

K1EL Systems K45B Product Brief – 3/8/2023

Thank you for purchasing a K45 CW Modem. Please download product documentation from the URL listed below. The most important document is the **K45B User Guide**. It is essential that you read Appendix D starting on page 38 before connecting the K45 to your PC's USB port. This will insure that you have the correct USB driver installed.

K45B Product Website

<https://www.k1elsystems.com/K45X.html>

K45 User Manual

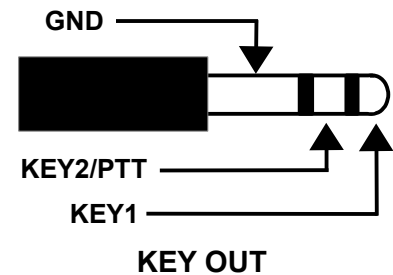
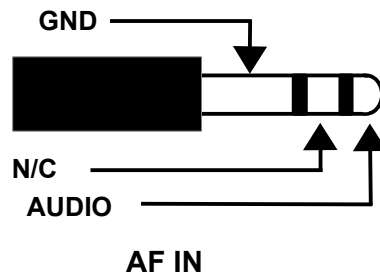
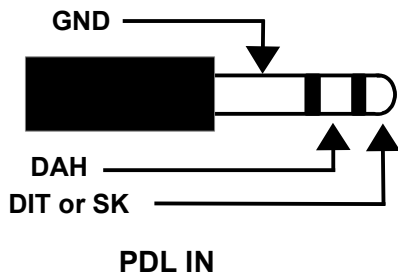
https://www.k1elsystems.com/files/k45man_B0.pdf

The K45 is the Swiss Army knife of CW keyers. A USB keyboard interface, CW reader, iambic paddle interface, backlit LCD display, a WinKeyer host interface, and optically isolated keying outputs are all presented in one compact box. In addition, the K45 will operate many different modes including RTTY transmit, QRSS, HSCW, and conventional Morse up to 99 WPM. We sell the K45 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 in this datasheet, please refer to the user guide for full details.

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 K45 CWR is a new design featuring more settings and good performance.



There are five connectors on the rear panel. Power is applied through the USB Host connector. A standard USB keyboard, wired or wireless, can be attached to the USB keyboard port (USB KBD). The Paddle connector (PDL IN) is an 1/8" stereo jack which accepts either a paddle set or straight key input. All connection diagrams are shown below. 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 K45 configuration to straight key mode.



The AF IN jack (middle diagram) is used to feed receiver audio into the K45 for Morse decoding. Stereo or mono input is acceptable. Audio line output from your receiver is the best signal source. Some radios have a separate connector for line out while others assign it to an AUX connector. On some SignalLink™ or equivalent interfaces, audio line out may be brought out to an 1/8" monitor port that can be connected directly to the K45 audio input.

The K45 keys a transmitter through the KEY OUT jack (rightmost diagram). Two outputs can be configured as separate keying outputs (KEY 1 and KEY2) or a single output (KEY1) with PTT. All you usually need is the KEY1 output, PTT disabled. Our keying cable kit comes with an 1/8" to 1/8 inch stereo cable. One end plugs into the K45's KEY OUT port while the other end plugs into your radio's paddle or key input. If the radio has a 1/4" key input jack, an adapter is included with the kit. Be sure the radio is set to operate in straight key input mode. K45 keying outputs and grounds are isolated from K45 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, but please verify that keying requirements are met beforehand.

The USB HOST connector provides power to the K45 through a USB-A to Mini-B cable. This cable connects the K45 directly to a USB phone charger, portable battery bank, or other USB power source. Since the K45 only draws about 150 mA, even the smallest phone charge will work fine. The K45 can also be powered from a PC's USB port.

Do not plug the K45 into your PC until you have referred to Appendix D on page 38 of the User Manual:
https://www.k1elsystems.com/files/k45man_B0.pdf for USB Driver Information

K45 Power Up

For first time power on, it's a good idea to connect a keyboard to the K45. 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 side-tone 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 K45. Then the USB keyboard driver is installed and then the K45 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 K45 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 K45'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, briefly press 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.

K45 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 K45 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. **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 press **CTL-M** from the main window, a list of memory tags is displayed and where they are assigned. Play a message by pressing the number displayed. 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. If you enter **/?** while editing a message, a list of command hints are shown including additional parameters where required.

Examples: Delay for 5 secs **IK05**, 7 sec key down **IK07**, send serial number **IN**

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 K45 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. Depending on the signal level, the CWR's gain may need adjustment. That is done by holding down **CTL** and pressing left and right arrow keys. As you tune through a station, you will see the signal bar peak to the right. When you have tuned to maximum, the K45 will start to decode and display text along with the approximate WPM.

Warranty Information

The K45 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 K45 for repair and we will issue an RMA. Please submit questions by e-mail to: k1el.kitsinfo@gmail.com.

The K45 contains no internal adjustments or configurable jumpers, Please do not tamper with or modify the internal circuitry of your K45 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 K45 is safe and documentation is clear and accurate, it is still possible to cause equipment damage or incur personal injury if the K45 is not used as intended, is connected incorrectly, safety guidelines outlined in the K45 User Guide are not followed, or K45 is modified. K1EL cannot be held responsible for damages in these or other similar events.