

Keyboard Keyer User's Guide

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What it is.

This is a small, single-board device that connects a PS/2 keyboard to the Morse code key input of your ham radio transmitter. Type on the keyboard, and the transmitter will be keyed with the corresponding Morse Code. There are onboard visual (LED) and audio (speaker) outputs which are useful for code practice.

How it works.

See the Keyboard Keyer [project description](http://w8bh.net/project-description) at w8bh.net.

Quick Start Guide.

1. Plug your PS/2 keyboard into the matching jack on the left side of the board
2. Plug one end of a 1/8" male-to-male audio cable into the keyer-out jack.
3. Plug the other end of the audio cable into the key jack of your transmitter. This keyer assumes that the cable connector tip is (+) and sleeve is ground. Make sure your transmitter is configured for CW, and straight key input at the jack's tip. Disable transmitter power until you are ready to transmit.
4. Apply power to the board via the USB-C jack.
5. When the device is turned on, the LED and speaker will signal 'R', and the display will flash 'Ready'.
6. Characters typed on the PS/2 keyboard will be converted to Morse and sent to your rig.
7. See details below for configuring your keyer.

Command Summary:

Here is the keyer command set. Each command is described more fully in text that follows.

Keystroke	What it does
Ctrl-A or <Page Up>	Toggle Audio output on/off
Ctrl-C	Enter other ham's callsign
Ctrl-F	Create a function-key macro
Ctrl-L or <Page Down>	Toggle LED output on/off
Ctrl-N	Enter other ham's name
Ctrl-P	Adjust the audio output pitch (frequency)
Ctrl-Q	Set QSO counter
Ctrl-R	Reset all setting to their defaults
Ctrl-S	Save all current user settings
Ctrl-T	Set the audio output tone to a specific frequency
Ctrl-W	Display current WPM code speed
Ctrl-V	Display current software version
<esc>	Stops a macro in progress; erases screen
<home>	Erase screen
<up arrow>	Increase code speed by 1 WPM
<down arrow>	Decrease code speed by 1 WPM
<left arrow>	Decrement QSO counter
<right arrow> or <end>	Increment QSO counter & erase name/call
<F1> through <F12>	Play text macro #1-#12
<A> through <Z>, <1> through <0>, <!\$%'().,/>	Send Morse Code for the key
<*> asterisk	Send prosign SK, or continue a paused macro.
<+> plus	Send prosign AR
<=> equals	Send prosign BT
<(> open paren	Send prosign KN
<`> grave	Send callsign previously entered with CTRL-C
<~> tilde (Shift<`>)	Send name previously entered with CTRL-N

Function-key macros

Often-used messages can be stored and recalled with a single keystroke. A typical example is CQ: save the message "CQ CQ CQ de W8BH W8BH K", then send it later by pressing a function key. This tiny keyer lets us store a whopping 12 messages of 99 characters each.

To create a function key macro, type Ctrl-F on the keyboard. (That is to say, hold down the Ctrl key while you press F). Now, type out your message. When you are done, press the function key that you want to associate with this message. That's it. From now on, whenever you press this F-key, the message will be replayed. If you make a mistake while typing, just end it with the F-key and start again.

Macros you create are initially put in temporary memory, and will be erased when the unit is powered off. To save them permanently, use the Ctrl-S 'save' command.

To edit a macro, re-enter the macro: Ctrl-F, followed by your new macro text, followed by the function key.

To delete a macro, Ctrl-F, enter no text, and press the function key.

To play the macro, press its function key. If nothing plays, there is currently no text for this macro.

To abort a macro in progress, press the <esc> key. The macro will stop after the current character has finished sending.

Pausing macros

As you create macros, you might find instances when it would be convenient to pause for user input. For example, you could create a macro like this "UR RST IS 589. NAME IS BRUCE". But you probably don't want to give everybody a 589 report. One solution is end split it into two macros. Play the first macro "UR RST IS", type in the RST report, then play the second macro "NAME IS BRUCE". Alternatively, the macro pause "*" character lets you to keep the entire message in a single macro. Consider the following macro: "UR RST IS * NAME IS BRUCE":

1. Macro will play "UR RST IS", then pause for your input
2. Key in the correct RST report
3. Press "*" to resume the macro in progress
4. Macro continues "NAME IS BRUCE."

Try it. You will find pause/resume quite natural.

Macro substitution characters

In addition to the pause character, there are a few additional special characters that you can use:

- '#' QSO serial number. See QSO Counter section below
- '^' Other ham's callsign
- '~' Other ham's name

For example, “OK ~ back to you” will play “OK FRED back to you.” if you previously entered the name FRED with the Ctrl-N command. If you didn’t enter any name, it would play “OK back to you”. Similarly, “` de W8BH (“ would play as “de W8BH KN” with no callsign or “K8ZN de W8BH KN” if you had previously entered K8ZN with Ctrl-C.

QSO Counter

Many CQ contests require an exchange of QSO (serial) numbers. To send your QSO number, program a macro key with your exchange, and insert the ‘#’ character where the serial number is required. For example, “599 #” will send “599 001” if the QSO number is currently 1, “599 002” if the QSO number is 2, and so on. The number format is set by two coding options, LEADING_T and SHORT_SERIAL:

SHORT_SERIAL	LEADING_T	QSO #8	QSO #28	QSO #328
False	False	“008”	“028”	“328”
False	True	“T08”	“T28”	“328”
True	False	“08”	“28”	“328”
True	True	“T8”	“28”	“328”

The LEADING_T option replaces a leading 0 with its CW shortcut ‘T’. Use the SHORT_SERIAL option to send only 2-digits if the QSO number is less than 100.

The current QSO number is always displayed in the status bar. The QSO number is automatically incremented after each use of a counter macro.

To set the QSO number to a specific value, press CTRL-Q.

To manually increment the QSO number without sending it, press the right-arrow key or End key.

To decrement the QSO number (for example, for resending an exchange), press the left-arrow key.

Adjusting keyer speed

By default, the keyer will send Morse Code at a speed of 20 words per minute. The current speed is displayed in the status bar, at the top-right corner of the display. The speed may be adjusted from 5 to 50 WPM. Use the <up arrow> and <down-arrow> keys to increase/decrease the speed, respectively. To save the current code speed, press Ctrl-S.

Name and Call Keys

Save a ham’s call with CTRL-C and/or their name with CTRL-N. Then, later in the QSO, you can quickly resend them using the <`> key for the call and <~> key for the name. The name and call information will remain in place until a) you manually increase the QSO number with <end> or <right-arrow>, b) you enter a new name or call, or c) you power down the unit.

Reset

Press Ctrl-R to reset all of your settings (speed, pitch, font size, audio, macros, etc) to their defaults. If you did this by mistake, don't panic. Just cycle the power. Your updated settings are not permanently saved until you press Ctrl-S.

Audio output

There are two onboard audio output options: piezo and small speaker. They are intended to give a little audio feedback and/or allow code practice without a transceiver. You may have elected to fit one, or both, or neither of them. Regardless, audio output is toggled on/off by the Audio command (Ctrl-A). A very small 'A' will appear in the display status bar, at the top/left corner of the display, when audio output is active.

By default, the side-tone pitch is 1200 Hz. There are two ways to adjust the pitch. Press Ctrl-P, and then press <Page Up>/<Page Down> to change the pitch in 100 Hz intervals. Pressing <up>/<down> keys will change the pitch in 10 Hz intervals. Press <enter> to end. Alternatively, you can directly enter the tone frequency with Ctrl-T. I couldn't decide which one I liked best, so I kept them both. Press CTRL-S to save the new pitch.

LED output

This keyer provides visual output in the form of an optional LED. LED output is toggled on/off by the LED command (Ctrl-L). A small square in the display start bar is solid (filled in) when LED output is active, and empty when LED output is disabled.