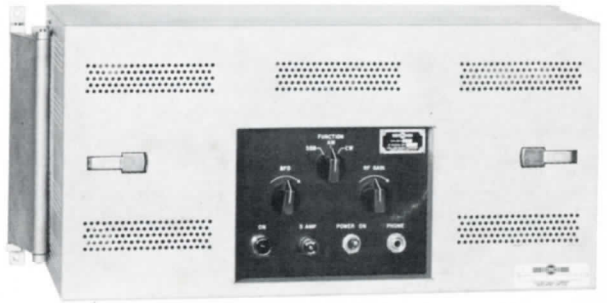


# 51N-8



**COLLINS**

**HF SSB RECEIVER**



*A compact receiver for  
continuous unattended operation in  
air-to-ground or point-to-point communication systems.  
Specific models are available to meet  
individual requirements.*

# **COLLINS** **51N-8** **HF SSB RECEIVER**

The 51N-8 is a stable, fixed frequency single sideband or compatible AM receiver for voice operation in the 2-30 mc range. An excellent selectivity characteristic makes it ideal for operation in terminal areas where channel frequencies are closely spaced. Selection of desired sideband, channel choice, RF gain level and On-Off functions may be either locally or remotely controlled.

## **FEATURES**

**CRYSTAL FILTER** in the RF circuit reduces cross modulation effects to a very low level and prevents blocking.

**HIGH FREQUENCY STABILITY** is assured by housing the frequency determining crystals in a dual plug-in temperature-controlled oven.

**SINGLE CONVERSION RF** circuit, made possible by a crystal filter, reduces circuit complexity and increases operational reliability.

**MODULAR CONSTRUCTION** provides easy access to all components and test points. Since modules plug into the chassis, replacement is rapid and simple.

## **CIRCUITRY**

The receiver uses a single conversion frequency scheme. The RF circuit incorporates a bandpass crystal filter preceding the RF amplifier circuits which rejects all adjacent channel or other spurious signals. A crystal-controlled HF oscillator supplies the correct injection frequency voltage to the first converter.

The 500 kc output signal is connected to an IF module through a 50 ohm cable. It is amplified and coupled to the second IF stage through a Collins Mechanical Filter.

The Filter, with its inherent steep skirt characteristic, limits the noise bandwidth and selects the desired sideband.

The second IF amplifier stage drives a low distortion heterodyne second detector and the AVC amplifier. The detector output is amplified by a single transistor audio stage and transformer coupled to the line amplifier. The AVC voltage is rectified by a delayed circuit, providing a characteristic which gives a nearly constant amplitude audio level over a wide range of input levels.

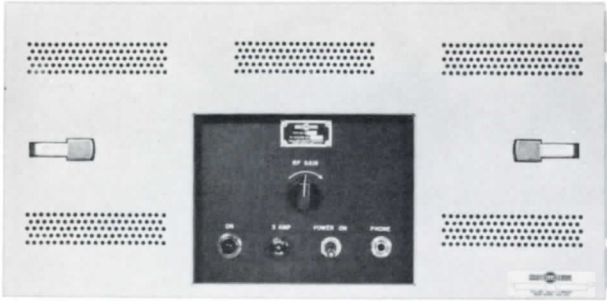
The line amplifier provides additional gain to feed the audio signal to a telephone line. Voltage for the receiver is furnished by a self-contained power supply module.

Connections are provided to permit power to be turned on and off, receiver gain adjusted and the mode of operation selected from a remote location with auxiliary control facilities using simplified circuitry.

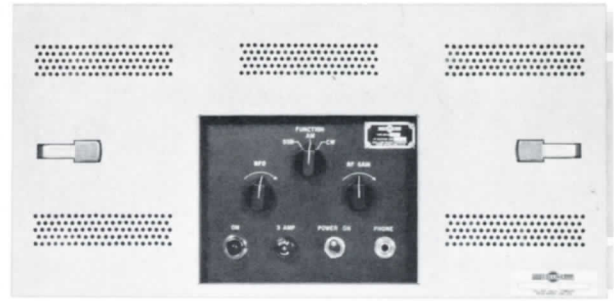
RF gain level may be adjusted to limit noise output in the absence of a received signal.

The 51N-8 Receiver consists of a group of modules, each housing a major circuit function, which plug into a single hinge mounted rack panel. All wiring between modules is made at the rear of the receiver and is readily accessible from the rear by simply swinging the panel forward and removing the rear shield plate.

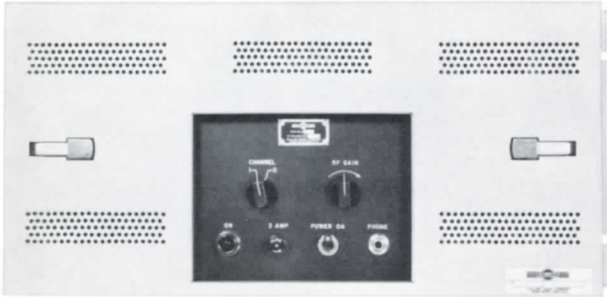
Modular construction provides easy access to all components and test points. These independent subassemblies are provided with numerous test points accessible from the front. Since the modules plug into the chassis, replacement is rapid and simple. Modules have snap-on covers for interior access. Module component leads are soldered into eyelets in the etched wiring boards. This facilitates removal and replacement of components.



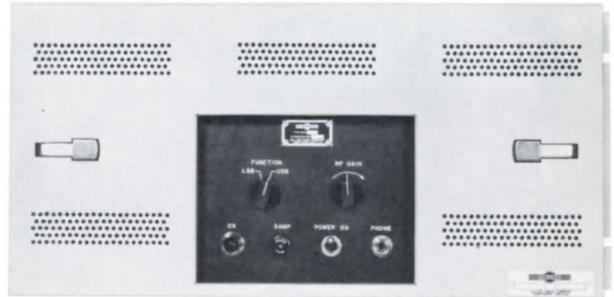
51N-8AL lower sideband or 51N-8AU upper sideband, single channel high frequency receiver.



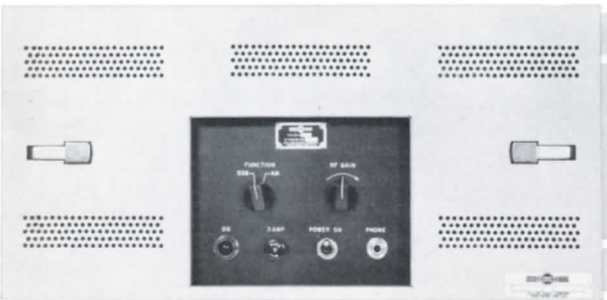
51N-8DL and 51N-8DU offer choice of AM, CW and lower sideband or AM, CW and upper sideband, respectively. Single channel operation is provided by either receiver.



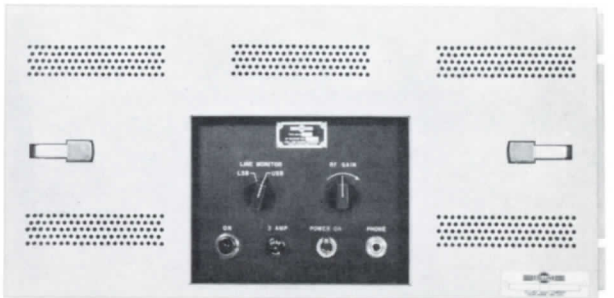
51N-8BL lower sideband or 51N-8BU upper sideband, two channel receiver.



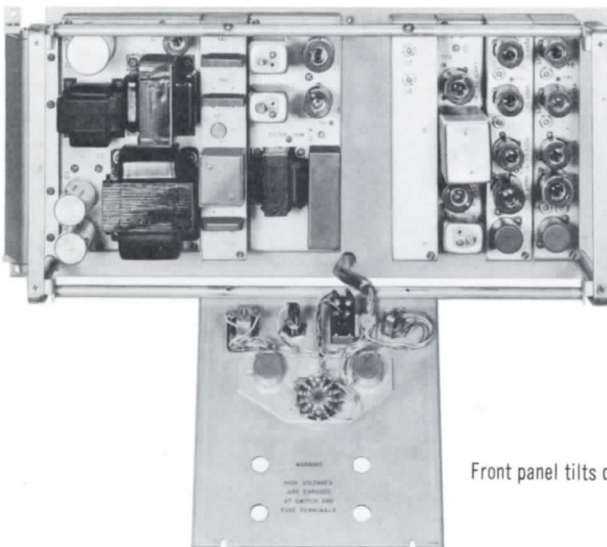
51N-8E allows a choice of either upper or lower sideband operation on a single channel.



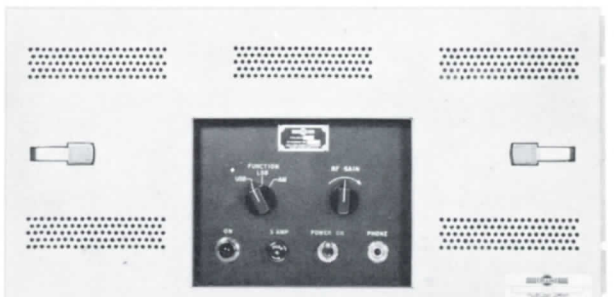
51N-8CL and 51N-8CU offer choice of AM and lower sideband or AM and upper sideband, respectively. Single channel operation is provided.



51N-8F permits simultaneous reception of two independent sidebands with carrier frequency suppressed. Single channel operation is provided.



Front panel tilts down permitting easy removal of modules. Modules have snap-on side covers for interior access.



51N-8G allows choice of either AM, lower sideband or upper sideband operation on a single channel.

## SPECIFICATIONS

FREQUENCY COVERAGE: 2-30 mc. Plug-in coils in 4 bands. Crystal filter for desired channel frequency. HF crystal at  $\frac{\text{channel frequency} + 500 \text{ kc.}}{2}$

FREQUENCY STABILITY: 1 part in  $10^6$  per week (20-35° C). 2 parts in  $10^6$  per week (0-55° C). 0.5 part in  $10^6$  (cyclic stability at normal ambient).

TYPES OF RECEPTION: SSB voice using upper sideband, lower sideband or simultaneous independent sideband (both sidebands, suppressed carrier), AM or CW, depending on model. FSK operation available with accessory equipment.

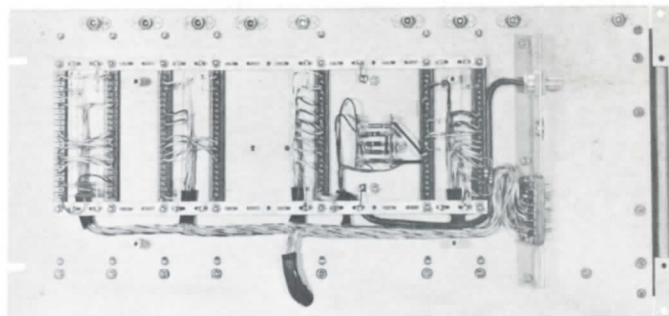
SELECTIVITY: 3 kc at 6 db down, 5.6 kc at 60 db down.

SENSITIVITY: SSB not more than 1 uv for 10 db  $\frac{S + N}{N}$  ratio. AM not more than 2 uv for 6 db  $\frac{S + N}{N}$  ratio.

SPURIOUS SIGNAL REJECTION: Exceeds 60 db, including images.

RF INPUT IMPEDANCE: 52 ohm unbalanced.

AGC CHARACTERISTICS: Audio output variation less than 6 db for inputs from 20-200,000 uv. Not more than 6 db reduction with 1 uv signal input.



51N-8 Receiver, rear cover removed showing complete accessibility of all wiring for inspection or maintenance.

AUDIO POWER OUTPUT: 0 dbm into 600 ohms with 10 uv signal.

AUDIO OUTPUT IMPEDANCE: 600 ohm balanced.

AUDIO RESPONSE:  $\pm 3$  db from 300-3,000 cps.

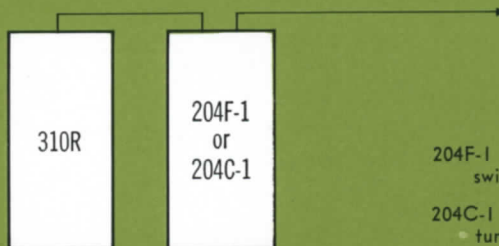
POWER SOURCE: 115-230 v  $\pm 10\%$ , 1 phase, 50-60 cps. 200 watts maximum.

SIZE: 19" W, 7" D, 8 $\frac{3}{4}$ " H, excludes rack.

WEIGHT: Approx. 25 lbs.

## ASSOCIATED EQUIPMENT

A combination of the 310R Exciter, featuring operation in the 2-30 mc range, and one of the associated power amplifiers is compatible for SSB operation with the 51N-8 Receiver.



204F-1 2.5 kw Power Amplifier—2-30 mc, may be switched between either of two preset channels.

204C-1 10 kw Power Amplifier—4-25 mc, manually tuned, continuous frequency coverage.



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