

An added bonus of special interest to the Novice is the built-in code practice oscillator, which can also be used as a keying monitor. The RX-10 is attractively packaged in a heavy-gauge aluminum cabinet with wood-grained plastic end plates, making a sturdy portable unit. With the option of 117-volt ac or 12-volt dc operation, it should be popular with campers, vacationers, and beginners looking for an inexpensive receiver that will deliver good performance. — *WAWFL/1*

Ten-Tec RX-10 Communications Receiver

Height: 4 1/2 inches.

Width: 10 3/8 inches.

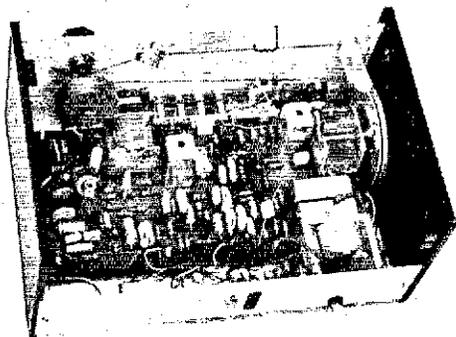
Depth: 7 1/4 inches.

Weight: 2 1/4 pounds.

Power Requirements: 117 volts ac, 50-60 Hz, 1/8 A, or 12 V dc, 35 mA.

Price Class: \$60.

Manufacturer: Ten-Tec, Inc., Sevierville, TN 37862.

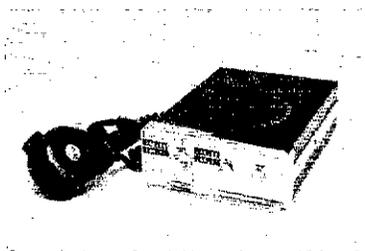


Here's an inside view of the RX-10. The weighted knob on the front panel is used to drive the MAIN TUNING capacitor. The variable capacitor just below the weight knob is the PRESELECTOR tuning.

QST ————— QST ————— QST

Regency Electronics HR-2

FM Transceiver



IMAGINE, IF YOU CAN, a neat looking package measuring 8 x 5 1/2 x 2 1/4 inches, into which is carefully packed a double-conversion receiver, and a transmitter with an output power of 10 watts or more. Next, envision some 24 transistors, 2 integrated circuits and 7 diodes, plus all of the other components needed to make up the transceiver. Dream stuff, you say? Not at all! The foregoing description is a word picture of the Regency HR-2 amateur fm station.

The equipment comes with crystals for 146.34/146.94-MHz operation. The company also provides the buyer with a dc power cable, microphone, mobile mounting bracket, and 12 spare crystal sockets which will be discussed later. The rig can be tucked away under the instrument panel of any automobile — large or small — and will still allow ample leg room for all but the most rotund of passengers.

The writer's HR-2 has been in service for some 6 months. It has seen daily use in a 1970 VW car, and despite the rather minuscule battery dimensions there have been no signs of charge depletion even though "somebody" carelessly left the HR-2 power switch in the ON position overnight on a few occasions. (Making a similar mistake with a tube-type mobile unit will normally leave the

red-faced operator with a battery whose best effort will provide a mere grunt from the starter when it is engaged.) Solid-state mobile gear, therefore, has its advantages!

Regency rates the transmitter output power at 10 watts. Checks with a calibrated vhf wattmeter showed 13 watts output into a 5/8-wave antenna tuned for an SWR of 1. Operating voltage (engine running) was 13.6 during the tests. Despite Connecticut's rough terrain (small mountains, if you will), the author has never experienced difficulty in working through area repeaters at distances up to 50 or 60 miles. It is worth mentioning, however, that the 5/8-wave antenna contributes significantly to the aforementioned good results. The slight gain over a 1/4-wave whip (approximately 3 dB) can be beneficial under marginal signal conditions.

The only failure experienced to date, and one that appears to be case history with many HR-2 units, was a faulty set of relay contacts. After several hours of use the B+ transfer contacts of the changeover relay apparently become pitted in the transmit position. When this happens it may take numerous squeezes of the mike button to get into the transmit mode. Being unable to obtain a reply from Regency regarding a solution to the problem, owing, perhaps, to faulty mail service, the writer

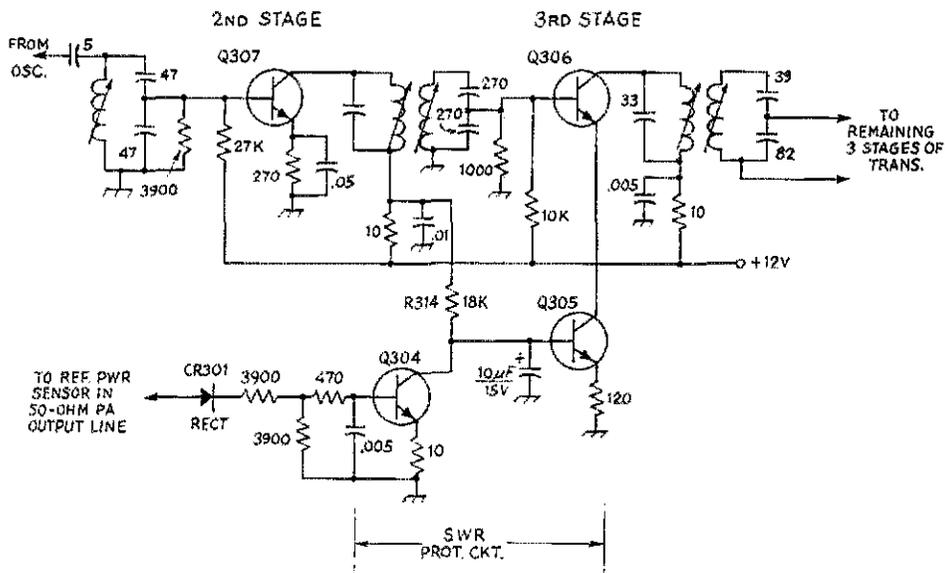


Fig. 1 — Simplified schematic diagram of the SWR protection circuit in the HR-2. A Monimatch-style SWR bridge is used in the 50-ohm output line from the PA stage. Reflected power is rectified by diode CR301. The resultant dc voltage biases Q304 into conduction, causing a voltage drop across R314. The drop across R314 reduces the forward bias on Q305, lowering its conduction to turn off the third stage, Q306. The greater the reflected power (SWR) the greater will be the reduction in drive to the last three stages of the transmitter strip. When Q304 is biased into full saturation from a high SWR condition, Q305 will act as an open switch to cut off Q306.

effected his own cure by paralleling the spare set of relay contacts with the B+ contacts. No difficulty has been experienced since making the modification. Others in the area have reported success after placing a 3- or 4-ohm, 5-watt resistor in series with the B+ lead to the relay arm, thus providing some current limiting.

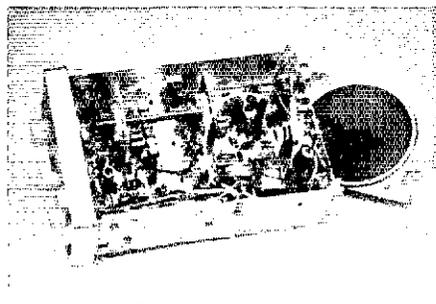
Some Circuit Highlights

It was encouraging to note the use of standard American-made semiconductors in the transceiver. This means that those who are willing to repair their equipment can purchase replacement devices without needing to second-guess the experts on the type of semiconductor to substitute for the defective part.

Balanced-emitter transistors (BET) are used in the power stages of the transmitter to provide a fair margin of safety when a PA load mismatch

condition becomes manifest. Additional protection to the high-level transistors is offered by an SWR sensor circuit (Fig. 1). The reflected power is sampled at the PA output, then rectified and fed to two control transistors, Q304 and Q305. Transistor Q305 acts as a saturated switch during normal conditions, permitting third stage Q306 to conduct and drive the remaining transmitter stages. The greater the reflected power, the lower will be the forward bias on Q305, thus opening switch Q305 and reducing the output power of Q306 to lower the collector current of the succeeding stages.

Though the HR-2 has 12 crystal-switch positions, only 6 of them are wired into the circuit. However, the company furnishes with the package, 12 additional crystal sockets, and these can be installed for use with the 6 unused switch positions to permit the reuse of the first six crystal pairs in a different paired arrangement. The instruction



Interior view of the HR-2. When mounted in position, the speaker obscures the left half of chassis. It is bolted to the side walls of the case and points upward to permit the sound to egress from the top of the transceiver. The transmitter section of the unit is just to the right of the front panel. The pc board at the upper right of the photo contains the receiver head end. The remainder of the receiver circuit is built on the pc board seen below the relay, at the lower right in this view.

booklet illustrates how this can be done. So, in effect, one can have a 12-channel setup by subscribing to the foregoing concept.

The receive crystals cannot be "netted" because no trimmers are provided. However, when using Regency crystals there was no need for trimming. The transmitter, however, has trimmers for each crystal position, enabling the user to adjust the transmitter frequency "dead on" with respect to the repeater receiver frequency.

Audio quality from this and all other HR-2s heard in the area is excellent, provided the deviation is adjusted for the bandwidth of the repeater receiver (usually between 5 and 15 kHz, depending upon the deviation in vogue for a given repeater group).

The receiver has a robust larynx. Signals from the speaker easily override the ambient noise in the car (and VW engines are not noted for their quiet manner!). Furthermore, the limiting action of the HR-2 receiver is sufficiently good to prevent ignition noise from impairing copy of all but the weakest of signals. For the record, no noise-suppression measures have been taken to tone down the pulse interference from the writer's engine. However, the antenna is mounted on the end of the car farthest from the engine compartment, and this is a good practice in any mobile installation.

Regency Electronics HR-2 2-Meter FM Transceiver

- Height: 2 1/4 inches.
- Width: 5 1/2 inches.
- Depth: 8 inches.
- Power Requirements: 12 to 13.6 volts dc.
- Sensitivity: 0.35 μ V for 20 dB quieting.
- Receiver i-f bandwidth: 16 kHz.
- Freq. Range: 144 to 148 MHz.
- Deviation: 0 to 15 kHz, adjustable.
- Power Output: 10 watts (min.) @ 13.6 volts.
- Price Class: \$230.
- Manufacturer: Regency Electronics, Inc.,
7900 Pendleton Pike, Indianapolis,
IN 46226.

In Summary

Those wanting a Tom Thumb-size transceiver for 2-meter fm will be wise to inspect and consider Regency's HR-2. It is one of the least costly fm packages on the present market, and may be just what you're looking for! Oh yes, the receive crystals are the 45-MHz overtone variety, and the transmitter employs 6-MHz fundamental rocks. -- *WICER*



August 1921

... The First National ARRL convention and Radio Show is coming up on the 31st in Chicago. It is going to last for four days and a lot of stuff is planned. A lot of dignitaries have been invited, including President Harding and the Secretaries of the Navy and Commerce. No replies from them have been received.

... The second part of R. A. Heising's article, "Modulation in Radio Telephony," completes this classical essay. Circuits are shown and discussed for both modulated oscillators and power amplifiers.

... The cover this month says "QST - A Magazine devoted exclusively to Citizen Wireless"! I peeped at the cover for September and am glad to report we're back to "The Wireless Amateur."

... We have descriptions of the recently introduced RCA audio transformer and a new and relatively inexpensive decremeter designed by F. M. Doolittle which avoids the necessity of using a current-squared meter such as is used in the Kolster decremeter.

... K. B. Warner muses about summer radio and notes that ham activity during the summer is on the increase. Lots of new hams with three-letter calls who never learned that summer was the time to shut down. He also discusses a ridiculous ordinance passed by the city of Salem, Mass. Wonder how long it took them to repeal it.

... 2XX, the station of Robert F. Gowen is described. He was DeForest's Chief Engineer, and we have some of the components in our Museum.



August 1946

... Now that a lot of hue and cry attendant on the re-opening of the ham bands is over, K. B. Warner puts his feet on the desk and does a little daydreaming about ways and means for improving operating practices with related technical improvements. He is leading up to a transceiver, so help me, but doesn't go quite that far.

... Byron Goodman, W1JPE, describes his new eight-tube ham receiver. He uses plug-in coils for four bands and incorporates variable selectivity, avc and audio-noise limiter and other features.

... The boys are pushing the frequencies up, all right. Here's a duplex phone rig that operates on 21,900 Mc. It is a wave-guide rig with a horn antenna. Not for the average ham. Uses a Z-668 reflex oscillator. The best DX so far is 800 feet. This interesting article was written by A. R. Sharbaugh, W1NVL/2, and R. L. Watters, W9SAD/2, both of the Research Laboratories of General Electric.

... Don Mix, W1TS, has a piece on unstable signals and a lot of hints on how to overcome such troubles. He is talking about chirpy signals, drift, etc.

... Charles E. Nichols, Jr., W1MRK, after a lot of frustrating experiences on ten meters and after a bit of glancing at the bank roll, makes his decision and comes up with a three-element beam perched on his house and directly rotatable, using an old automobile steering wheel right in the shack. Worked just peachy. -- *W1ANA*