K2 Aux I/O Cable for RS-232 Communication

K2 communication with a RS-232 device such as a PC is supported through the K2's Aux I/O port available as a DB9-Female connector mounted on either the KIO2 board installed in a basic K2 or the KIO2 interface included with the KPA100 amplifier. While these connectors look like a typical serial communications port, they are not, and contain proprietary signals on the other pins outside of the standard RS-232 signals RXD, TXD and Ground. Therefore, a standard RS-232 cable or connection cannot be used with the K2's Aux I/O connector or resulting damage to any internal components using these proprietary signals will occur. This is why it is called an Aux I/O connector as opposed to RS-232 or Serial.

A custom cable that only carries the three RS-232 signals needed must be used to connect a standard RS-232 connection to the K2's Aux I/O connector. This cable was typically constructed when either the KIO2 module or KPA100 amplifier was constructed and installed in a K2. The last two pages of this document include the original instructions for constructing this custom cable as described in the KIO2 manual on pages 12 and 13.

Within reason, this cable can be made at any length desired. The KIO2 kit typically came with 10-15 feet of 4-conductor cable for this purpose. Whether connecting to a standard RS-232 port or a USB to RS-232 conversion cable like our KUSB cable, this custom cable must be placed between the resulting RS-232 port and the K2 Aux I/O port.

The following list the Elecraft part numbers needed to construct the Aux I/O cable:

Elecraft KIO2 PC Serial Cable Parts LIst			
Ref	Description	Quantity	Part Number
Misc	Connector DB9F (serial I/O cable, PC end)	1	E620048
Misc	Connector DB9M (serial I/O cable, K2 end)	1	E620049
Misc	Backshell for serial I/O cable	2	E620050
Misc	4-conductor shielded cable (serial I/O cable)	10ft	E760009

K2 to Computer Cable Assembly

⚠ **CAUTION:** <u>**Do not use a pre-assembled cable of any kind**</u> **(printer cable, etc.) between the KIO2 and a computer.** Some pins on the KIO2 provide special signals not intended for use with an RS-232 interface, and you could damage the K2, KIO2, or the computer if these lines are used incorrectly. You must assemble your own K2-to-computer cable as explained below.

☐ Locate the 4-conductor cable. The cable can be cut to a shorter length if desired, but it will work equally well at its full length (15', 3 m). If a longer cable is needed, contact Elecraft. Any cable substituted for the supplied type must be shielded to minimize noise pickup.

☐ Remove 1/2" (12 mm) of the jacket from the cable. Be very careful not to nick the individual wires.

☐ Peel back and cut away the foil shield.

☐ The white wire will not be used for serial communications, but should be saved as a spare. For now, fold the white wire against the cable jacket at both ends, and secure it with small strips of tape.

☐ Strip off 3/16" (5 mm) of insulation from each insulated wire.

☐ Twist the strands of each wire tightly together, then tin the ends, using a minimum of solder.

☐ Locate the DB9F (female) and DB9M (male) D connectors. **Arrange them as shown in Figure 7, with the female connector on the left and the solder cups facing up.**

☐ Each connector has a 5-pin row and a 4-pin row. Make sure the 5-pin rows are facing each other. Figure 7 shows how the two connectors will be wired in the following steps.

☐ Clamp the DB9F (female) connector into a padded vise, if available. This will make wiring easier.

☐ As shown in Figure 7, pins 7 and 8 of the female connector can be wired together (using a discarded component lead) to provide RTS/CTS loop-back[1]. Some application software requires this *hardware handshaking* between the computer and K2. We recommend that you make this connection, unless you're sure that your application software does not need it. Some programs use these lines for other functions, such as CW keying of the transceiver. (If you have an existing computer-control installation, check the present connector wiring to see if RTS/CTS loop-back can be omitted.)

☐ Clip the bare shield wire off at the PC end of the cable only. The shield wire will be connected only at the K2 end.

---

[1] RTS = Request to send, CTS = Clear to send.

☐ Solder the RED, GREEN, and BLACK wires of the PC end of the cable (the end with no shield wire) to the female connector. Refer to Figure 7.

☐ Remove the female connector from the vise, and insert the male connector. Keep this connector in the orientation shown below.

☐ Solder the BARE (shield), RED, GREEN, and BLACK wires to the male connector as shown.
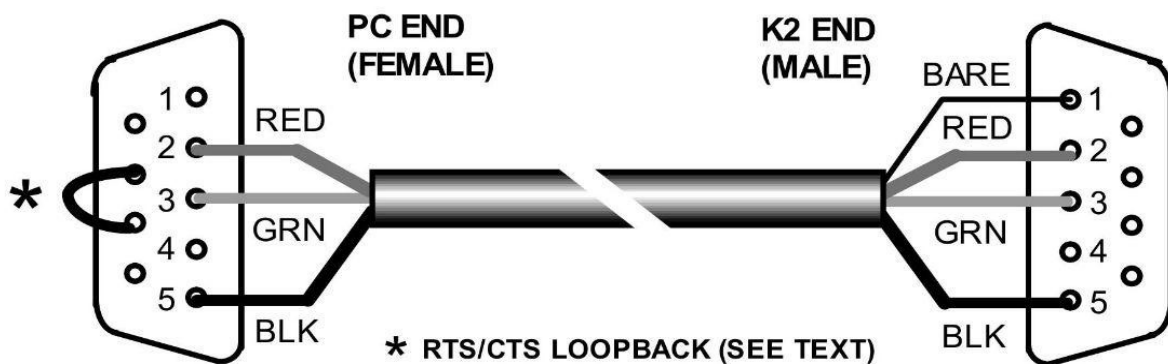
☐ Remove the male connector from the vise.

Figure 7

☐ Locate the connector housings (backshells). Open the bags and remove all hardware. Each backshell consists of two plastic halves, two long *jackscrews*, a small cable clamp, and associated hardware.

☐ Attach a backshell (two halves) to one of the D connectors as shown in Figure 8. Use the provided cable clamp to hold the cable in the proper position, then secure the clamp with two small screws. The two jackscrews must be retained in position by the shells when the two halves are joined. Secure the backshell halves with the provided hardware. Once this is completed, attach a backshell to the other D connector.
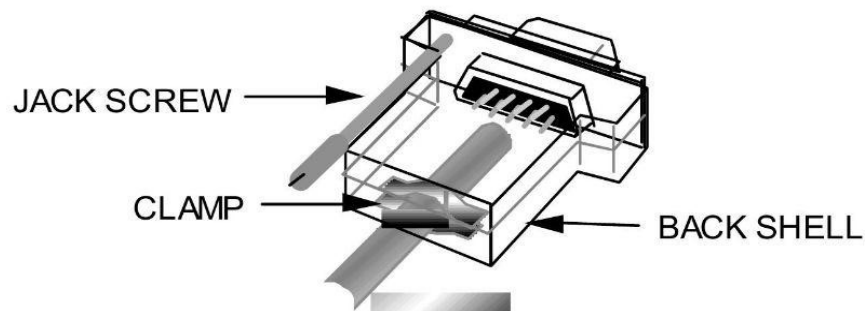

Figure 8

13