

Constructing and Operating:



Grid Block Keying Adapter

A kit to connect your solid state keyer to a negative keying voltage vacuum tube transmitter or transceiver.

General notes about building:

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

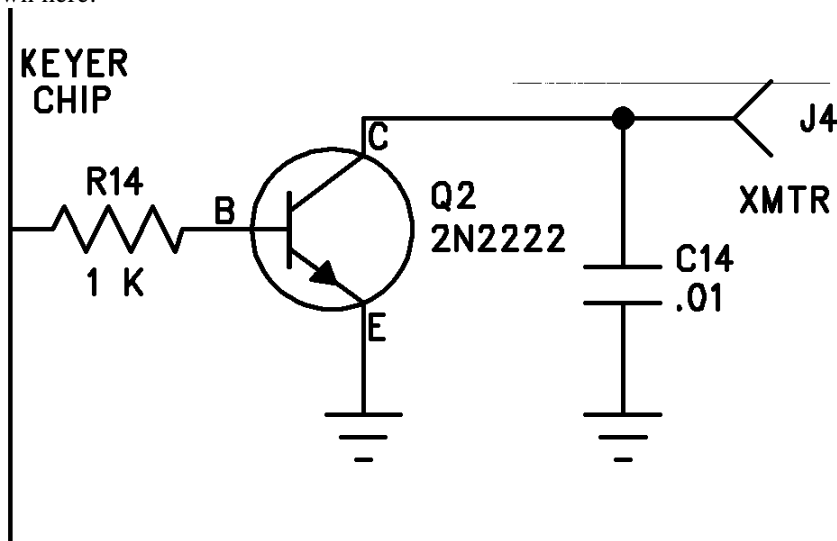
I used machined pin SIP sockets (not supplied) to provide the connection points to the keyer +5V and keying outputs and transmitter key input. I then was able to plug the wires from the keyer and transmitter into the SIP sockets which simplifies moving the unit in and out of the enclosure. The machined pin sockets are available in snappable strips from most of the mail order surplus electronics parts suppliers.

Step 1: Double check that this kit will work with your keyer and transmitter

This kit is intended to be used with a vacuum tube transmitter that uses a negative keying voltage usually called grid block keying. This can be determined from the transmitter manual or by measuring the voltage at the key terminals. This voltage should be negative and in the range of -50 to -150 volts. 90 volts can deliver a very unpleasant jolt - review electrical safety guidelines before trying to measure this voltage.

Older vacuum tube equipment often used high voltage positive keying voltages usually referred to as cathode keying. The user shouldn't attempt to use this kit with a positive keying voltage.

Most modern keyers run on 5V and use an open collector NPN output transistor circuit to key a solid state rig. An example of this circuit (from the Island Keyer) is shown here:



Example keying circuit from the Island Keyer

If your keyer output circuit is substantially different from this example, contact Jackson Harbor Press before proceeding with kit construction.

Step 2: Get the parts together

All of the essential board mounted components have been supplied. Inventory the parts using the stocklist. You will still have to provide offboard items from the stocklist to fully implement Grid Block Keying adapter including wire, solder and mounting hardware.

Step 3: Mount and solder the components on the circuit board

Use the parts placement diagram to determine the placement and orientation of the parts.

Form the leads on R1 (1 k ohms, brown, black, red) and R2 (10 k ohms, brown, black, orange) for .4" lead spacing, then insert and solder them at the spots shown on the diagram to the right and just below the center of the board.

Insert and solder Q1 (MJE350, TO-225AA transistor) as shown at the center of the board. If a lower height profile is desired you can form the leads perpendicular to the board so the the transistor lays down towards the top of the board.

Form the leads on D1 and C1 for .4" lead spacing , then insert and solder them to the left of Q1. Be sure to orient D1 with it's cathode band towards the bottom of

the board. If a lower height profile is desired you can swap the positions of **D1** and **C1** (because they are connected in parallel) so that **C1** lays parallel with the board to the left.

Step 4: Check your work

Before proceeding, take the time to check the bottom of the board for solder bridges. Use the bottom view of circuit board diagram 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.

Step 5: Connect the adapter to the keyer and the transmitter.

Connect the adapter to the keyer with 3 wires, first, 5V to the pad to the left of **Q1**. Second, keyer output to the pad to the right of **Q1**. Finally, use a metal standoff and star washers to mount and also ground the adapter to the keyer case. Next, connect the adapter to the transmitter (probably to a jack) by wiring to the **gnd** and **xmtr** pads at the top left of the board.

Step 6: Start it up!

Connect the transmitter to the the adapter - you should now be able to use your solid state keyer to key your grid block transmitter.

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Jackson Harbor Press
RR1, Box 91C
Washington Island, WI 54246
jacksonharbor@worldnet.att.net

Grid Block Keying Adapter Stocklist

<u>Qty</u>	<u>Ref.</u>	<u>Part Description</u>
1	Q1	MJE350 - High voltage PNP keying transistor
1	R1	1 k ohm 1/4 watt carbon film resistor (brown, black red)
1	R2	10 k ohm 1/4 watt carbon film resistor (brown, black orange)
1	C1	.01 uf, 500V disc ceramic capacitor
1	D1	1N4007, 1000V PIV, 1A rectifier diode
1	-	Grid Block Keying Adapter circuit board

The following items are not included in the kit:

solder

wire

4-40 mounting hardware (star washers, threaded standoffs, machine screws)