

# K1EL Systems K46 Product Brief – 11/8/2024

Thank you for purchasing a K46 CW Modem. Please download product documentation from the URL listed below. The most important document is the **K46 User Guide**. Please review Appendix D before connecting the K46 to your PC's USB port to insure that you have the correct USB driver installed.

## K46 Product Website

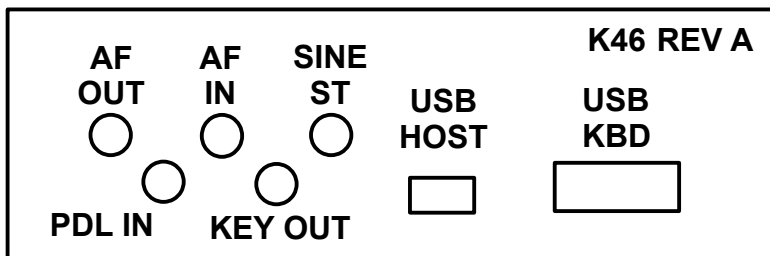
<https://www.k1elsystems.com/K46.html>

## K46 User Manual

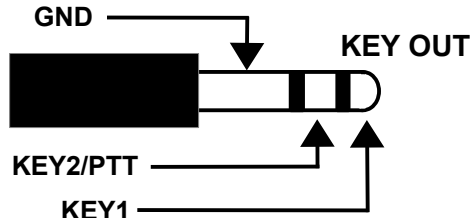
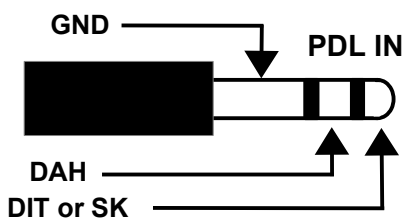
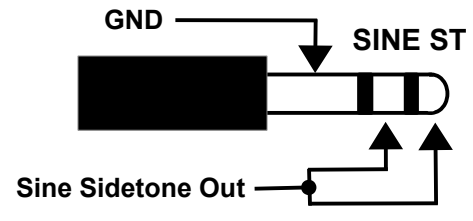
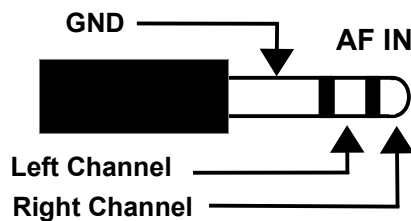
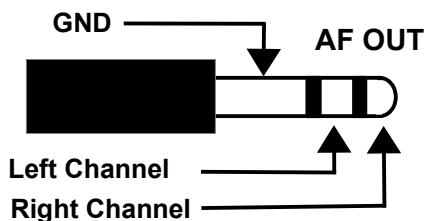
[https://www.k1elsystems.com/files/k46man\\_A0.pdf](https://www.k1elsystems.com/files/k46man_A0.pdf)

The K46 is the Swiss Army knife of CW keyers. A USB keyboard interface, CW reader, iambic paddle interface, backlit LCD display, sinewave sidetone output, audio splitter, a WinKeyer host interface, and optically isolated keying outputs are all presented in one compact box. In addition, the K46 will operate many different modes including RTTY transmit, QRSS, HSCW, and conventional Morse up to 99 WPM. The on board CW reader accepts audio from a receiver, then filters, demodulates, and decodes CW characters which are then displayed on the LCD. A signal level bar graph is used to tune in CW stations quickly and accurately. The K46 CWR is DSP based and works very well.

We sell the K46 assembled, tested, and ready to go. It is powered over a USB cable connection to a phone charger, USB battery bank, or a PC with a properly installed USB driver. Basic cabling will be described below but please refer to the user guide for full details.



There are seven connectors on the rear panel. Power is applied through the USB Host connector. A standard USB keyboard, wired or wireless, is attached to USB KBD. PDL IN is an 1/8" stereo jack which accepts either a paddle set or straight key input. The paddle inputs are activated when switched to ground (GND). A straight key can be used by connecting it between DIT and GND and setting the K46 configuration to straight key mode.



The K46 has an internal sidetone speaker which can be adjusted for frequency and amplitude. If desired, it can be disabled the sinewave sidetone generator can be used with an external speaker or headphones using the SINE ST output.

The AF IN jack is used to feed receiver audio into the K46 for Morse decoding. Stereo or mono input is acceptable. Audio line output from your receiver is a good signal source. An easier way is to connect the receiver's external speaker output to AF IN and then connect an external speaker or headphones to AF OUT. Inside the K46, AF IN is directly connected to AF OUT with a tap to the CWR input. This feature was added in response to requests for a simpler way to connect the K46 CWR to a receiver's audio output.

The K46 keys a transmitter through the KEY OUT jack. Two setups are supported; separate keying outputs (KEY 1 and KEY2) or a single output (KEY1) with PTT. All that's usually needed is KEY1 with PTT disabled. Our keying cable kit comes with an 1/8" to 1/8 inch stereo cable and an 1/8" to 1/4" adapter. One end plugs into the K46's KEY OUT port while the other end plugs into your radio's paddle or key input. A 1/4" adapter is included with the kit. Be sure the radio is set to operate in straight key input mode. K46 keying outputs and grounds are isolated from K46 internal ground and other signals by optically coupled solid state relays. These relays can switch voltages up to +/- 300 V at 120 mA. This covers most any solid state radio. Older vacuum tube radios that employ grid block keying may be compatible.

The USB HOST is a USB Mini B connector which provides power to the K46. A USB phone charger, portable battery bank, or other USB power source are acceptable. Since the K46 only draws about 150 mA, even the smallest phone charge will work fine. The K46 can also be powered from a PC's USB port and emulate a WKUSB if desired.

## K46 Power Up

For first time power on, it's a good idea to connect a keyboard to the K46. Connect the USB Host port to a USB charger or battery, it's best to leave host PC connection for a later time. When power is applied, an **R** will be sent in sidetone and after a few seconds the LCD display will light and the sign on screen will be displayed. This displays the firmware revisions of the various controllers in the K46. Then the USB keyboard driver is installed and the K46 is ready to use. Type on the keyboard and the letters will be sent in Morse. There are two display windows, one for Tx and one for Rx. At start up the K46 defaults to the Rx window. Press the **TAB** key to toggle from the Rx and Tx window and you will see letters as they are entered. Turning the encoder will adjust the K46's transmit speed. Set the speed to a low rate and enter a string of 10 or 12 letters. The letters are displayed in the Tx window ahead of their transmission. To see the real time transmit progress, press and hold the Windows key. If you plug in a paddle-set, you can enter letters and they will be sent and echoed into the Tx window. You can pause transmission with the **INSERT** key and cancel transmission with the **DELETE** key. There is a small access hole to the left of the encoder to adjust LCD contrast by small Philips screwdriver. Note that the K46 can be operated without a keyboard or with a numeric pad, please refer to the user manual for details.

## K46 Configuration

There are two setup command types; ESC and Control. ESC commands bring up sub menus that present modal options. Press **ESC** followed by the letter **C** to bring up the basic configuration menu set. There are five different menus each with eight settings. Use the left, right, up, and down keys to move between menu items. Press **Enter** to open up an option for modification. A setting is changed by either up/down keys, entering a numeric value, or by turning the encoder. When done, press either **Enter** to save the setting or **ESC** to cancel it. The K46 User guide describes all the ESC commands. ESC H will display a short list of them. To get directly to a particular configuration menu, hold the ALT key down and then press a number between 1 – 5. For example, pressing **ALT 3** takes you directly to configuration menu 3.

Control commands are immediate and take effect as soon as you enter them. Press and hold the Control (CTL) key while pressing the desired control key. For example, **CTL-T** will toggle tune mode. A description of all of the control keys can be found in the manual, **CTL-H** brings up a list of control command hints.

## Message Entry

There are 12 messages that are triggered by hitting **F1-F12** function keys. It's easy to edit a message; hold the **Shift** key down and press the F key you want to edit; **Shift-F1** for example. An edit window will be displayed with a Tag at the top and body of the message below. Enter a message in the lower pane. Press **UP** when you are on the top line to edit the tag. Replace it with an 8 letter description of the message, **CQX1** for example. When you are finished press either Enter to save the message or ESC to cancel. Now when you press **ESC M** from the main window, a list of memory tags is displayed with its F key assignment. Play a message by pressing the number displayed. Directly pressing the F key will also play the message. Buffered commands can be inserted into a message such as a speed change, timed delay or timed key down. Refer to the User Guide for a list of commands and how they work. Basically you enter a \ followed by command letter(s). If you enter \? while editing a message, a list of command hints are shown including additional parameters where required.

Examples: Delay for 5 secs: \K05, 7 sec key down: \K07, send serial number \N

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## CWR (CW Reader) Operation

The CWR is on by default. All you need to do is feed audio into the AF IN port and the K46 will process it after you have tuned a station in. There is quite a lot to learn to run the CWR and this is covered in the user guide. As you tune through a station, you will see the signal bar peak to the right. When you have tuned to maximum, the K46 will start to decode and display text along with the approximate WPM. Depending on band conditions, the CWR's settings may need adjustment. That is done by holding down **CTL** or **ALT** and pressing the left, right, up, or down arrow keys.

CWR Setting Keys are ALT L/R: Noise Filter, ALT UP/DN: Signal Threshold, CTL: L/R: Gain, CTL UP.DN: Spacing

## Warranty Information

The K46 is fully warranted to the original purchaser against defects in materials and workmanship for one year after purchase. This warranty does not cover damage caused by accident, improper care, or lightning. Please contact us before returning your K46 for repair and we will issue an RMA. Please submit questions by e-mail to: [k1el.kitsinfo@gmail.com](mailto:k1el.kitsinfo@gmail.com).

The K46 contains no internal adjustments or configurable jumpers, Please do not tamper with or modify the internal circuitry of your K46 as this will void the warranty and more importantly, may result in an unsafe operating condition.

## Product Liability

While every effort has been made to insure that the K46 is safe and documentation is clear and accurate, it is still possible to cause equipment damage or incur personal injury if the K46 is not used as intended, is connected incorrectly, safety guidelines outlined in the K46 User Guide are not followed, or K46 is modified. K1EL cannot be held responsible for damages in these or other similar events.