to use. The scroll lock key on the keyboard will come on to indicate that text is being saved to memory. Then type the text you wish to store. Another CTRL-FnKey will end the storage process. To send the text in the buffer simply push the function key (without the control key). These buffers are nonvolatile so the text will

remain stored even when the power is turned off. It is my experience that occasionally an error occurs when transferring the text from the memory buffer to the radio. I could fix this by slowing down the keying rate, but slowing it down makes touch typing more difficult. Thus I've looked for the best possible trade-off between speed and accuracy.

There are a couple of limitations to the keyboard's capabilities. Communication between the keyboard and the radio is one way only. Thus there is no way for the keyboard to know what is currently on the radio's screen. As a result, the function keys could not be made context sensitive. Pushing the wrong function key (or return or escape key) at the wrong time can have unintended consequences (such as muting the radio).

In particular, if you push the F2 key while a station's APRS information is being displayed, you will not go to the message screen. Instead, the "control" function will be turned on. If the radio does not appear to be operating normally, check the front panel to see if either the "mute" or "cntl" function is on. You can turn the cntl function off by hitting the return key on the keyboard. You can turn the mute off by hitting the escape key twice.

A second limitation is that only those functions could be implemented that Kenwood made available via the microphone. The function that would be nice to have that is not available is the ability to delete messages from the message list by pushing the delete key on the keyboard. Unfortunately this could not be implemented, so to delete messages it will be necessary to reach over to the radio and push the delete key. However, this may be the only reason that you'll ever need to touch the front panel of the radio again.

