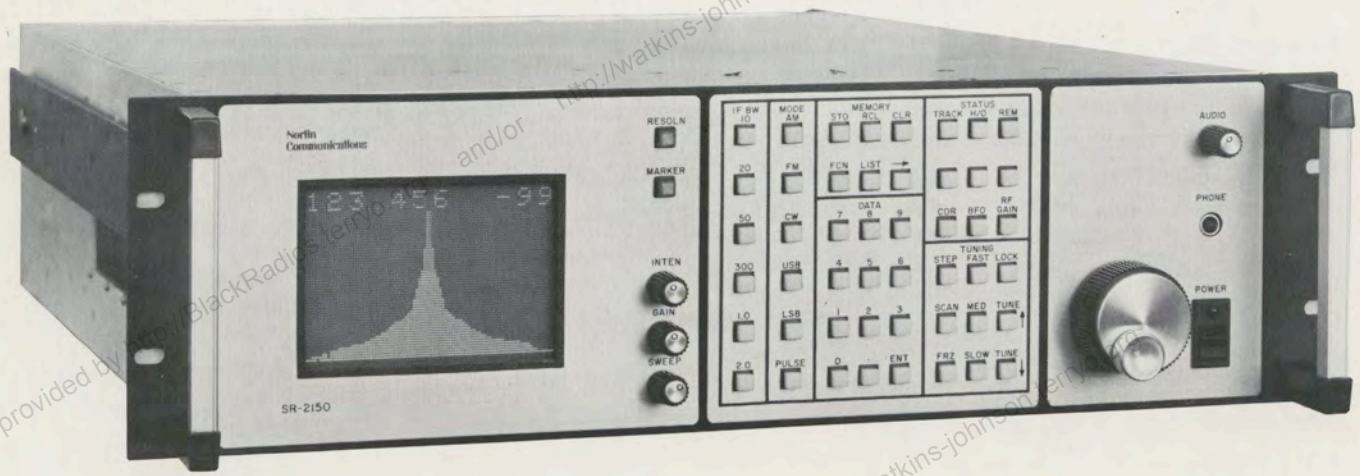
Norlin Communications

RECEIVER SYSTEMS DIVISION

SR-2150 SERIES

VHF/UHF Receiver



Features

- 20 to 500 MHz (Option to 1200 MHz)
- Unique Modular Construction
- Keyboard and Microprocessor Receiver Control
- Centralized Gas-Plasma Display with Signal "Zoom" Feature
- High Speed Synthesizer Tuning
- Low Phase Noise
- Built-in 99 channel memory
- Scan Mode
- Step-Tune Capability
- Front panel design insures ease of operation
- Fully Remote Controllable

Description

The SR-2150 Series Receiver represents a significant breakthrough in high-speed, low phase noise synthesizer techniques applicable to real-world COMINT requirements. The Basic SR-2150 VHF/UHF Receiver tunes the 20 to 499.99999 MHz frequency range and is expandable to 1200 MHz. The receiver is synthesized, fully micro-processor controlled, and features a large screen Gas-Plasma Display for IF pan and scanning presentations. The Gas-Plasma display also presents frequency readout, Signal strength, F_1 - F_2 frequency band, and BFO offset alphanumeric data. The receiver is designed for signal intercept, search and DF applications. This equipment may be deployed for use in fixed station sites, mobile monitoring systems, airborne, shipboard, and submarine collection systems.

The SR-2150 VHF/UHF Receiver accepts a

wide variety of standard modules that enable growth and adaptability to mission changes with mimimum cost. Due to this modular flexibility, the receiver is easily configured and specifically designed to form the nucleus of computer controlled and Master-Slave hand-off systems.

Other receivers in this series are the SR-2102 Slave Receiver and the SR-2153; which offers a receiver with tunable tracking bandpass preselectors and LED frequency readout.

Functional Description

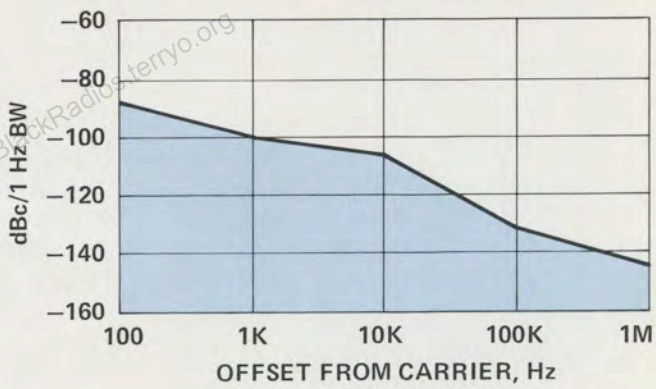
The simplified functional block diagram shows the signal path, available options, and outputs from the SR-2150 receiver. The functional units are closely related to the operational modules for ease of fault isolation. All modules are plug-in, ensuring low mean time to repair. The receiver chassis is fully wired to accept the optional modules at any time in the future.

Specifications

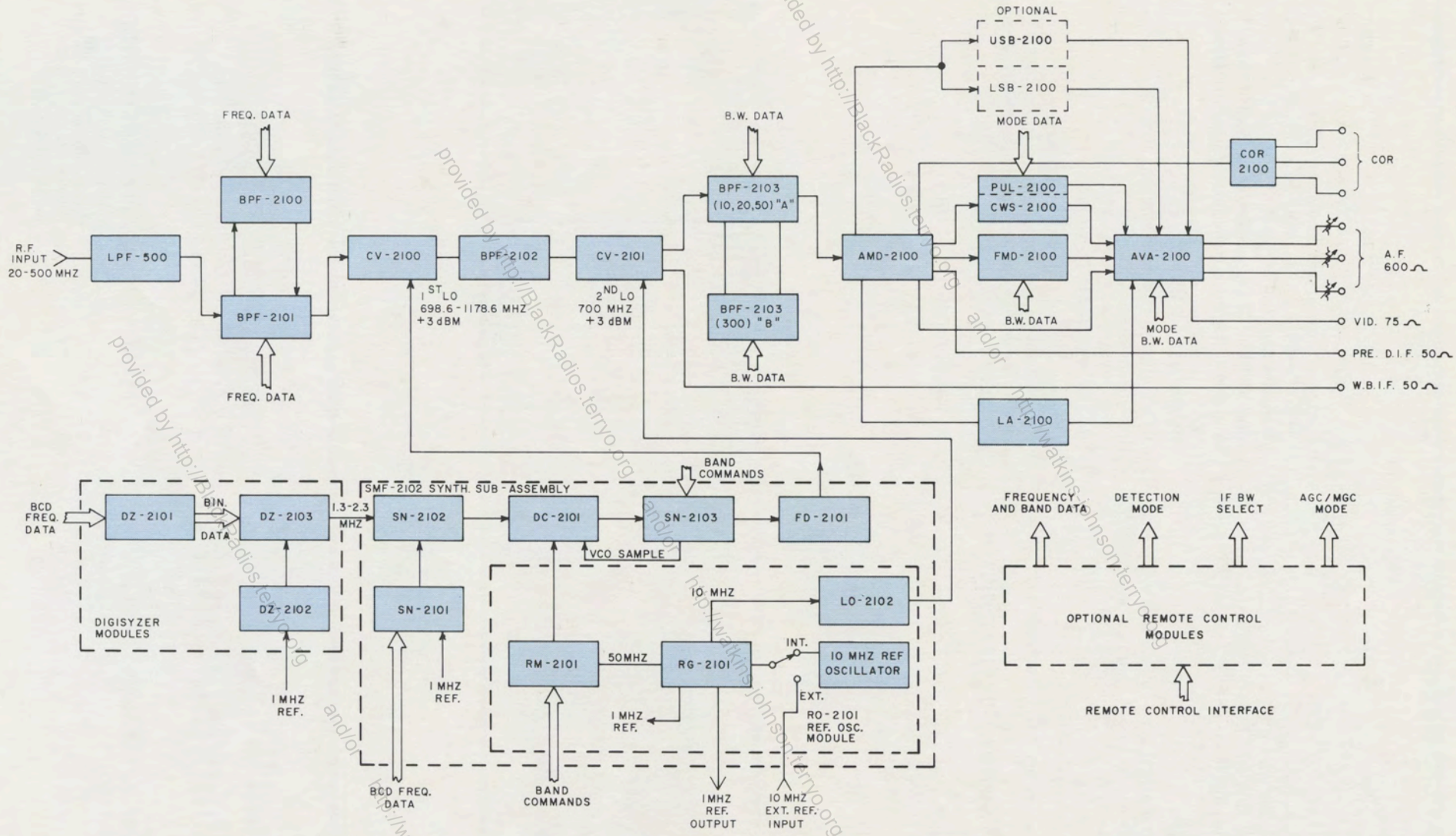
Frequency Range:	20 to 499.99999 MHz (expandable to 1200 MHz)
Frequency Resolution:	10 Hz
Types of Receptions:	AM, FM and CW Detection Modes (SSB and Pulse Detection Optional)
IF Bandwidths:	10, 20, 50, 60, 100, 300, and 500 kHz; 1, 2, 4, 8, and 10 MHz. Any three may be selected as standard.
Frequency Stability:	1×10^{-7} per day
AGC Range:	80 dB for AM, FM, and CW; 6 dB maximum variation
AGC Attack:	10 msec, maximum
AGC Delay:	200 msec, typical
Noise Figure:	10 dB maximum
Third Order Intercept Point:	0 dBm typical, −5 dBm minimum
Second Order Intercept Point:	+50 dBm typical, +40 dBm minimum
Internal Spurious:	−110 dBm maximum
Image Rejection:	95 dB minimum
IF Rejection:	90 dB minimum
LO Radiation:	−95 dBm maximum
Blocking:	−15 dBm for 3 dB reduction in output
BFO Range:	±2 kHz minimum
Input Impedance:	50 Ohms nominal
VSWR:	3:1 maximum
Outputs:	
Preselective IF	21.4 MHz, 20 dB above antenna input up to −40 dB input (rear panel BNC)
Postselective IF	21.4 MHz, −13 dBm for all input levels above −100 dBm to below 0 dBm (rear panel BNC)
Video	1 VRMS into 75 Ohms with a bandwidth equal to ½ the selected IF bandwidth chosen
Audio	100 Hz to 15 kHz, balanced, 10 mw, 600 Ohms
Phone	100 Hz to 15 kHz, front panel jack, 20 mw, 600 Ohms
AGC Monitor	0 to 10 V, proportional to signal strength, 10K Ohms
COR Contacts	.5 AMP, 100 V
IF Pan:	
Amplitude	Logarithmic
Sweep Width	4 MHz
Resolution	Automatically selected for optimum resolution, 10 kHz to 1 MHz
Sweep Rate	30 Sweeps/Second
Marker	21.4 MHz
Input Power:	115/230/240 VAC, ±10%, 47 to 400 Hz, 130 watts approx. (fan required for 400 Hz)
Finish:	Brushed aluminum front panel
EMI:	Designed to MIL-STD-461, Class 1A
Temperature:	0°C to +50°C Operating, −41°C to +71°C Storage
Relative Humidity:	0 to 95%
Weight:	70 lbs approximately
Dimensions:	Height 5.25" 13.3 cm Width 19.00" 48.3 cm Depth 21.00" 53.3 cm

The SR-2150 synthesizer switches in less than 200 microseconds so that the receiver can be rapidly step tuned. Its single sideband noise spectrum, related to reciprocal mixing, is shown below.

TYPICAL RECEIVER SSB PHASE NOISE PERFORMANCE



Specifications subject to change without notice.



Functional Block Diagram

Options

01 DIGITAL CONTROL OPTIONS

a. RCI-2100 IEEE-488 Interface
b. RCI-2101 Serial Card with following capabilities: RS-232C/RS-422/RS-423/Serial Party Line Bus Interface.

02 IF BANDWIDTHS

A total of six IF bandwidths (three in addition to the standard unit) are available from the following: 10, 20, 50, 60, 100, 300, and 500 kHz; 1, 2, 4, 8, and 10 MHz.

03 SSB DEMODULATOR

3 kHz bandwidth, upper and lower sideband

04 FREQUENCY EXPANSION (DC-2102 DOWN CONVERTER)

Extends frequency coverage to 1200 MHz. The single RF input connector is retained. Upon installation, the receiver microprocessor adjusts tuning commands so that a single control and the single display are used for the full 20 - 1200 MHz coverage.

Specifications of the receiver in the 500 - 1200 MHz band are slightly degraded from baseband performance.

05 MAINTENANCE KIT

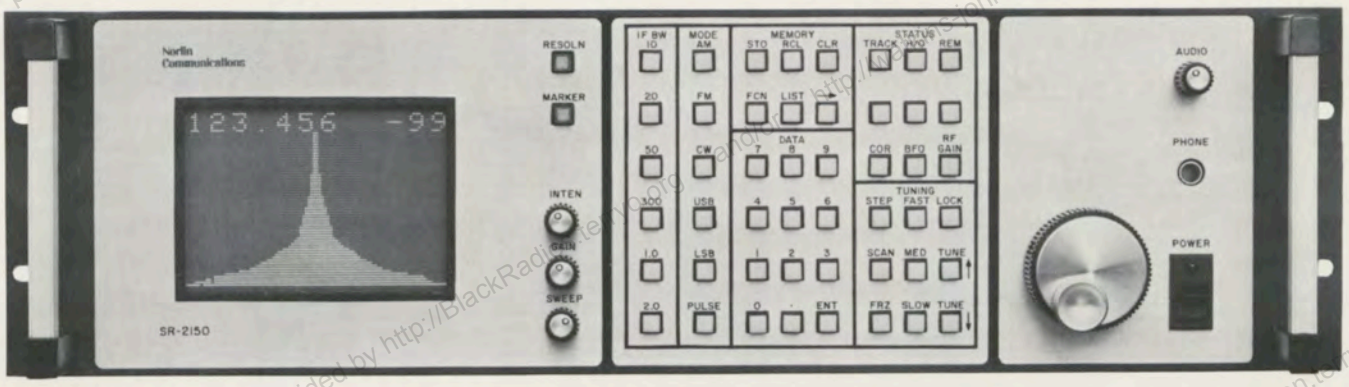
Contains all special tools and card extenders required for routine maintenance.

06 LOGARITHMIC DETECTOR

Provides 0 to 5 V Log Video output for a 70 dB input dynamic range. The output, on a rear panel BNC connector, is available continuously regardless of selected detection mode.

07 PULSE DEMODULATOR

Provides detection of Pulse signals.



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