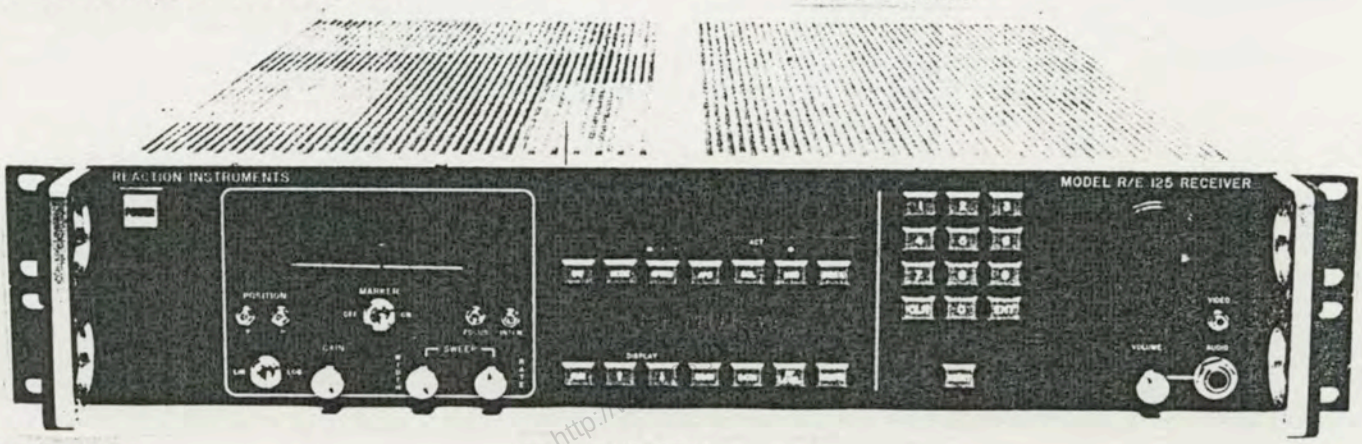
Adams Russell
REACTION INSTRUMENTS, INC.

MODEL R/E-125
VHF/UHF COMINT
RECEIVER



FEATURES

- 20-500 MHz Frequency Coverage
- Exceptionally High Dynamic Range
- AM, FM, (CW and SSB Optional)
- Up to 4 Selectable IF Bandwidths
- Very Fast Tuning Synthesizer
- Sensitive and Fast Carrier
- to Noise-Operated Squelch
- Up to 400 Channels/sec Scan Rate
- High Sensitivity
- High NPR and Low BER
- Lock-On Capability
- Excellent Spurious Response
- Fast AGC Attack and Release
- Signal Strength Measurement
- Local or Remote Control
- Built-in WB Signal Monitor

DESCRIPTION

The Model R/E-125 VHF/UHF COMINT Receiver is a synthesized receiver, designed to fill the need for a general purpose digitally controlled COMINT Receiver. The receiver section, a Model 1250C, is manufactured by Elta Electronics Industries, which is combined with Reaction Instruments' Model 695 IF Display in a single chassis.

The Model R/E-125 Receiver covers the 20-500 MHz frequency range with a 1 kHz resolution. It can demodulate AM, FM, CW and SSB (optional) signals, employing four selectable IF filters. RF preselection by voltage tracking filters provides improved intermodulation protection as well as rejection of spurious signals. A fast-tunable synthesizer is employed with a capability switch and settles between any two selected channels in less than 500 usec.

Integrating the decision and control power of an internal microprocessor unit, the R/E-125 Receiver is available with either local, manual control or with remote control as a basic building block in a larger EW system. The microprocessor enables sophisticated operation modes, combined with a built-in memory of 100 preset tasks or 20 frequency scan ranges.

A built-in signal monitor provides a visual spectrum display of signal activity around the tuned frequency. The sweep width of the signal monitor is continually adjustable up to 4 MHz.

OPERATING MODES

In the LOCAL Mode, the operator has full control of all receiving functions, through the front panel controls:

Tuned Frequency	Squelch Control
Frequency Scan Rate	IF Bandwidth
Detection Mode	Video Gain
AGC ON/OFF	Audio Gain
AFC ON/OFF	RF Gain

Frequency and signal strength are presented.

The LOCAL control mode provides three automatic operating functions:

SINGLE CHANNEL -	preset task receiving
SEARCH -	through the 20 preset frequency ranges
SCAN -	the 100 preset tasks, by automatic scan
RS-422 INTERFACE -	REMOTE mode

SPECIFICATIONS

Frequency Range	20-500 MHz 20-1000 MHz - Optional, uses external converter)
Frequency Resolution	1 kHz (10 Hz in SSB option)
Detection Modes	AM, FM (CW, SSB optional)
Noise Figure	11 dB max.
Preselection	VTF, 8% BW
Input Impedance	50 ohm, 1:3 VSWR max
IF Bandwidth	4 max, select from 10, 20, 50, 100, 200, 300, 350*, 700, 1000, 1400* kHz
Synthesizer Settling Time	500 usec, max. for any freq. step
Frequency Accuracy and Stability	+/-1 ppm max
Input IP3	+15 dBm for two signals +/- 10% from control freq., +5 dBm for two signals in the WB IF
Image Rejection	90 dB (20-180 MHz), 75 dB (180-500 MHz)
IF Rejection	80 dB min
Phase Noise	
f_0 +/-25 kHz	-95 dBc/Hz
f_0 +/-200 kHz	-115 dBc/Hz
f_0 +/-450 kHz	-125 dBc/Hz
LO to Antenna Radiation	-90 dBm max
Spurious Rejection	80 dB
Desensitization	-45 dBm out of band signal, removed at least 200 kHz, will not degrade receiver's sensitivity by more than 3 dB
Squelch	Noise riding, carrier to noise operated
Squelch Sensitivity	10 dB C/N, at 350 kHz IF, 2 msec dwell time 99% probability of interception and 10^{-5} false alarm rate
AFC Range	+/-0.5 IF BW
AGC Range	100 dB
BER	within 2 dB of optimum theoretical curve
NPR	32 dB at IF BW of 700 kHz
Computer Interface	RS-232C
Output	
WB IF to SDU	
Ctr. Freq.	21.4 MHz
Bandwidth	3 MHz min
Gain	10 dB min
NB IF	
Ctr. Freq.	21.4 MHz
Output Level	-3 dB min
Video	1 Vrms into 75 ohms
Audio	
BW	300-3400 Hz
Signal Level	0 dBm min into 600 ohms fixed output on rear panel 6 dBm min, variable output on front panel
Distortion	5% max -100 to -70 dBm 10% max -70 to -10 dBm
Power	115/220 Vac, 48-420 Hz 80 W
Temperature	
Operating	0°C to 50°C
Storage	-25°C to 65°C
Size	3.5" H x 22.5" W suitable for 19" rack mount

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