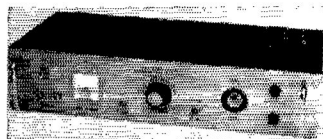


• Recent Equipment —

Alltronics Model K RTTY Converter



UP to now there have been few well-engineered RTTY converters available either commercially or in war surplus for radio amateurs interested in teletype. Home-brewed terminal units (TU) or converters have been the order of the day. Some good designs have evolved¹ and met the test of amateur practice. The features required for optimum performance in amateur RTTY operating have now been combined in a unit that is simple to handle and dependable in performance. This unit, the Alltronics Model K Telewriter converter, operates on the audio impulses received from the output of any reasonably-stable communications receiver. These signals are converted to provide timed d.c. impulses for printing RTTY signals. The block diagram in Fig. 1 indicates the different elements that make up a complete receiving and transmitting system and, except for the teletypewriter-printer, the terminal unit is probably the essential component that non-RTTY amateurs may require to adapt their existing stations for RTTY operation.

The Alltronics converter can be rack-mounted or not, as the user prefers; it has the advantage of compactness (our composite designs have too often been unduly bulky). It contrives an excellent balance and clean-cut appearance without this in any respect being allowed to handicap its essentials of convenience in placement of operational controls.

There's an effective use of a dual magic-eye tube for quick easy-tuning-in of f.s.k. signals. (Our personal choice is for cross lines on an oscilloscope. However, Alltronics approach is practical and saves the user considerable space as well as permitting the dollar's worth to go farther in

equipment.) There are two front-panel closed-circuit jacks connected in series so that a printer and re-perf can be operated at the same time in the series loop. If desired, a single printer can be used. There's the expected ON-OFF switch, a SEND-RECEIVE switch, and a REVERSE switch that permits a quick turnover on any signals on which mark and space are found to be reversed, or if a signal is tuned in "upside down."

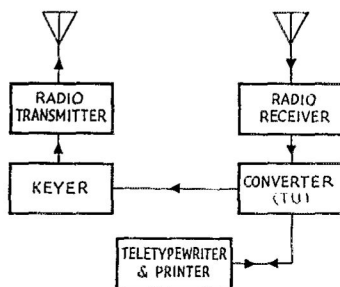


Fig. 1—Block diagram showing a typical RTTY setup.

Operation

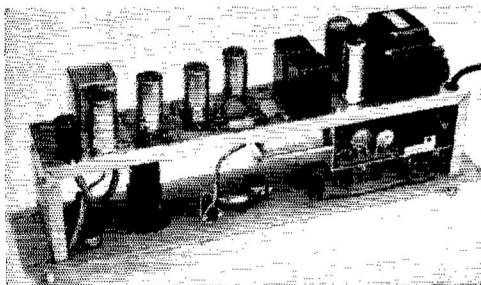
The block diagram of the Model K converter is shown in Fig. 2. Incoming signals first pass through a two-stage limiter, V_1 , which adjusts the amplitude variations to a desired standard, permitting weaker signals to have their equal chance to be copied. A linear discriminator amplifier, V_2 , and a rectifier circuit permit operation with normal 850-cycle shift or reduced (narrow) shifts. Low-pass filtering is used here to reduce noise and take out interfering beat notes higher than the dot rate. A symmetrical clipper and d.c. amplifier, V_3 , slices out a section of the filtered pulses, removing any remaining distortion and beat frequencies riding on top of the pulses. A rotary control located at the center of the converter's panel, labeled DISTORTION, and normally in the 12 o'clock position, allows for increase in the weight of either mark or space to reduce errors caused by distortion of signals due to propagation anomalies.

The printing loop is operated from a final keying-tube stage, V_4 , which connects directly to the printer magnets. This is a recommended way to give electronic keying, which means freedom from the radio noise sometimes generated in relay-keyed loop circuits.

Adjustments

A meter on the front panel of the converter measures loop current. This can be adjusted

¹ R. G., Bernstein, "An Inexpensive Radioteletype Converter," *QST*, January, 1953, p. 44.



This view of the converter shows how most of the components are mounted on a "U"-shaped chassis, which is in turn attached to the 19-inch rack panel. Cover plates have been removed for this photograph.

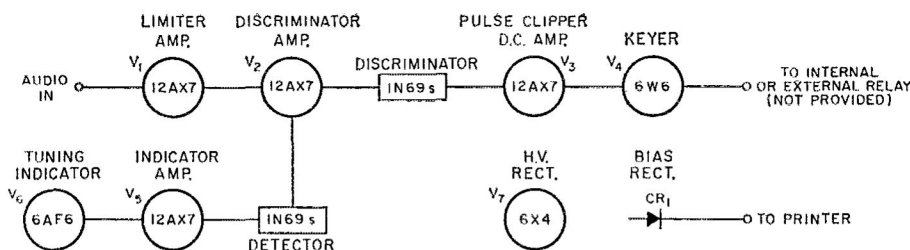


Fig. 2—Block diagram of the Model K converter.

"right-on-the-nose" for 30 or 60 ma. or other desired values. Adjusting the slider on an accessible internal resistor lets the user respect the printer manufacturer's exact specifications for his machine, or change equipment from series to paralleled magnet connections. The internal 120-volt d.c. supply for the printer and keyer tube is independent of the plate supply for the rest of the converter circuit. This lets you put the printer loop at ground potential.

A separate adjustable resistor and metering jack lets you adjust the loop supply to give correct bias current for an internal or external polar relay (which is not furnished) for f.s.k. or a.f.s.k. uses.

Front panel controls allow the dual tuning-eye indicator, V_6 , to be set. Adjustment is made so that the mark eye just closes when a 2125-c.p.s. mark signal is tuned correctly, and so that the space eye closes when a 2975-c.p.s. signal is tuned in.

Other provisions in the converter include an

octal socket in which a polar relay (optional) may be plugged. This is used for frequency shifting a v.f.o. for transmission. The keyboard in series with the printer loop activates this relay when the converter is switched to SEND. An output plug is provided on the back of the Model K, so that the converter can in this same way operate an external polar relay for transmission, additional loop circuits, etc.

—F. E. H.

Alltronics Model K RTTY Converter

Height: 4 inches.

Width: 19 inches.

Depth: 8 inches.

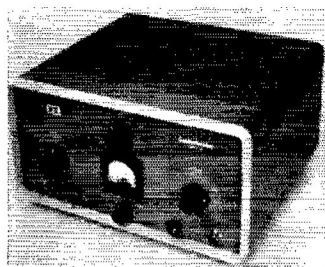
Weight: 7 pounds.

Power requirements: 117 volts, 60 cycles, 50 watts maximum.

Price class: \$190.

Manufacturer: Alltronics-Howard Co., Box 19, Boston 1, Mass.

The Loudenboomer Linear Amplifier



So far as we know, the Radio Industries Loudenboomer, Mark II, is the first commercial rig to use the new Eimac 3-400Z high- μ zero-bias triode.¹ Probably the most convenient feature of the tube, and thus of the amplifier, is that no bias or screen voltage is necessary. This greatly simplifies the power-supply problem, as only a single high-voltage power supply, delivering about 2500 to 3000 volts at 350 ma., is necessary to operate the amplifier at the full legal input.

Designed for table-top operation, your external power supply (a matching power supply is available from Radio Industries), is placed on the floor or in any other convenient spot away from the amplifier. Since all of the operating controls for

the power supply are on the amplifier unit, the power supply need not be touched by the operator when turning the unit on and off or when going from send to receive.

About 40 watts of drive are required for full input to the amplifier and, since the tube is connected in grounded grid, a large percentage of drive power appears as useful r.f. output. Drive is applied to the 3-400Z filament through a broadband transformer designed for an input impedance of approximately 50 ohms on all bands from 80 to 10 meters. A pi-network plate tank, using an adjustable output loading capacitor, allows for working the amplifier into a variety of load impedances, but the amplifier is nominally designed for operation into a 50-ohm nonreactive load. In order to maintain low minimum capaci-

¹ Barber and Sutherland, "High-Power Zero-Bias Grounded-Grid Linear," *QST*, September 1961, p. 11.