

# YACK User Manual

## Version 1.6j for 3CPO

YACK (Yet Another CW Keyer) is a universal CW keyer developed for the Atmel ATTiny processors by Jan Lategahn DK3LJ with modifications by Jack Welch AI4SV. Further modifications for 3CPO were developed by John Clements KC9ON.

### Startup

**Default Settings:** The keyer initial settings on first power on is IAMBIC B at 15WPM. This can be changed to your own setting as shown below.

**Power On:** The keyer will respond with **HI** when powering up.

**Straight Key Operation:** Connect a straight key into the jack. Either a Mono jack may be used or a stereo jack with the ring (middle connection or DAH) connected to shield (ground). The keyer will automatically see the “mono” jack on power up and put the keyer into straight key mode. The PLAY1 and PLAY2 buttons will still play back the contents of the memory. However, going into command mode will only respond to a paddle keyer!

### 3CPO Buttons

**ON** – Turns the unit on and off.

**Play 1** – Play back the contents of memory 1.

**Play 2** – play back the contents of memory 2.

**QRS** – each button press will slow the speed by 5WPM. Your original WPM can be retrieved by powering the unit off and on or by pressing the reset button.

**Reset** - Equivalent to powering the unit off and on. This will quickly restore any presses of the QRS button back to your default WPM setting.

**COMMAND** – Enters command mode. See below for command mode settings.

### Speed Change

Speed can be changed by pressing and holding the **COMMAND** button while operating the **DIT** and **DAH** paddles. DIT reduces speed while DAH increases speed. The keyer plays an alternating sequence of dit and dah while changing speed without keying the transmitter.

### Command mode

Pressing the command button without changing speed will switch the keyer into command mode. This will be confirmed with the '?' character. Another press of the same button takes the keyer back into regular keyer mode and will be confirmed by sending **OK**.

During command mode the transceiver is never keyed and side tone is always activated. Further functions can be accessed by keying one-letter commands as listed below. After 6 seconds of inactivity the keyer will return to regular mode and send **OK**.

If a command is not interpreted properly an error message of 8 dits is sent. Successful commands will typically respond with '**R**'.

# **YACK User Manual**

## **Version 1.6j for 3CPO**

**It is highly recommended** to perform the 0 - LOCK command after you have made your setting preferences to avoid accidentally changing them. Locking will prevent commands 1, 2, A, B, D, F, I, K, L, R, S, & X, from being changed until the 0 – UNLOCK command is given.

### **COMMANDS - BASIC**

<b>H</b>	<b>PLAY 1</b>	The stored message 1 is played back with keying enabled (if configured). A press of the command key immediately returns the keyer to keyer mode so a QSO can be started.
<b>5</b>	<b>PLAY 2</b>	The stored message 2 is played back with keying enabled (if configured). A press of the command key immediately returns the keyer to keyer mode so a QSO can be started.
<b>1</b>	<b>RECORD 1</b>	Record to internal message 1. The keyer immediately responds with "1" after which a message up to 100 characters can be keyed at current WPM speed. After 5 seconds of inactivity the message is played back once and then stored in EEPROM. Choosing "1" but not keying a new message deletes the chosen message buffer content.
<b>2</b>	<b>RECORD 2</b>	Record to internal message 2. The keyer immediately responds with "2" after which a message up to 100 characters can be keyed at current WPM speed. After 5 seconds of inactivity the message is played back once and then stored in EEPROM. Choosing "2" but not keying a new message deletes the chosen message buffer content.
<b>W</b>	<b>QUERY SPEED</b>	The keyer responds with the current WPM speed.
<b>U</b>	<b>TUNE</b>	The transceiver is keyed for a duration of 20 seconds for tuning purposes. Tuning mode is aborted once either DIT or DAH paddles are touched or the control key is pressed.

### **COMMANDS - KEYER**

<b>A</b>	<b>IAMBIC A MODE</b>	Sets IAMBIC A as permanent keying mode.
<b>B</b>	<b>IAMBIC B MODE</b>	Sets IAMBIC B as permanent keying mode.
<b>D</b>	<b>DAH PRIORITY</b>	In squeezed state a sequence of DAHs is sent. Some of the first generation keyers exhibited this behavior so the chip can simulate

# **YACK User Manual**

## **Version 1.6j for 3CPO**

that.

- L      ULTIMATIC MODE**      Sets the keyer into ULTIMATIC mode. In Ultimatic mode always the last paddle to be touched is repeated indefinitely when paddles are squeezed
- X      PADDLE SWAP**      DIT and DAH paddles are swapped.

### **COMMANDS – TRANSMITTING AND TONE**

- I      TX INVERT**      This function toggles whether the "active" level on the keyer output is positive or negative. This setting is dependent on any additional attached keying circuits or radios. Normally this command is left alone.
- K      TX DISABLE**      Toggles the setting of the TX keyer output. In default state the keyer switches the output line when it is in keyer mode. Toggling this setting enables or disables that function. NOTE: Keying is always off in Command mode.
- S      SIDETONE**      The side tone oscillator setting is toggled (ON -> OFF or OFF -> ON). NOTE: This setting is only of relevance for regular keying mode. Side tone is always on in command mode.

### **COMMANDS – FEATURES**

- C      CALLSIGN TRAINER**      The keyer plays a generated 2x2 call signs (side tone only) at the current WPM setting. The call signs are then entered back using the iambic key. If it is repeated correctly, "R" is played and the next call sign is given. If a mistake was sensed, the error pro-sign (8 dots) is sounded and the current call sign is repeated again for the user to try once more. If nothing is keyed for 10 seconds, the keyer returns to command mode.
- Z      ADVANCED TRAINER**      Similar to the training mode above except on each successful entry the speed is increased by 1WPM. An unsuccessful entry reduces the speed by 1WPM. Pressing the command button will terminate the training, return the keyer to the original WPM speed, and give statistics of speed at end of session, number of calls sent, and number of calls correct. Do not press command mode while the keyer is sending. The last call sign sent is not counted.

# **YACK User Manual**

## **Version 1.6j for 3CPO**

- N      BEACON MODE**      The keyer responds with "N" after which a number between 0 and 9999 can be keyed. After a 5 second timeout the keyer responds by repeating the number and 'R'. Once the keyer returns to keyer mode, the content of message buffer 2 is repeated in intervals of n seconds. The setting is preserved in EEPROM so the chip can be used as a fox hunt keyer.  
Returning to command mode and entering an interval of 0 (or none at all) stops beacon mode. Keyer will respond with 'R'.

### **COMMANDS - GENERAL**

- R      RESET**      All settings are returned to their default values except for the stored messages in the message buffers. Restored settings include speed, Paddle Swap, TX level inversion, side tone and TX keyer settings. Speed will be reset to 15WPM in IAMBIC B mode.
- V      VERSION**      The keyer responds with the current keyer software version.
- F      FARNSWORTH PAUSE**      Allows setting of an extended inter-character pause in all sending modes which makes fast keying easier to understand. Note that this of course only influences RECEPTION, not TRANSMISSION. If you desire Farnsworth mode in transmission, please manually pause during characters.
- 0      LOCK/UNLOCK**      The 0 command locks or unlocks the main configuration items but not speed and playback functions.

### **HARDWARE RESET**

You may find you have lost control of your keyer by setting the speed too fast or accidentally issuing a command (See LOCK) which makes it act strange. The keyer may be reset to factory defaults with the following sequence:

- 1) Power on the unit.
- 2) Hold the command button down
- 3) Push and release the reset button
- 4) Release the command button

Memories will still be in tact.

### **YACK IC PINOUT**

Pin 1 : RESET  
Pin 2 : DIT  
Pin 3 : DAH

## **YACK User Manual**

### **Version 1.6j for 3CPO**

Pin 4 : GND

Pin 5 : TX key line

Pin 6 : Side Tone key line

Pin 7 : ADC Input from command keys – See 3CPO schematic for example.

Pin 8 : +5V

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## **YACK INFORMATION**

The original YACK software and instructions can be found at:

<http://sourceforge.net/projects/yack/>