

Building and using:

Keyer Accessory kit
from Jackson Harbor Press

Introduction:

The kit is intended to provide both a low power, regulated 5 volt supply AND a tube transmitter keying relay for any keyer which doesn't have these features built in.

General notes on building the Keyer accessory kit

The Solid State Relay (S1) is an MOS device. This means that it should be handled as little as possible to prevent static damage. The builder should use a grounding strap and anti-static mat if available or at the very least, work on a grounded metal surface and be sure to touch ground prior to touching these devices.

One decision the builder should make before starting construction of the Keyer accessory kit is how the project will be mounted in the keyer case. The single mounting hole is sized at 1/8 inch for 4-40 sized hardware.

The pads and traces are small and delicate - a small tipped, low power (25 watts or less) soldering iron should be used.

Building the Keyer accessory kit:

Step 1) Get the parts together: All of the board mounted components have been supplied but you will still have to provide off-board items to fully implement the kit. These items include:

Input power connector (a 9V battery "snap")
Output keying connector
mounting hardware, 4-40 sized

Step 2) Identify and orient the components: Most of the components should be fairly easy to identify and place - see the parts list and the parts placement diagram for descriptions. C3, the tantalum cap is marked for polarity - be sure to orient the side with the red (positive +) stripe (this side bulges out slightly) to match the + sign on the circuit board.

step 3) Place and solder the components on the main circuit board: Use the parts placement diagram for information on the placement and orientation of the parts. Clip the leads of the through hole parts after soldering.

- a) the 6 pin socket for S1, orient the notch side towards the WB9KZY marking on the board
- b) U1, TO92 packaged +5V regulator IC. orient U1 with the flat side towards the top of the board.
- c) R1, bend one of the leads of this part over and mount it vertically next to the S1 socket.
- d) C1, .1 uF, (light blue, marked 104), placed to the left of U1
- e) C2, .1 uF, (light blue, marked 104), placed to the right of U1
- f) C3, 2.2 uF, place on right side of board with positive stripe (bluing side) towards the + symbol on the board
- g) Connect the 9V battery snap (or other power input connector) to the ground and +Vin holes on the left side of the board. connect the black wire of the snap to ground, the red wire to +Vin.
- h) S1, form the leads of S1 and insert into the socket, with the pin 1 side (indicated by the round indented circle on the top of the part) towards the WB9KZY marking on the board.
- I) Connect the +5V output to the keyer power input
- j) Connect the keyer ground to the Keyer accessory kit ground
- k) Connect the keyer output transistor to pin 2 of S1.
- l) Connect the outputs of S1 to the output connector, usually one side of the connector will be grounded, it doesn't matter which of the two outputs of S1 are grounded. S1 will key both positive and negative voltages.

step 4) Check the board: Before proceeding, take the time to check the bottom of the board for solder bridges. Use the parts placement and bottom view diagrams as a guide to visually check for these shorts. It may help to clean the flux from the board and then use a strong light in conjunction with a magnifying glass to see these problems. Also, double check the orientation of the critical components such as the 2.2 uF tantalum cap and U1.. After you are convinced that the board is OK, connect the board to a 9V battery using a VOM to measure the current used, current should be less than 2 mA (depending on the keyer), if

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it's larger, power down and re-check the board for shorts and polarity problems. If the current is relatively low, power down, disconnect the meter, the board is ready for use.

Circuit description:

The circuit consists of a low quiescent power, low dropout +5V regulator, the LM2936. C1, C2 and C3 are bypass capacitors used to prevent problems with RFI and oscillation. U1 should use about 7 uA of current at 9 volts of input. This is low enough that a power switch may not be required. U1 is quite rugged and should be able to withstand relatively high input voltages (35 volts) along with polarity reversals. The keying circuit uses a 6 pin Solid State Relay (SSR) which can switch up to 400 V DC or AC at 120 mA of load current.

Please feel free to email with any questions, comments, suggestion or problems with this kit. My email address is:

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Thanks for choosing the Keyer accessory kit and

Best Regards,

Chuck Olson, WB9KZY

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List of parts included with the Keyer accessory kit

Ref	designation	Description
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C1	.1M or 104	.1 uf multilayer ceramic .1" lead space cap
C2	.1M or 104	.1 uf multilayer ceramic .1" lead space cap
C3	.2u2 16	2.2 uf tantalum .1" lead space cap, red stripe indicates positive (+) side
R1	750 ohms	purple, green, brown, gold 1/4 watt resistor
S1	AQV214EH	SSR (Solid State Relay), 6 pin DIP, 400 V, 120 mA
U1	LM2936	low power, +5V regulator IC circuit board

Items you may need to provide to complete the Keyer accessory kit

- 4-40 sized mounting hardware
- 9V battery snap connector OR other power connector
- transmitter output jack
- solder, wire, good quality desoldering braid