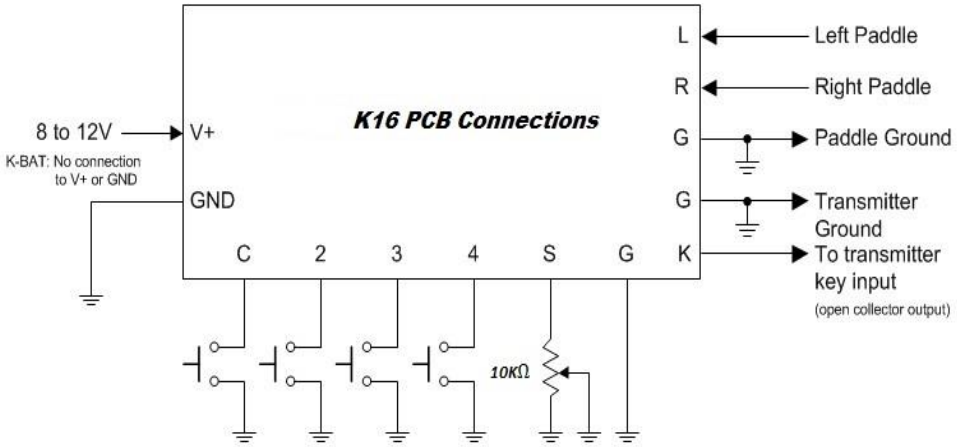
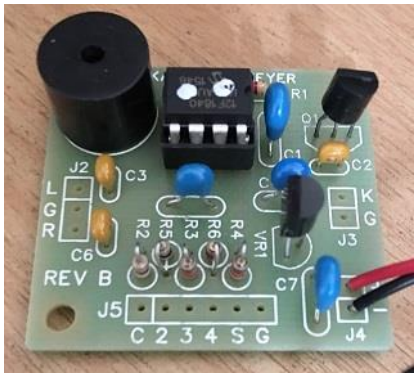


NOTES

KANGA PRODUCTS

The "Kanga" K1EL - K16 Keyer



The Kanga K16 Keyer is an inexpensive single IC Morse Code Keyer/Processor which can be used either in contesting or casual use.

It is based on the very popular ***K16 I.C. developed by Steve Elliot K1EL (Winkeyer fame)*** who kindly allowed Kanga Products to produce their own PCB.

The K16 Keyer has many original features, and with a PCB measuring 38mm x 35 mm it is small enough to fit inside a transceiver.

Firstly check you have all components against the components listed. You may find that a direct replacement part has been substituted. This is due to the ever increasing change in electronic component manufacture or components becoming obsolete.

These changes will be noted in the component list. If a component is missing or damaged please contact Kanga Products for a replacement. You will need to down load the ***"K16 Features Document"*** this will cover the loading of memories and other features of the K16 IC.

These are on the K1EL Systems website:
https://www.hamcrafters2.com/files/k16man_R11.pdf

Construction

Fit the components in the order listed into their positions marked on the board, solder in place and trim off excess wire.

NOTE: That R2 – R6 are mounted vertically, see fig 1. For shaping of resistors R2 – R6 before soldering to PCB. ***"Now check your work for bridging and solder splashes"***

Now install all the capacitors, these are non-polarised and maybe fitted either way round. Followed by the IC socket, making sure it is correctly orientated.

Observing polarity, positive (+) pin toward the IC socket solder into place the Piezo Speaker. Do not over heat as this will damage the speaker.

Now fit Q1 (BS170 Transistor) and VR1 (voltage regulator) observing the pattern on the PCB against the shape of the component. *"Now check your work again for solder splashes or bridges"*

Testing Procedure

Before fitting U1 (K16 IC), check to ensure you have + 5v at Pin 1 of the IC socket. If you do not, then switch the power off and check that you have fitted VR1 the correct way round. Once confirmed that you have +5v at Pin 1 disconnect the power and fit U1, ensuring location of Pin 1.

Reconnect the battery and you should now hear one **'R'** *(di-dah-di)* in Morse from the speaker. Use a jumper wire between ground and the L and/or R points on the PCB and you should hear *dits and dahs*. Now Ground Msg1 point and you'll hear **'R'**. If you ground Msg2, Msg3 or Msg4 the Keyer will send **'MT'**.

PCB Connections

The diagram illustrates the connection to the K16 Keyer PCB. Not all are required such as the push buttons, the K16 will work fine with just one tied to the Command (C) input. Alternatively, 2, 3 or 4 pushbuttons can be connected. The more pushbuttons, the more messages can be accessed. A speed pot (10kΩ Linear) is also not a requirement. If you do not wish to use one, simply tie the **'S'** input to ground, this will tell the K16 IC to operate in fixed speed mode.

Please Note:

The keyed output is open collector, which means it acts as a switch to ground. The keyed output can be directly connected to a transmitter key input. Beware that the Key output can only switch voltages up to 60V DC. It is not capable of directly keying a vacuum tube transmitter which employs negative keying voltages.

Component Listing

Part	Type	Markings	Notes
K16 PCB		Ver B	
R1	4.7KΩ	Yellow, Violet, Red, Gold	
R2	470Ω	Yellow, Violet, Brown, Gold	
R3	1KΩ	Brown, Black, Red, Gold	
R4	1KΩ	Brown, Black, Red, Gold	
R5	1KΩ	Brown, Black, Red, Gold	
R6	1KΩ	Brown, Black, Red, Gold	
C1	100nF	104	Multilayer (Blue)
C2	1nF	102	Multilayer (yellow)
C3	1nF	102	Multilayer (Yellow)
C4	470nF	474	Multilayer (Blue)
C5	10nF	103	Multilayer (Blue)
C6	1nF	102	Multilayer (Yellow)
C7	100nF	104	Multilayer (Blue)
SP1	Piezo Speaker		Observe Polarity
Q1	BS170 Transistor		See Notes
VR1	LM78L05 (+5 Volt Reg)		See Notes
8 Pin DIL Socket			Note Pin 1
UI	K16 Keyer IC		Note Pin 1
Battery Clip	PP3 Battery Type		Note Polarity

For further information on programming the memories, you will need to download the K16 Features Manual which also includes a tutorial, from K1EL Systems Website.