



SCI-6 Sound Card Interface Kit

Version 1.00

May 2006

The SCI-6 interface was designed to be a low cost, high quality interface between your PC's sound card and radio transceiver. It can be used for PSK-31, RTTY, SSTV, WSJT and a large number of other digital modes.

Unlike other low cost sound card interfaces, the SCI-6 completely isolates your computer and transceiver. It uses transformer isolation on both transmit and receive audio to prevent ground loops and hum. The PTT circuit interfaces to a PC serial port through an opto-isolator to generate automatic transmit/receive control.

Component List

SCI-6 PCB	Right angle phono jack (4)
100K resistor (Brown-Black-Yellow)	4-40 screw (4)
1K resistor (Brown-Black-Red)	Plastic case
1N4004 diode (2)	1/8" phono cable (2)
600-600 ohm transformer (2)	100uF capacitor
10K trim pot	Rubber feet (4)
4N32 opto-isolator	Tie-wraps (2)

Assembly Instructions

1. Insert and solder the 1K (Brown-Black-Red) resistor at location labeled R3.
2. Insert and solder the 100K (Brown-Black-Yellow) resistor at location labeled R2.
3. Insert and solder the 1N4004 diodes at locations D1 and D2. Be sure to observe the proper polarity by making sure the white band on the diode matches the white band marking on the circuit board.
4. Insert and solder the 4N32 opto isolator IC at location U1. Be sure to mount it correctly by inserting it so that the dot pin 1 marking on the IC faces the "U1" label on the circuit board.
5. Insert and solder the 100uF capacitor at location C1. Be sure to observe the proper polarity. The negative lead is marked with black minus signs, and should be inserted in the hole that is not marked with the + symbol on the circuit board.
6. Insert and solder the trimmer pot at location R1.
7. Insert and solder the two transformers at locations T1 and T2. They can be installed either way.

8. Insert and solder the 4 RCA phono jacks at locations J1-J4. Use care that these are installed straight and fully down to the circuit board or they will not line up properly with the case end panels.
9. Strip 3/4" of the outer layer black covering of the free ends of the two 1/8" stereo plug cables. Be careful not to cut the shield wires. Separate the shield wires from the white and black wires. Twist the shield wires together.
10. Strip 1/8" of insulation from the white and red wires of the 1/8" stereo plug cables. Tin the ends and the end of the shield wires.
11. Place the circuit board into the bottom case part. The bottom has 4 stand-offs that align with the 4 mounting holes on the circuit board. Do not screw the board into the case at this time. Place the rear panel into the slots of the bottom case. The rear panel has one large and two small holes. Connector J3 must protrude through the large hole and the two smaller cable ends will be over the holes marked P1 and P2. The end panel should be oriented so that the small holes are away from the bottom case. If not, remove and rotate the panel until they are.
12. Take the cables prepared in steps 9 and 10 and insert them into the holes in the end panel from the outside in. To aid soldering during the the next steps you can remove the circuit board and end panel from the bottom case, but keep them together and do not rotate the parts separately.
13. Solder the cable end nearest the larger hole to location P2. The shield solders to the pad marked "S". The white wire goes to the pad marked "T", and the red wire goes to the pad marked "C". To avoid possible shorting, keep the shield length short.
14. Solder the remaining cable to location P1 in the same manner described in step 13.
15. Examine your soldering on the whole board to be sure there are no shorts or solder bridges.
16. Slide the rear panel up against the circuit board. Put the panel with the 3 large holes over the other end of the circuit board.
17. Mount the circuit board in the case bottom with the four 4-40 screws. Note that the case is not threaded, but the screws will self thread into the soft plastic if a little pressure is applied while screwing.
18. Push the two black cables into the case so that there are short loops in the cable between the circuit board and end panel. Place a tie-wrap over each wire between the circuit board and end panel as close to the end panel hole as possible. The tie-wraps will act as strain relief for the cables.
19. Using a small screw driver, turn the trim pot at R1 fully counter clockwise. Then adjust it 1/2 turn clockwise.
20. Place the top of the case over the assembly. Be sure the mounting screw bosses align between the top and bottom. Do not screw the case together at this time.
21. Carefully cut out the label. Use the corner markers as a guide. Peel off the adhesive label and orient it so that the side marked – PC – is at the end panel with the one RCA connector and the two 1/8" phono cables.

Cables to the transceiver

The cables to the transceiver are not supplied since there are so many different types of connectors used with different radios. You will have to supply these cables. The SCI-6 uses phono connectors since they are readily available. You will have to supply these cables. Make shielded cables to minimize the potential for RFI.

Consult your radio's manual to determine the best way to connect to your radio. Some radios have separate connectors for PC interfacing. If your radio has one, it will generally be best to make your cables for that. Otherwise you might need to use the microphone connector for transmit audio and PTT. The headphone jack may be used for receive audio.

There are 3 jacks for connecting to the transceiver. Note that the grounds for these are isolated from each other. It is important not to connect the transmit audio ground to either of the other grounds. Doing so will usually result in ground loops and hum on the transmit audio.

Most radios have a separate ground for the transmit audio. If your radio does not, you will need to connect the PTT ground to the transmit audio ground. Do this as close as possible to the connector that mates to the radio.

The PTT circuit uses control signals from the computer's COM port to for transmit control. The circuit uses an opto-isolator to isolate the computer from the transceiver. This circuit cannot be used with tube rigs.

You will need to pick either the RTS or the DTR signals on the COM port to control PTT. RTS is probably the most popular. Some programs allow you select either or both signals at the same time. Refer to the cable schematic for instructions on making a cable to the COM port.

Setup and final assembly

1. Install and bring up the program you will be using with the SCI-6. Hook up the SCI-6 to your computer and radio. Table 1. shows the connections.
2. Follow the program instructions for setting the transmit audio drive levels. Adjust R1 for the proper transmit signal level.
3. Place the top cover on the unit and use the supplied screws to secure it.

Table 1.

SCI-6 Side	Connects To
PC:RCV	PC Sound Card Microphone Jack
PC:XMIT	PC Sound Card Headphone Jack
PC:PTT	COM Port
Radio: XMIT	Radio Microphone audio
Radio: RCV	Radio Audio out or headphone jack
Radio: PTT	Radio PTT control

Enjoy operating the digital modes with your SCI-6. Please report any problems or suggestions to Unified Microsystems.

Unified Microsystems
PO Box 133
Slinger, WI 53086
www.unifiedmicro.com