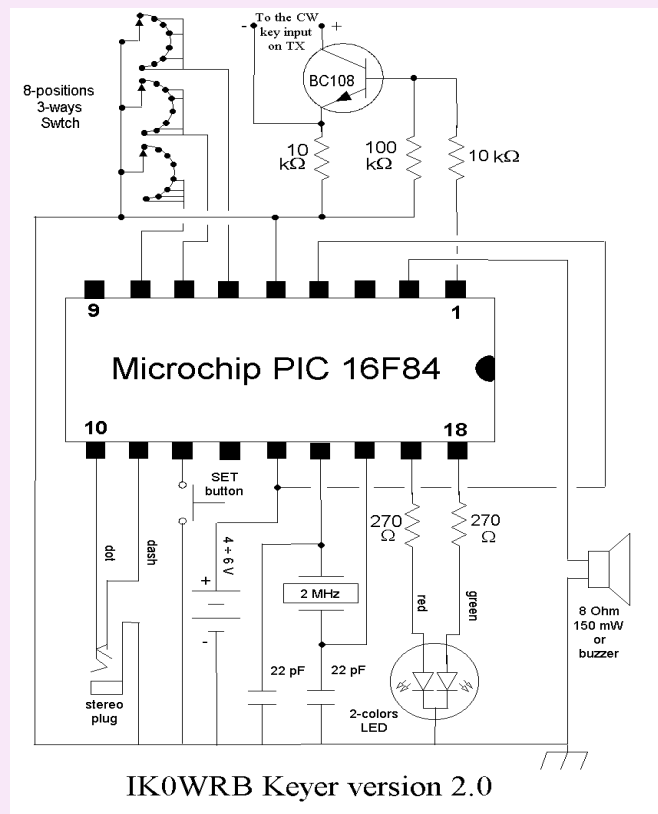


IK0WRB Keyer

Old version 2.0

The circuit

What follows is the scheme of IK0WRB Keyer version 2.0



As you can see, it is quite similar to the version 1.0 circuit. The only differences are that you don't need a second optional button and you must use a 3-ways 8-positions switch. Please note that the switch may be replaced by a 3 bits rotary switch, but if you use a 4-bits switch you can also upgrade to version 2.1 of the keyer.

Components list

- a Microchip PIC 16F84, in the 18 pins package
- a 2 MHz quartz crystal, parallel resonance
- 2 capacitors of 22 pF, 15 VL
- 2 resistors of 270 Ohm, 1/4 Watt
- a resistor of 100 kOhm, 1/4 W
- 2 resistors of 10 kOhm, 1/4 W
- a 2-colors LED, common cathod, red and green
- a button, normally open
- 2 jack plugs, 3 poles (stereo)
- a loudspeaker, 4 - 8 Ohm 150 mW, or a buzzer
- a BC108 transistor, or similar
- a 3-ways 8-positions switch (or a 3 bits binary switch)

The program

You can download here the hex module you need to program the Microchip PIC 16F84 chip you need for the keyer. This is the software for **version 2.0** of the keyer. New versions of the circuit (and related software) may be released in the future. The zip archive contains the circuit scheme, this page and the hex module.

How to use the keyer

The usage of the keyer is basically identical to that of version 1.0. But setting parameters and moving to the different states is far more quick and simple, thanks to the presence of the switch. Moreover the LED is now used to signal the settings of some parameters.

The switch can be set to 8 different positions and each one is a different state of the keyer.

The following table shows how to operate the keyer version 2.0.

Operating version 2.0 of the IK0WRB Keyer

Switch position	Status	LED color	Left paddle	Right paddle	SET button
1	Ready	Green while rx. Red while tx. Yellow if tx local.	Dot1/4	Dash1/4	Send single CQ message
2	Speed	Yellow	Decrease speed	Increase speed	Sound current speed (Snn)
3	Weighting	Yellow	Decrease weight	Increase weight	Sound current weight (Wn or Wn.5)
4	TX	Green if disabled. Yellow if enabled.	Enable transmitter	Disable transmitter, enable speaker	Sound status (TY or TN)
5	Audio	Green if disabled. Yellow if enabled.	Enable audio monitor	Disable audio monitor	Sound status (AY or A1/41/4N)
6	Beacon	Green if message present. Off if no message.	Starts Beacon sequence. During carrier: immediate call.	During call: go to carrier. During carrier: more carrier.	Starts Beacon sequence. During tx or pause: stops Beacon sequence.
			Autostart beacon sequence at power on		

7	CQ	Green if message present. Off if no message.	Starts CQ sequence. During pause: immediate CQ.	During CQ: go to pause. During pause: more pause.	Starts CQ sequence. During CQ or pause: stops sequence
8	Enter	Green	Store a dot	Store a dash	Single pressure: insert inter-word space.
			Store an inter-character space when pausing 0.25 sec.		2 consecutive pressures: delete last char.

Notes

Changes from version 1.0 to 2.0 are **in bold**.

- [Speed](#) can be changed with a 1 wpm step, **from 1 to 60 wpm**.
- [Weighting](#) can be set from 2 to 5, with a step of 0.5
- [CQ message](#) stored in the memory can be 236 *symbols* long, where a symbol can be a dot, a dash or an inter-character space. **Inter-word space is coded as two consecutive inter-character spaces**.
If the memory is full while storing, the keyer stops storing, retaining the message stored up to that point. The message is in the EEPROM, so it's never lost, unless you decide to store another one.
- [CQ mode](#): **you can send a single CQ by pressing the SET button in the Ready state** or start a continuous CQ sequence by pressing left paddle or SET button in the CQ mode. RX period is fixed at 10 seconds, but **you can momentarily reduce or prolongue it buy using the paddle keys**. See table for details.
- [Beacon mode](#) works as CQ mode, but with a 20 seconds pause with carrier ON. **You can modify the pause periode as in CQ mode**.
- [There is no on/off switch](#), because the keyer goes into sleep mode after about 33 seconds of inactivity. A pression of one of the paddles or the SET button, awakes the chip and the keyer continues its activity, as if it had been always on.
In sleep mode the circuit drains less than 10 microamperes, comparable to the auto-discharge of batteries.

Future releases

If you have a **4-bits binary switch** around, please use version 2.1 of the IK0WRB Keyer.

No further releases are planned at the moment, since I used all the 1024 program memory words of the 16F84! In fact, I had to work to fit the chip size...