

Setting Elecraft transceivers for soundcard digital

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The setup for soundcard digital modes using Elecraft transceivers (K3/K3S/KX2/KX3 and also the K2) is different than the setup advice for other amateur transceivers.

That is because the Elecraft transceivers are different from other amateur transceivers, mainly in the way the power is controlled.

The “common internet advice (and some software application instructions)” do not work well with the Elecraft gear. That advice is usually of the form – set the power for your maximum desired power and use the audio level to control the power output. That will cause “Power Hunting” problems with Elecraft transceivers. Ignore that advice if you are operating an Elecraft transceiver.

So how to setup Elecraft transceivers for soundcard digital modes?

1. First set the audio level correctly. There are 3 possible variables. First the soundcard setting for “Speaker” in the computer – set it for about 50% using the slider for the soundcard. Second is the “Power” slider in the software application – set that initially to about 50%.
2. Now attend to the Elecraft gear. First, you should be using DATA A mode (AFSK A for MMTTY or other RTTY applications). Set the K3/K3S MIC SEL to LINE and set the level to about 30 (midrange). For the KX2, KX3 you will be using the MIC input rather than LINE IN, but the MIC Gain setting should be a mid-range value. If set at a high or a low value, you may not be able to achieve the proper resolution in the audio setting. Should you not be able to achieve a midrange setting, you may have to add an attenuator between the soundcard speaker output and the MIC input to the KX3/KX2. A 10k resistor in series with the audio line followed by a 1k resistor from the line to ground will usually suffice.
3. Do a “transmit” from the software application, and adjust the audio level initially with the soundcard “speaker” slider and the software application “Power” slider until you have about 4 bars indicated on the “ALC” meter.
4. Then use the K3/K3S/KX3/KX2 MIC GAIN to refine the level to produce 4 bars solid with the 5th bar flickering on the ALC meter.
5. Don’t worry about the “ALC” indication. The ALC meter scale in DATA A mode indicates the onset of ALC at the 5th bar. The lower bars are there as an aid in setting the audio level. The 5th bar is the “NO ALC” point for the K3/K3S/KX3/KX2 – this is consistent with the internet advice to not drive the transceiver into ALC.
6. Once the audio is set, adjust the desired power output with the POWER knob, and all should be well.
7. For the K2, the situation is similar, except that there are no ALC bars to assist in adjusting the audio level. Increase the audio until you begin to see the ALC meter display 1 bar, and then back off until it is no longer displayed.
8. You may have to make slight adjustments of the audio level when changing from one digital software application to another, but the change should be small. Observe the number of ALC meter bars for each application before going on the air with a real signal.

I cannot emphasize enough that the Elecraft transceivers control power differently than all other amateur transceivers. You must set the audio properly, and adjust the power with the POWER knob, in

contrast to the common internet and software instructions which are written for transceivers that control the power in an open loop by setting the drive level. The Elecraft transceivers control power by measuring the actual power output and comparing it to the power requested by the POWER knob and adjust the drive accordingly.

That means if you set the power knob for 100 watts, and attempt to control the power using the audio level (as indicated by the internet advice), the Elecraft transceiver will attempt to increase the power even with the audio level at a low level to 100 watts. It will be unable to do that due to the low audio level, and thus the saga of “Power Hunting” will begin.

The Elecraft method of power control is superior in that it allows you to achieve any power level you desire without regard for the RF gain of the transmit stages differing from band to band. For instance setting the power knob to 5 watts will result in 5 watts power no matter what the gain of the RF transmit chain may be. But if the Transmit audio is insufficient, full power may be difficult to achieve, and the result is the “Power Hunting” referred to above.

Because of this closed loop power control mechanism, the Elecraft transceiver must be handled differently than other transceivers in the amateur arena.

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