

**RF-590 HF-SSB SYNTHESIZED RECEIVER
SPECIFICATIONS**

Frequency Range	10 kHz to 29.999999 MHz
Frequency Resolution	1 Hz increments standard
Tuning	Continuous with seven selectable tuning rates and keypad entry.
Tuning Time	Tuning time between any two frequencies is less than 20 milliseconds.
Frequency Stability—Internal	± 1 part in 10 ⁶ per day — Standard TCXO ± 1 part in 10 ⁸ per day — Optional OVEN
Frequency Standard I/O	Input: 1, 5, or 10 MHz; 1 Vrms Output: 1, 5, or 10 MHz (depends on internal frequency standard chosen); 1 Vrms
Channel Memory	100-channel capacity capable of being loaded locally or remotely with complete receiver parameters. Battery backup provides retention of operational parameters without power for one month minimum.
Scanning	Scan any set of consecutive channel numbers (channel scan) or one of ten pre-programmed sets of random channel numbers (group scan).
Readout/Display	Receiver frequency, BFO frequency, channel assignment, mode, IF BW/filters, AGC, BITE, dwell, and scan group.
BFO	10 Hz synthesized tuning, ± 9.99 kHz
Internal Preselector	Low Pass Filter — standard Suboctave Filters — optional (internal module) Digital Preselector — optional (internal module)
Maximum Signal Input	Receiver protected to 100 watts (72 Vrms) available power input.
Modes of Operation	CW, 2-ISB (optional) 4-ISB (optional), AM, FM, LSB, USB, FSK (with external demodulator), Special Data Modes (Link 11, etc.)
Squelch	Syllabic Rate Squelch (CW, SSB, AM) and Noise Squelch (FM), both operated from a common front panel adjustable control.
Sensitivity	100 kHz-30 MHz — for 10 dB $\frac{S+N}{N}$ ratio CW: 0.15 uV (300 Hz bandwidth) AM: 1.5 uV (6 kHz bandwidth) SSB: 0.35 uV NOTE: Below 100 kHz, sensitivity degrades 20 dB/decade.
IF Bandwidths	Up to six IF bandwidths plus LSB and USB.

IF Filter	-3 dB BW (kHz)	IF Filter	-3 dB BW (kHz)
CW	0.3	FM Wide Band	16
CW	1.0	USB	2.8
AM	3.2	LSB	2.8
AM	6.0		
AM	16		

 **HARRIS**
RF COMMUNICATIONS

Intermodulation	In Band: -50 dB or better for two 100 mv (-7 dBm) signals within the IF passband. Out of Band: -50 dB or better for two 0 dBm signals separated 30 kHz or more.
Cross Modulation	-20 dB or better for 500 mV 30% modulated interfering signals removed 20 kHz or greater from the desired signal of 10 uV.
Reciprocal Mixing	The apparent noise appearing at the receiver input when in a 3 kHz bandwidth, caused by a 0 dBm signal 100 kHz off tune, is less than 1.0 uV (-107 dBm).
Quieting	Ultimate (S + N)/N: 50 dB
Spurious Responses	Image and IF: -100 dB Spurious: Internal -123 dBm equivalent or less; external -80 dB.
AGC Range	Less than 3 dB audio output variation for 1 uVrms to 1 Vrms RF signal range. (Threshold internally adjustable from .5uVrms to 5uVrms.)
AGC Time Constants	Attack time < 20 milliseconds. Decay time: Front panel selectable as follows: Slow, 4 ± 1 second Medium, 200 ± 50 milliseconds Fast, less than 30 milliseconds
Manual RF Gain	Front panel control, 125 dB range.
AGC I/O	Separate AGC inputs/outputs are provided on the rear panel.
Audio Outputs	Phone: +10 dBm/600 ohms/1% distortion Line Output: -16 to +10 dBm/600 ohms/1% distortion Speaker Internal: 2.0 W/8 ohms/5% distortion Speaker External: 2.0 W/8 ohms/5% distortion Hum and Noise: Less than -50 dB Pass Band Ripple: 3 dB maximum
IF Outputs	Filtered or unfiltered 455 kHz second IF.
Built-In Test Diagnostics	Fault isolation to replaceable module level, with front panel alphanumeric indication.
Power Requirements	100, 120, 220, or 240 Vac selectable; 47-420 Hz, 75 watts typically.
Temperature	Operating: -10 to +55° C Nonoperating: -62° C to +71° C
Humidity	0 to 95%
Size	Rackmount and desk mount capability. 5.25H x 19W x 20.5D inches maximum (13.3H x 48.3W x 52.1D, cm)
Weight	40 pounds (18.1 kg)
Remote Control (Optional, Internal Module)	A microprocessor based system capable of accepting asynchronous serial data in accordance with any one of the following formats: MIL-STD-188C, EIA Standard RS-232-C, or RS-422. Remote Control Functions: Frequency, Channel Select, IF BW, Mode, AGC-TC, BFO, Fault-BITE Status, Scan Select, RF/IF Gain, and Channel Load.

ABOUT THIS MANUAL

This manual is divided into five major sections indicated by blue tabs with section 5 further divided into sub-sections indicated by white tabs. The blue tabs indicate the introduction, installation, operation, technical description, and maintenance sections, while the white tabs indicate the detailed repair information for each assembly.