

FCC PROPOSES NEW CB RADIO CHANGES

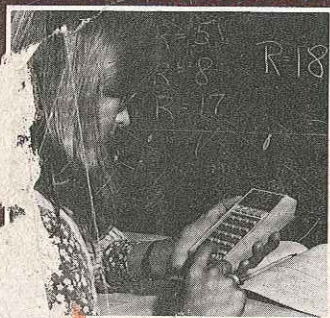
Popular Electronics®

WORLD'S LARGEST-SELLING ELECTRONICS MAGAZINE SEPTEMBER 1976/\$1

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Exotic Home Lighting Control Project

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BEST REPORTS

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**Hand
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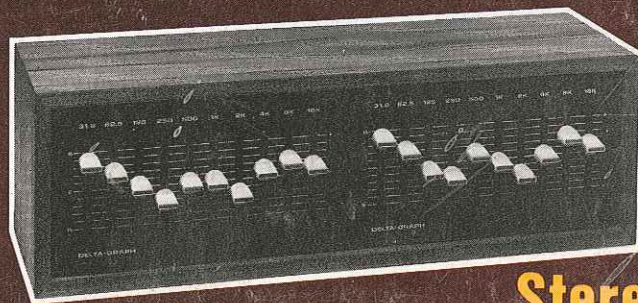
OAE

Tape Reader

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sign. It consists of a diode-protected r-f stage, first and second mixers, two 455-kHz i-f stages, detector stage, agc stage, squelch system, and an audio section that terminates in a class-B output stage (that also serves as the transmitter modulator or provides the PA output).

The receiver's sensitivity measured 0.5 μ V for 10 dB (S + N)/N. The maximum audio sine-wave output at the onset of clipping was 3.4 watts at 2.5% THD with a 1000-Hz test signal and an 8-ohm load. The overall audio frequency response was 400 to 2500 Hz at the 6-dB points. The agc system produced a relatively uniform audio output level, amounting to a change of only 8 dB with an 80-dB r-f input change at 1 to 10,000 μ V. A 30- μ V input signal was required to provide an S9 indication on the meter.

I-f selectivity is obtained with two cascaded 455-kHz ceramic filters that hold the \pm 10-kHz bandwidth to the area of 90 dB. However, due to r-f and mixer stage signal-handling characteristics, the adjacent-channel rejection, desensitization, and cross modulation were, in practice, on the order of 60 dB. Image and i-f signal rejection were 55 and 60 dB, respectively, while other unwanted-signal rejection was a minimum of 40 dB.

The automatic limiter, or anl, per-

formed exceptionally well, particularly during weak-signal reception, where it is most important. The squelch threshold range was 0.1 to 1000 μ V.

The priority SUB receiver employs single conversion to a 255-kHz i-f. This requires a special crystal for whatever channel is to be set up. Since we did not have such a crystal, we were unable to make any performance measurements in this section. Sensitivity is rated at 0.7 μ V, and with a 255-kHz i-f, the image rejection cannot be expected to be as good as the main section's. Nevertheless, this is of little consequence for the application for which this section is intended. Separate squelch and anl are provided for the SUB receiver, too.

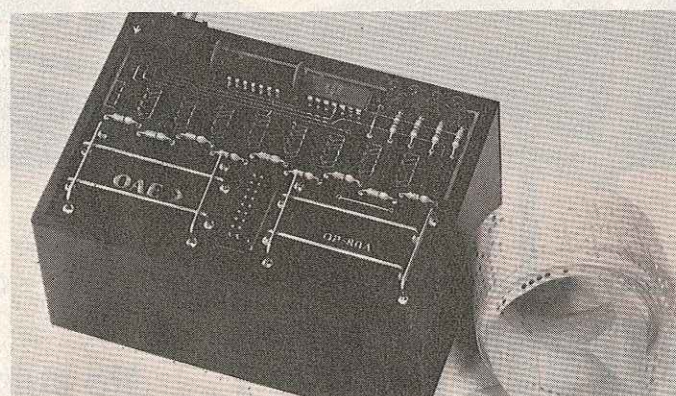
The Transmitter. The straightforward transmitter contains a synthesizer mixer, spurious-response filtering, and predriver, driver, and final (power) amplifier stages. The output of the last stage goes into a matching network for 50-ohm loads. The output carrier power measured 4 watts.

The automatic modulation control (amc) system provides a high degree of compression (35 to 40 dB above 50% modulation) for maintaining high modulation with differing voice levels. Under dynamic conditions, the splatter was nominally 50 dB down. With a

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OAE MODEL OP-80A TTY PAPER TAPE READER

High-speed tape reader for less than \$75.



YOU CAN feed TTY paper tape programs into any computer with an 8-bit input port without having to spend \$1000 or more for a Teletype® terminal. The OAE Model OP-80A high-speed paper tape reader lets you do it for just \$74.50 if you build it from a kit or \$95 if you buy it factory assembled and tested. The reader has no

moving parts, unless you count the motion of the tape going through it. It also lets you feed tape programs into your computer at much faster speeds than a standard electro-mechanical tape reader will permit.

General Description. The tape reader can be assembled in a single

1000-Hz test tone at full compression and 100% modulation, the distortion was only 5%. The overall response was 350 to 4000 Hz.

Antenna switching is performed electronically with a diode switch. Other circuits are relay switched.

The frequency tolerance of the transmitter was within 0.0025%.

User Comment. The appearance of this transceiver is enhanced by a black control panel with an orange stripe across the top. Behind the bezel, the case is all white, presenting a pleasant contrast with the front panel.

Miniature toggle switches are used for the switchable functions, while the VOLUME, SQUELCH, and SWR CAL controls and the channel selector are rotary devices. The meter movement is oriented vertically and is easy to read.

The priority SUB receiver is activated by a switch. When the switch is in the SUB position, the receiver is switched in and a light on the front panel flashes to indicate that the priority channel is on.

Attractive styling, excellent audio quality, and fine modulation characteristics make this transceiver a desirable piece of CB gear. The selective-call accessory socket and battery charging capability add unusual versatility.

evening. The design is so simple and complete, even a neophyte should have little difficulty in putting together the kit.

The tape reader's circuit design employs several 555 timer IC's, a precision optical sensor "head," and some "handshake" logic. All parts, including the heavy solid wire that serves as the tape guides, mount on the top surface of a single printed circuit board. The board itself becomes the top of a compact box. A 48" (1.2-m) multi-color flat ribbon cable interconnects the tape reader to the computer with which it is to be used.

The actual hookup to the computer is simple. If your computer has an 8-bit parallel input port, you can feed programs in parallel from tapes directly. On the other hand, if your computer is equipped with only a TTY serial input port pegged at a slow 110 baud, the tape reader's manual gives details on how to connect the reader to the com-

puter's serial input UART so that you can load programs at high speed. No software modifications are required in either case.

Four LED's in the tape reader indicate status. One comes on when 5-volt power (obtained from the computer's power bus) is applied to the reader. A second LED comes on when the tape illumination through the sprocket hole sensor is sufficient for proper operation. The remaining two LED's are not dedicated; they can be used as signal indicators as desired. The illuminating source can be any standard 100-watt desk lamp.

The stiff wires used as tape guides on the reader maintain proper tape alignment as it passes over the optical read head. A large arrow on the top of the pc board indicates proper direc-

tion of tape motion. A smaller arrow identifies the sprocket sensor.

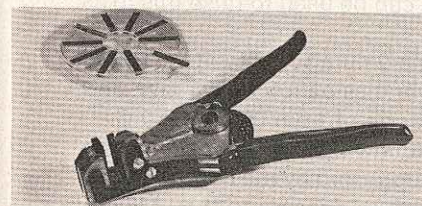
All internal and external connections are made to a conventional 14-pin dip socket mounted on one corner of the pc board. The color-coded ribbon cable is terminated at one end in a male connector that fits the DIP socket.

User Report. After assembling the kit, we wired it into the parallel port of our computer and connected the two required handshake leads. Then we loaded punched TTY tape in the guides, checked for the right indication of the sprocket LED, and pulled the tape through as fast as we could. It came as quite a shock to see how fast we could feed data into our computer and see it on our video monitor.

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ALPHA WIRE MODEL STRP-25 WIRE STRIPPERS

Unique cutting material permits repeated, dependable stripping.



The Model STRP-25 strippers retail for \$39.95 and come with three sets of plastic blades. A five-set replacement blade pack (No. BLD-5) can be obtained for \$11.95.

More Details. The blades are similar in size and shape to the steel blades used in injector razors. They even install in the tool the same way, with the new blades ejecting the old.

The Stilan plastic material used for the blades is tough and resilient. As the opposing knife-edges of the blades come together during the stripping procedure, they neatly slice through the insulation and then deform around the conductor. The tool then cleanly and automatically parts the insulation from the wire. Inspection of the blades after a strip will reveal small notches where the plastic deformed around the wire. If you carefully position the wire in these grooves and make repeated strips, you'll find that the blades will continue to remove insulation several hundred times before you have to move on to a "fresh" area. Of course, in actual practice, you would use all areas of the blades randomly.

The wire strippers are designed to cope with a number of problems fast and accurately. For example, when stripping insulation from 4" (10.2-cm) or shorter lengths of hookup wire, the tool will not crush the insulation, kink the wire, or pull the wire clean out of the insulation. Also, it strips insulation

from twisted-pair, speaker and line cord, and 300-ohm twin-lead cable with the same facility as single-conductor hookup wire. The tool will even strip insulation from wire bundles, multiple twisted pairs, and flat ribbon cable, whether or not the conductors are all of the same size.

User Comment. Over a period of weeks, we put the plastic-blade wire strippers through a strenuous series of tests. After performing some 10,000 strips using stranded and solid 22-gauge hookup wire with PVC insulation and several hundred strips on 300-ohm twin-lead with polyethylene insulation, we used the tool with the original blades to build two rather complex projects.

Periodic samplings of our strips were subjected to close inspection with a magnifying glass and high-intensity light. In all cases, the insulation was parted neatly at the strip points. More important, we detected no nicks in the wire, crushed conductors, or removal of fine wire strands.

Using a little bit of common sense, one can easily exceed 50,000 strips from a single pair of blades. You just start with the smallest size wire or cable with a pair of new blades and continue stripping away until the blades will no longer remove insulation. Then you use the same blades for the next larger size wire, working up to 12 gauge.

We highly recommend this new tool to anyone who is involved in electronics where speed and reliability are important.

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