



## RS-111-1B-12B RECEIVING SYSTEM



### FEATURES

The RS-111-1B-12B is the latest version of the well-known RS-111-1B Series. The receiving system provides AM, FM and CW reception over the 30-1000 MHz frequency range in four bands. A built-in signal monitor provides a visual display of signal activity over a frequency range of up to 1.5 MHz on both sides of the tuned frequency. The sweep width of the display is continuously variable by means of a front-panel control up to 3-MHz maximum dispersion. A 21.4-MHz crystal controlled marker oscillator built into the display may be used to indicate the exact center of the receiver's IF passband. By providing the marker oscillator, the need for a tuning meter is eliminated.

Digital automatic frequency control (DAFC) circuits provide the capability of operating the RS-111-1B-12B with an external frequency counter which provides a six-digit

readout in addition to locking the local oscillator to within 1 kHz of the tuned frequency. Automatic range and preset switching circuits are also provided. The DRO-309A and DRO-333 Frequency Counters are compatible with the RS-111-1B-12B.

Switch-selectable IF bandwidths of 20, 75 and 300 kHz provide narrowband predetection IF, AM and FM video, and audio outputs. An additional IF bandwidth of 2 MHz provides wide-band predetection IF, and simultaneous AM and FM video outputs regardless of the bandwidth switch position. An AGC monitor output is also provided. All outputs are available on the rear panel of the receiving system.

The receiving system is packaged in a compact 5.25-inch high unit designed for rack mounting. The unit operates from a 115/230 Vac, 50-400 Hz prime power source.

### SPECIFICATIONS

Type of Reception	AM, FM, CW
Frequency Range	30-1000 MHz in four bands: Band A, 30-60 MHz; Band B, 60-300 MHz; Band C, 235-500 MHz; Band D, 490-1000 MHz
Input Impedance	To operate from 50-ohm source

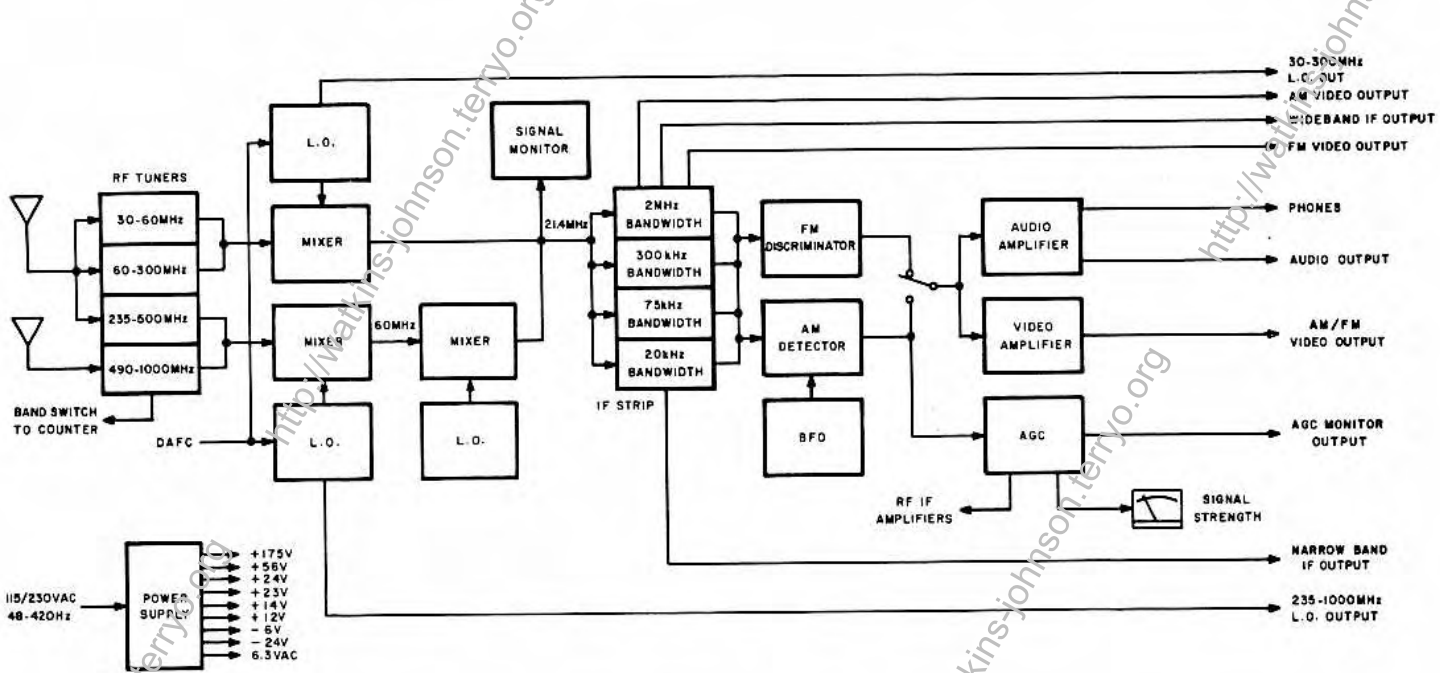
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Noise Figure . . . . .	Band A, 4 dB max; Band B, 7.0 dB max; Band C, 10 dB max; Band D, 12 dB max.
Image Rejection . . . . .	Band A, 60 dB min; Band B, 47 dB min; Band C, 65 dB min; Band D, 75 dB min.
IF Rejection . . . . .	Band A, 54 dB min; Band B, 80 dB min; Band C, 80 dB min; Band D, 90 dB min.
Oscillator to Antenna Conduction . . . . .	Band A, 15 $\mu$ V max; Band B, 15 $\mu$ V max from 60-260 MHz and 25 $\mu$ V max from 260-300 MHz; Band C, 8 $\mu$ V max; Band D, 75 $\mu$ V max.
IF Bandwidths . . . . .	Four total, two operating simultaneously: 2 MHz and either 20 kHz, 75 kHz, or 300 kHz selectable from front panel
Band A and Band B Sensitivity:	
20-kHz Bandwidth . . . . .	AM: 1- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 2- $\mu$ V input, modulated at 1 kHz with 7-kHz deviation, produces 20 dB (s plus n)/n, minimum
75-kHz Bandwidth . . . . .	AM: 2- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 3- $\mu$ V input, modulated at 1 kHz with 25-kHz deviation, produces 21 dB (s plus n)/n, minimum
300-kHz Bandwidth . . . . .	AM: 4- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 6- $\mu$ V input, modulated at 1 kHz with 100-kHz deviation, produces 21 dB (s plus n)/n, minimum
2-MHz Bandwidth . . . . .	AM: 11- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 15- $\mu$ V input, modulated at 1 kHz with 650-kHz deviation, produces 21 dB (s plus n)/n, minimum
Band C and Band D Sensitivity:	
20-kHz Bandwidth . . . . .	AM: 2- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 4- $\mu$ V input, modulated at 1 kHz with 7-kHz deviation, produces 21 dB (s plus n)/n, minimum
75-kHz Bandwidth . . . . .	AM: 4- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 6- $\mu$ V input, modulated at 1 kHz with 25-kHz deviation, produces 21 dB (s plus n)/n, minimum
300-kHz Bandwidth . . . . .	AM: 8- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 12- $\mu$ V input, modulated at 1 kHz with 100-kHz deviation, produces 21 dB (s plus n)/n, minimum
2-MHz Bandwidth . . . . .	AM: 22- $\mu$ V input, modulated 50%, produces 10 dB (s plus n)/n, minimum FM: 30- $\mu$ V input, modulated at 1 kHz with 650-kHz deviation, produces 21 dB (s plus n)/n, minimum
Band A and Band B Output Stability:	
20/75/300-kHz Bandwidths . . . . .	AM: Output varies less than 3 dB for input range of 2 to 10,000 $\mu$ V FM: Output varies less than 2 dB for input range of 1.5 to 10,000 $\mu$ V

2-MHz Bandwidth . . . . .	AM: Output varies less than 4 dB for input range of 4 to 10,000 $\mu$ V
	FM: Output varies less than 4 dB for input range of 4 to 10,000 $\mu$ V
Band C and Band D Output Stability:	
20/75/300-kHz Bandwidths . . . . .	AM: Output varies less than 4 dB for input range of 4 to 10,000 $\mu$ V
	FM: Output varies less than 2 dB for input range of 3 to 10,000 $\mu$ V
2-MHz Bandwidth . . . . .	AM: Output varies less than 4 dB for input range of 8 to 10,000 $\mu$ V
	FM: Output varies less than 4 dB for input range of 8 to 10,000 $\mu$ V
Outputs from 20/75/300-kHz Bandwidth:	
Audio Amplifier Response . . . . .	Within 3 dB from 100 Hz to 20 kHz
Audio Output Power . . . . .	0.1 watt, min, into 600-ohm load, balanced or unbalanced
Video Amplifier Response . . . . .	Within 3 dB from 50 Hz to 150 kHz
Video Output Level . . . . .	5 volt, rms, across a 10K-ohm load
Outputs from 2-MHz Bandwidth:	
FM Video Amplifier Response . . . . .	Within 3 dB from dc to 200 kHz
AM Video Amplifier Response . . . . .	Within 3 dB from 30 Hz to 1 MHz
FM Video Output Level . . . . .	0.3 volt, rms, across a 93-ohm load
AM Video Output Level . . . . .	0.3 volt, rms, across a 93-ohm load
Fine Tuning . . . . .	Operates on all bands
Beat Frequency Oscillator . . . . .	Operates in CW mode on either 20-, 75-, or 300-kHz bandwidths
Local Oscillator Outputs . . . . .	50 mV, minimum, into 50-ohm load (all bands)
Signal Display Section:	
Sweep Linearity . . . . .	Within 5% of sweep width
Sweep Width . . . . .	Continuously adjustable from 0 to 3 MHz
Sensitivity for Full Deflection . . . . .	2.5- $\mu$ V input to receiver
Resolution . . . . .	Using approximately 100-kHz sweep width, two signals 20-kHz apart will be displayed with at least a 6-dB valley between the peaks
Power Input . . . . .	115/230 VAC, $\pm$ 10%, 48-420 Hz
Power Consumption . . . . .	51 watts, approximately
Weight . . . . .	35 lbs, approximately
Size . . . . .	5.25 inches high, 19 inches wide, 15.5 inches deep



RS-III-1B-12B-SIMPLIFIED BLOCK DIAGRAM