

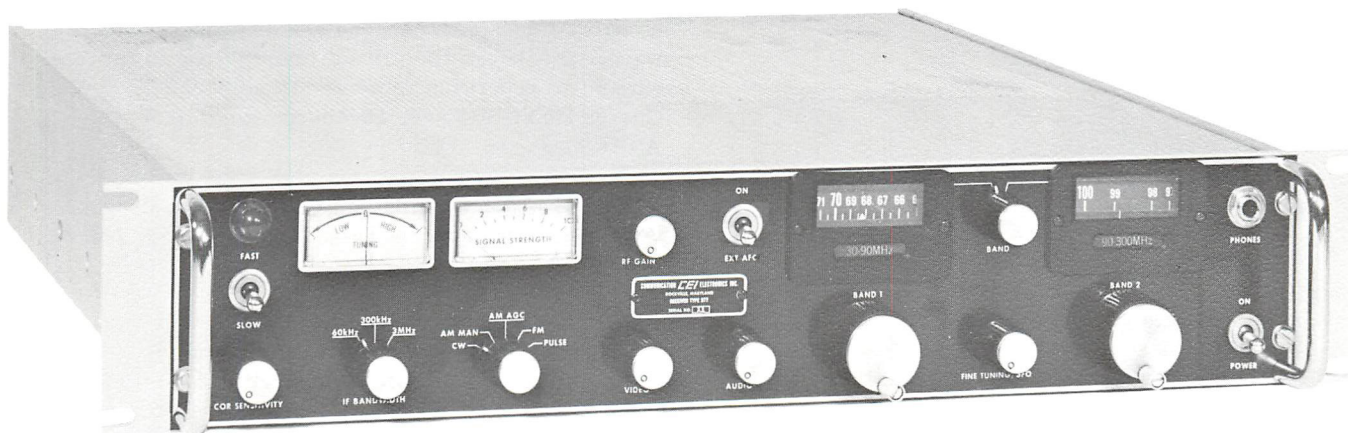


DATA SHEET
197.50
4/15/68

Technical Data

TYPE 977 RECEIVER

(REPLACEMENT FOR TYPES 970A & 975-2 RECEIVERS)



The CEI Type 977 Receiver is designed for the reception of AM, FM, CW, and pulse signals in the VHF frequency range of 30-300 MHz. It is an all solid-state receiver utilizing dual-gate MOS field-effect transistors in all critical stages in both the RF tuners and IF amplifiers. This, combined with CEI's "know how" in receiver design results in a unit having maximum sensitivity combined with a very large dynamic range and low cross-modulation characteristics.

Three IF bandwidths are provided in the 977: 60 and 300 kHz, and 3 MHz. The desired bandwidth is front-panel selectable. A unique AGC circuit has a charge time sufficiently short to permit operation on pulse widths as narrow as 1 microsecond, and a discharge time sufficiently long to operate with pulse repetition rates as low as 50 pps. The loop gain of the AGC circuit will hold output pulse amplitudes within narrow limits with large changes in the RF input level.

Two illuminated steel tape dials are normally used to indicate the frequency to which the receiver is tuned. The 270-MHz tuning range is spread over 52 inches of tape for readability and resetability. A dial accuracy of 0.5% is maintained over both bands. Provision is made to lock the receiver's local oscillator in 1-kHz increments over its entire tuning range to an external counter having DAFC (digital automatic frequency control). The receiver's stability then approaches that of the counter's reference source. An additional feature of the 977 is a COR (carrier operated relay) circuit with a front-panel mounted sensitivity control, selectable relay release time, and a lamp to indicate that the relay is energized.

SPECIFICATIONS

Type of Reception	AM, FM, CW, or Pulse; CW available on 60-kHz and 300-kHz bandwidth only
Frequency Range	30-300 MHz in two bands: Band A: 30-90 MHz; Band B: 90-300 MHz
Noise Figure	Band A: 4.5 dB, maximum; Band B: 6 dB, maximum
Image Rejection	60 dB, minimum

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SPECIFICATIONS (Continued)

IF Rejection	Band A: 54 dB, minimum to 40 MHz, 60 dB, minimum 40-90 MHz;
Oscillator Radiation at Input of Receiver	Band B: 80 dB, minimum
Antenna Input Impedance	15 μ V, maximum
IF Bandwidths	50 Ω , nominal
IF Frequency	60 kHz, 300 kHz, and 3 MHz, switchable from front panel
Gain Control Characteristics	21.4 MHz
Pulse AGC, 3-MHz Bandwidth	Charge time is sufficiently short to permit pulse widths as narrow as 1 microsecond and as wide as a square wave. Discharge time is sufficiently long to operate with pulse repetition rates as low as 50 pps. Charge time: 0.3 sec, Discharge time: 0.3 sec. All IF's
Normal AGC	Rise time or decay time no greater than 0.35 μ sec. Pulse sag no greater than 10% for an 800 μ sec pulse width.
Manual Control	
Over-all Pulse Response for 3 MHz Bandwidth, Manual Operation	
Sensitivity:	
60-kHz Bandwidth	AM: 1.8- μ V input, modulated 50% at 1-kHz rate, produces 10 dB (s plus n)/n, minimum
300-kHz Bandwidth	FM: 2- μ V input, modulated at 1-kHz rate with 20-kHz deviation, produces 21 dB (s plus n)/n, minimum
3-MHz Bandwidth	AM: 4- μ V input, modulated 50% at 1-kHz rate, produces 10 dB (s plus n)/n, minimum
	FM: 5- μ V input, modulated at 1-kHz rate with 100-kHz deviation, produces 21 dB (s plus n)/n, minimum
	Pulse: -99 dBm tangential sensitivity, minimum
	AM: 14- μ V input, modulated 50% at 1-kHz rate, produces 10 dB (s plus n)/n, minimum
	FM: 14- μ V input, modulated at 1-kHz rate with 1-MHz deviation, produces 21 dB (s plus n)/n, minimum
	Pulse: -90 dBm tangential sensitivity, minimum
Video Output	1.0 volt rms across 100 Ω load
Video Amplifier Response	Within 3 dB from 20 Hz to 2 MHz
FM Output Stability	Less than 2 dB variation for inputs above that required for 10 dB (s plus n)/n
AM Output Stability	Less than 6 dB variation for 70 dB input change above AGC threshold
Audio Output	100 mW across 600 Ω , balanced or unbalanced
Signal Monitor Output Frequency	21.4 MHz
21.4-MHz IF Output	50 mV, minimum, into 50 Ω load for input signal levels above AGC threshold
BFO	Tunable over \pm 15 kHz on 60-kHz or 300-kHz bandwidth; CW operation only
Local Oscillator Output	50 mV, minimum, across 50 Ω load
Carrier Operated Relay	
Sensitivity	Less than 1 μ V
Range	Adjustable to operate over an input signal level range of 1 μ V to greater than 500 μ V
Release Time	Slow: 6 second, \pm 20%, Fast: less than 0.5 second
Dial Accuracy	0.5% <i>LB 0.759-HB</i>
Power	115/230 Vac, 50-400 Hz; 10 watts, approximately
Size	19 inches x 3-1/2 inches x 16 inches, rack mounted