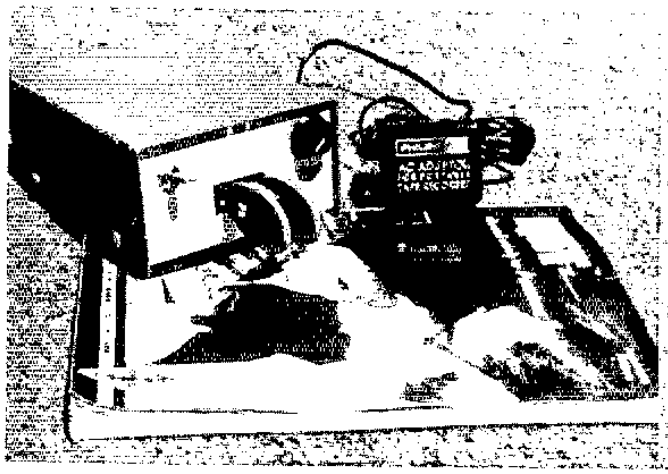
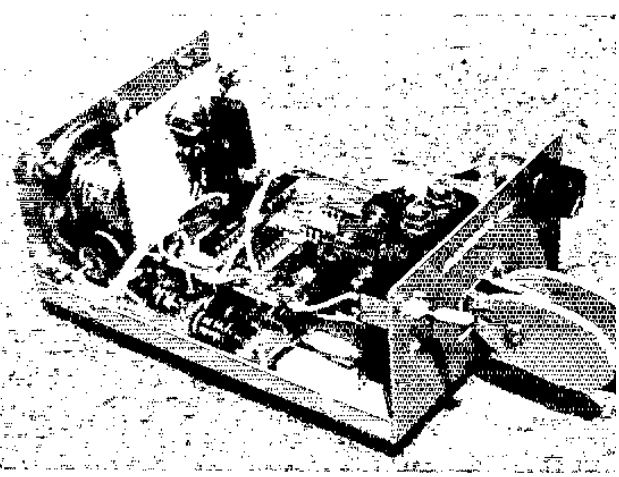
Hints and Kinks For the Experimenter





PACKAGING THE ACCU-KEYER

"Cw is dead!" cry the prophets of doom. Ask Jim, WB4VVF, about this statement. Since his original keyer article appeared in August 1973 *QST*, Jim has shipped more than 1500 printed-circuit boards, and reports that approximately 150 additional requests are received each month. This indicates a healthy interest in cw.

This is not meant to be a how-to-do-it article, but rather a source of ideas. The power supply for the Accu-Keyer is a commercially available ac adaptor, the type used to power portable tape recorders, radios and calculators. It measures 1-3/4 × 2 × 1-3/8 inches and furnishes 7.5 V dc at 130 mA. After several hours of operation the power supply package gets warm, but not hot, to the touch.

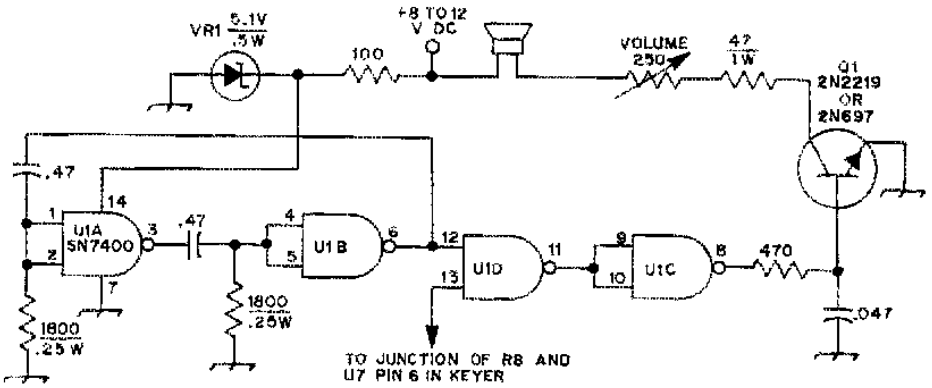
As can be seen in the photograph, the main circuit board, Brown Brothers key assembly, and monitor subassembly fit neatly inside a "mini" utility box which is available from Radio Shack. The box measures 7-3/4 × 4-3/8 × 2-3/8 inches and is rugged, attractive and priced reasonably. The gray hammertone finish and rubber feet help give the completed Accu-Keyer a professional appearance.

The schematic diagram shown in Fig. 1 was provided with the drilled circuit board obtained from WB4VVF. My monitor-oscillator was built on a 1-3/4 × 2-inch scrap of "perf" board, and was then epoxied to the rear of a two-inch round speaker. The speaker was mounted to the rear panel by using a scrap of copper window screening as a protective grill. Also located on the rear apron are two miniature phone jacks, one providing a connection for keyer output and the other for dc input.

The Accu-Keyer has an automatic character-space feature. After briefly disabling it during the pre-packaging stage of this project, I decided to use it without provisions to switch it in and out of the

Radio Shack catalog part numbers.

Item	Catalog No.
IC 7400, Quad NAND Gate	276 - 1801
Two Inch Speaker, 8 ohms	40 - 245
"Perf" board assortment.	276 - 1391
Toggle switch, subminiature.	275 - 324
"Mini" utility box.	270 - 232
Miniature jack and plug assortment.	274 - 335



circuit. However, if one is interested in retaining the in-out feature of automatic character spacing, there is ample room for a switch on either the front or rear panel. The front panel switch labelled TONE is the monitor disable switch. If your rig has a built-in sidetone oscillator, it will not be necessary to use the keyer monitor.

Included on the schematic diagram is a listing of the components with Radio Shack part numbers. It is given for those interested in duplicating this packaging scheme. – *Hal Morris, W4VUO/3*

NPN OR PNP WITH A VOM

A simple outline is offered below to determine the base configuration and type (npn or pnp) of a transistor. The only test equipment required is a VOM.

The first step is to set the VOM in the proper mode. Place the meter in the R × 100 position. The black meter lead is connected to the COMM. meter terminal, and the red lead is connected to the VΩA meter terminal (on some VOMs it is just Ω).†

The next step is to find the lead on the transistor that shows about the same resistance to each of the other two terminals. This is the base. Note the color of the meter lead. If red, the device is npn, if black, it is pnp. At this point, the base lead is known and the type is known.

Now set the meter to the high-ohms scale (R × 100K). Place the meter leads across the other two leads on the transistor. Reverse the meter leads to locate the lowest meter reading. Note the polarity of the meter leads. If the device is npn, then the black lead is on the collector and if it is a pnp type, then the red lead is on the collector.

The last terminal on the transistor, by the process of elimination, is the emitter. In a power transistor the case is generally the collector. It should be noted that although these tests are quite helpful in locating the different elements and types of transistors and will work 95% of the time, not all transistors can be identified in this manner. – *G. D. McKechnie, W4IKB*

[EDITOR's NOTE: Not all ohmmeters have the same polarity (red +, black —) when in the ohms position. In some instances, black may be the positive terminal. Confirmation of the test lead polarity may be found by placing a milliammeter across the leads while in the R × 1000 position. Proper meter movement will determine the ohmmeter polarity.]

OVERCURRENT RELAY MODIFICATION FOR THE HENRY RADIO 2K4 AMPLIFIER

In the present arrangement of the 2K4 amplifier there exists a possible danger. If for some reason the overcurrent relay engages, causing the amplifier to shut off, there is a chance of damaging the tubes. When the amplifier has been shut off, the exciter can still feed power to the grids, making it possible to destroy the tubes. A simple change in the wiring of one terminal strip will eliminate the possibility. In the power supply upper deck, on terminal-barrier TB101, remove the yellow wire from terminal No. 2 that goes to pin 4 of socket SK-1. Remove enough yellow wire from the cable harness so that it will reach the unused, normally closed terminal of relay RY101A. Connect a new wire from the unused common terminal of RY101A back to terminal No. 2 of TB101. This change provides automatic disabling of the antenna relay when the overcurrent relay is activated; thus the exciter rf bypasses the amplifier, going directly to the antenna when this overcurrent condition exists. – *Dave Porter, K2BPP*

AN ALTERNATIVE TO HIGH-WATTAGE ZENER DIODES'

High-wattage Zener diodes, the type used to develop bias in some linear amplifiers, are often hard to find. While they are not terribly expensive, not many distributors stock Zener diodes of the 50-watt variety. The accompanying diagram shows how a 1-watt Zener diode, an inexpensive 50- to 90-watt audio transistor along with a half-watt resistor, can be connected to perform the same function. Circuit A uses a silicon or germanium pnp transistor. The voltage rating of the Zener diode should be approximately 0.3 volt less than the desired bias voltage for a germanium transistor and approximately 0.7 volt less for a silicon unit. The circuit at B uses an npn transistor. Again either a germanium or silicon transistor may be used, and the Zener-diode voltage rating is the same as that for circuit A. The transistor should be bolted to the chassis, using the chassis as a heat sink. In circuit A the transistor can be bolted directly to the chassis, but the circuit at B will require a mica insulating washer because the collector (case) is above ground. Ferrite beads are placed on the transformer center-tap lead to discourage parasitic oscillations – adapted from a circuit in the article "The Amplified Zener," which appeared in the September, 1970 issue of *Electronics World*, copyright 1970 by Ziff-Davis Publishing Company. (All rights reserved.)

[EDITOR'S NOTE: Many thanks to J.F. Dunten, K5DQT, for calling this circuit to our attention.]