

ELECRAFT Application Note

Using the K3 with Elecraft XV Transverters

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Introduction

The Elecraft XV Series high-performance transverters may be used with any transceiver or transmitter/receiver pair that covers the 10 meter band. This application note describes how to connect your K3 to any combination of these transverters. Each transverter is selected using the K3 BAND switch and the actual receive and transmit frequencies are shown on the K3 display. Separate transverters are offered for the following bands:

- Model XV50: 50 to 52 MHz
- Model XV144: 144 to 146 MHz.
- Model XV222: 222 to 224 MHz.
- Model XV432: 432 to 436 MHz.

Those who wish to use an XV50 with the K3 may do so, even though the K3 includes six meters. For example, your antenna configuration and other station interconnections may favor a separate transverter on this band.

Also note that the XV50 has a better 6-meter MDS than the stock K3, because the K3 has been optimized for high dynamic range rather than for best sensitivity. However, a very low-noise preamp is available for the K3: the Elecraft PR6. This unit plugs directly into the RX ANT IN/OUT jacks on the K3 (requires the KXV3 option).

⚠ While not required, the Elecraft KXV3 RX Ant. I/O, IF Output and Transverter Interface is highly recommended for use with the transverters.

- **The KXV3 provides separate (split) receive transmit connections to the transverter and a low-level (1 milliwatt) transmit drive independent of the K3 power amplifier stages that eliminates the need to switch between the transverter and an external H.F. antenna.**
- **The KXV3 also eliminates the danger of damaging your transverter by transmitting with high-power RF into it accidentally.**

Installation Options

We recommend that you first set up your K3 as described in this Application Note to verify that your transverter is operating as expected. Once that has been done, the following optional setup configurations may help you better integrate the transverter into your station. These are described in detail in your Transverter Owner's manual:

1. *Daisy-Chaining Multiple Transverters.* Using multiple transverters without swapping cables.
2. *Using an External Receive Preamplifier.* Using the transverter with an antenna-mounted preamplifier to optimize noise figure with long feed lines.
3. *Using an External Power Amplifier.* Controlling an external power amplifier from the transverter.

Elecraft K3 With KXV3 Adapter

This setup uses the low-level transmit and separate receiver connections provided by the KXV3 Adapter.

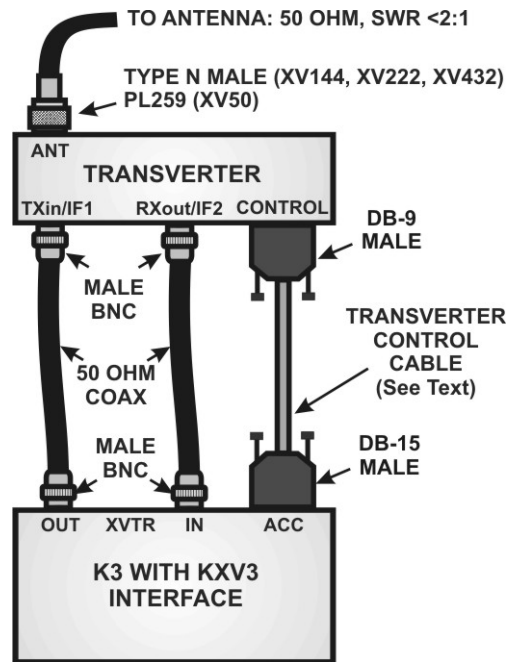


Figure 1. Connecting the Transverter to an Elecraft K3 With a KXV3 Interface.

Refer to the *Using Transverters* in your K3 Owner's Manual to configure the K3 for operation with the transverter:

- _ Note the XVn ADR number you have set up for the transverter.
- _ Set the maximum output to: **L1.00** (1.00 milliwatts).
- _ Set *CONFIG:TX INH* to **OFF**.

Refer to the following table and set the DIP switches on the transverter RF PCB for the XVn address you assigned.

XVn	DIP SWITCH POSITIONS			
	1	2	3	4
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	OFF	OFF	ON	OFF
4	OFF	OFF	OFF	ON
5	OFF	ON	ON	OFF
6	OFF	ON	OFF	ON
7	OFF	OFF	ON	ON
8	OFF	ON	ON	ON

Place 2-pin shorting blocks on the transverter RF PCB jumpers shown below:

- _ JP1: 1-2 _ JP2: 2-3 _ JP3: 1-2
- _ JP4: 1-2 _ JP5: 2-3 _ JP6: 2-3 _ JP9: 1-2

- Place a shorting block on 2-pin jumper JP8 (near the ON/OFF switch on the transverter RF PCB) and verify that there is no shorting block on JP7.
- Locate transverter front panel PCB 2-pin jumper, JP1, at the end of the socket-mounted controller IC. Verify that there is no shorting block on this jumper. (Do not confuse this JP1 with JP1 on the RF PCB.)
- Refer to *Transverter Control Cable* on page 4 to make up a new transverter control cable or to add connections for the transverter to your existing cable.
- Connect the cables as shown in Figure 1 on the previous page.
- Connect a 13.8 VDC, 6 ampere power supply to the transverter using a cable equipped with an Anderson Powerpole® connector.

Elecraft K3 With No KXV3 Adapter

This setup uses the K3's antenna port for both the transmit and receive signal path to the transverter.

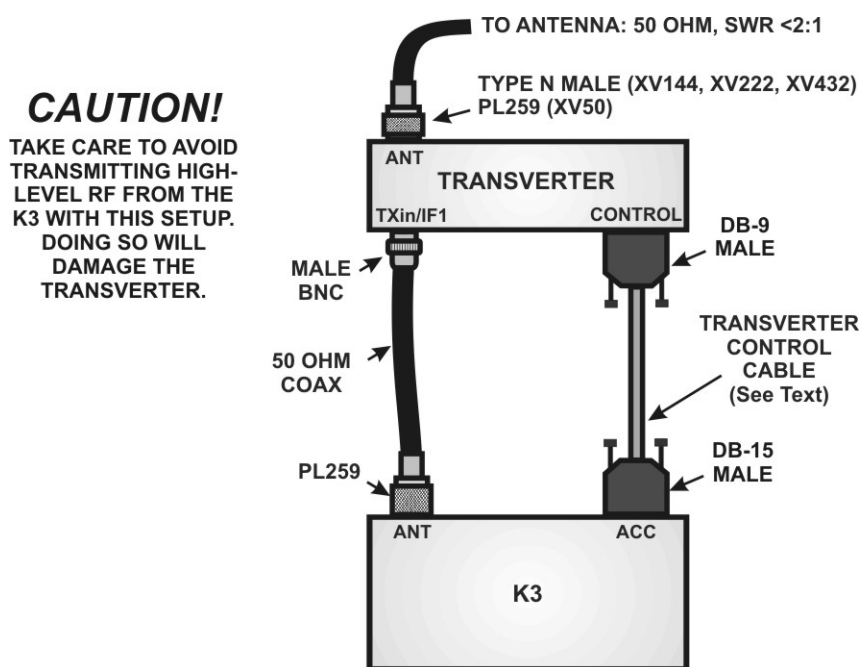


Figure 2. Connecting the Transverter to an Elecraft K3 Without a KXV3 Interface.

- Refer to the *Using Transverters* in your K3 Owner's Manual to configure the K3 for operation with the transverter:
 - Note the XVn ADR number you have set up for the transverter.
 - Set the maximum output to: **H5.0** (5 watts).
 - Set *CONFIG:TX INH* to **OFF**.

Refer to the following table and set the DIP switches on the transverter RF PCB for the XVn number you assigned.

XVn	DIP SWITCH POSITIONS			
	1	2	3	4
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	OFF	OFF	ON	OFF
4	OFF	OFF	OFF	ON
5	OFF	ON	ON	OFF
6	OFF	ON	OFF	ON
7	OFF	OFF	ON	ON
8	OFF	ON	ON	ON

Place 2-pin shorting blocks on the transverter RF PCB jumpers shown below:

- _ JP1: 2-3
- _ JP2: 1-2
- _ JP3: 2-3
- _ JP4: 2-3
- _ JP5: 1-2
- _ JP6: 1-2
- _ JP9: 1-2

Place a shorting block on 2-pin jumper JP8 (near the ON/OFF switch on the transverter RF PCB) and verify that there is no shorting block on JP7.

Locate the transverter front panel PCB 2-pin jumper, JP1, at the end of the socket-mounted controller IC. Verify that there is no shorting block on this jumper. (Do not confuse this JP1 with JP1 on the RF PCB.)

Refer to *Transverter Control Cable* on page 4 to make up a new transverter control cable or to add connections for the transverter to your existing Aux I/O cable.

Connect the cables as shown in Figure 2 on the previous page.

Connect a 13.8 VDC, 6 ampere power supply to the transverter using a cable equipped with an Anderson connector

Transverter Control Cable

Your transverter was supplied with a DB-9 cable connector and a length of multi-conductor wire for making up the transverter control cable. You will need to supply a male DB-15 connector to mate with the ACC connector on the back of your K3. A connector is available from Elecraft. Order Part Number E620161.


Wire your control cable as follows:

Cut a length of the 4-conductor cable to suit the needs of your station layout. Keep the cable length as short as practical. A maximum length of 2' (60 cm) is recommended. Longer lengths may be used, but you may need to supply a more heavily-shielded cable to avoid RF interference.

If you are integrating two or more transverters into the station at this time, cut a length of cable to reach from the first transverter to the next transverter in a daisy-chain arrangement (see Figure 3).

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

- Peel back and cut away the foil shield. Do *not* cut the bare ground wire.
- Cut the white wire where it exits the jacket. It will not be used.
- Strip of 3/16" (5 mm) of insulation from the black, red and green wires.
- Twist the strands of each wire together. If you are daisy-chaining cables, twist the ends of leads with like colors together. Tin lightly with solder.
- Solder the wires to the connectors as shown in Figure 3.

 Follow the color codes shown below when wiring the connector. The same color code is used in the control interface cables for other Elecraft equipment. Keeping a consistent color code will help avoid mistakes and make troubleshooting easier.

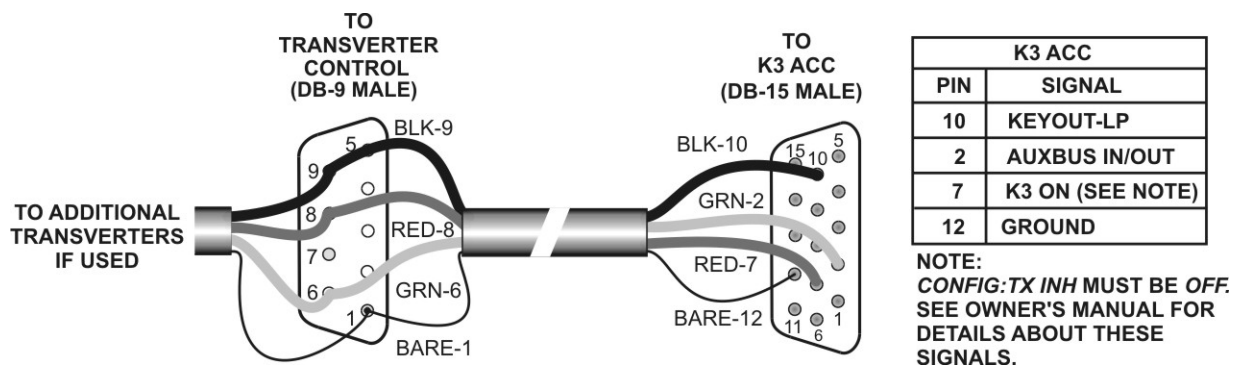


Figure 3. K3 Control Cable Wiring.

- Attach the connector shells as shown in Figure 4.

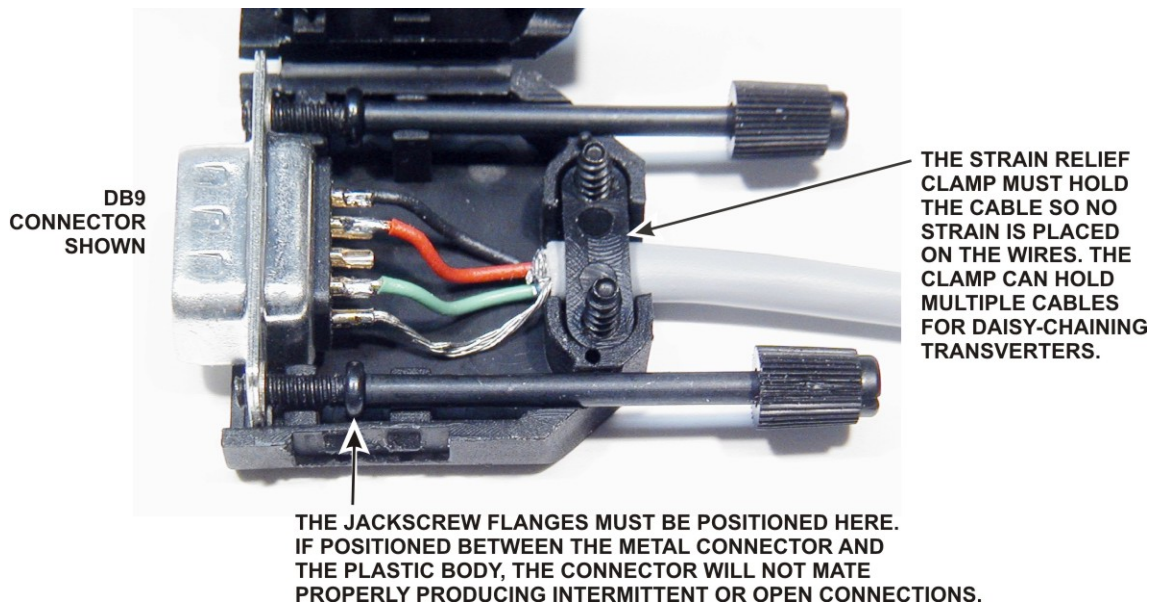


Figure 4. Installing Connector Shells.