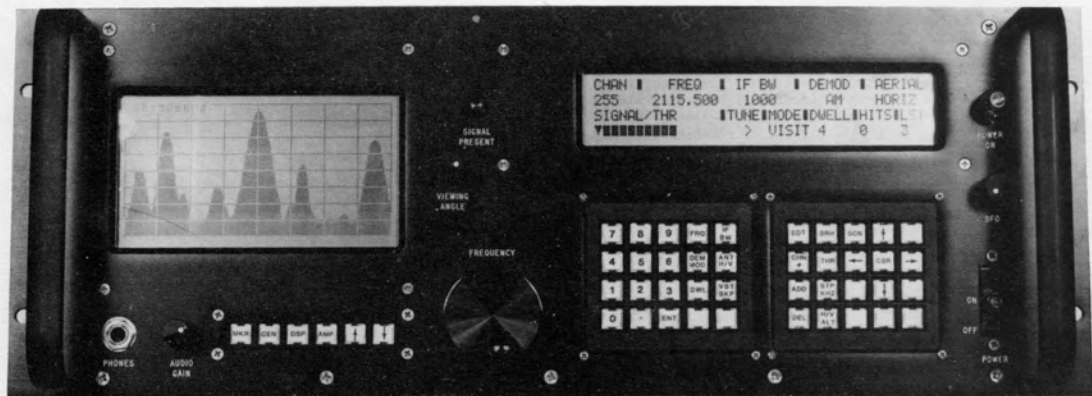




VHF/UHF FREQUENCY SYNTHESIZED RECEIVER



MODEL 8601

Featuring . . .

- 20 – 2120 Frequency Coverage
- Frequency Synthesized to 1 KHz
- Up to 7 IF Bandwidths for Front Panel Section
- AM, FM, Pulse and CW/SB Demodulation
- Spectrum Display

INTERAD LTD.

Gaithersburg, Maryland

U.S.A.

GENERAL DESCRIPTION

The Interad Ltd. Model 8601 is an advanced receiver which features local/remote-controlled functions, the latest solid state electronics and frequency synthesizer to provide reliable monitoring of the 20-520 MHz frequency spectrum. With the frequency converter option, the receiver can monitor signals up to 2120 MHz.

The RF section of the 8601 is a double conversion superheterodyne front end with the first IF at 1090 MHz and the second IF at 21.4 MHz. This RF section incorporates wide dynamic range components to assure spurious-free reception. The IF demodulation section contains three selectable bandwidths (see Table 1) and AM/FM demodulators. An additional four IF bandwidths, as well as pulse and CW/sideband demodulation can be incorporated as options.

The local oscillator subassembly of the receiver consists of two phase-locked loop synthesizers with a tuning resolution of 1 KHz and a continuous tuning speed of 5 milliseconds. Both local oscillators are fully synthesized and derive their frequency reference from a common, high stability 100.000 MHz oscillator.

When operating under local control, the receiver functions are selected using two front panel keyboards. A rear panel 25-pin connector enables remote control of these functions using the RS-232C communication protocol. A front panel liquid crystal display indicates tuned frequency, IF bandwidth, demodulation mode and channel memory.

In addition to the extended frequency range, additional IF bandwidths and demodulation options, there is the option of an all solid state signal spectrum display. This subassembly contains a 2.75 x 5-inch LCD panel for display of the received signal spectrum.

The 8601 is designed for mounting in a standard 19-inch rack with a 7-inch panel height. Internal construction is modular to facilitate incorporation of options as well as maintenance and repair. All RF-sensitive modules are housed in precision aluminum enclosures and are interconnected with coaxial cables. The receiver chassis is made from welded aluminum which is finished in clear iridite. The front and rear panels are machined aluminum. The front panel is engraved with a black anodite finish.

The 8601 contains a micro-controller subassembly to control receiver operation. Software is stored in ROM to facilitate testing and reprogramming of the receiver. Custom software can be written by Interad on an optional basis.

The hardware for the micro-controller consists of MSI/LSI integrated circuits mounted on printed circuit cards. The majority of these components are CMOS devices to minimize power consumption. The microprocessor is a CMOS device, the NSC-800. This microprocessor is software-compatible with the popular Z-80 microprocessor.

The standard operating modes programmed into the 8601 are the following: Manual receiver operation using front panel controls; remote receiver control via RS-232C port on rear panel; search and acquisition mode for up to five different frequency ranges ($F_1 - F_2$) within overall coverage; and frequency scanning of up to 256 preset channels. In the scanning mode each individual channel can be programmed for the following: Frequency specified to the nearest KHz; IF bandwidth; demodulation mode; dwell time on frequency after signal drops below threshold setting; and antenna to be used (see below).

An additional option available with the 8601 is the separate ASU-8501 antenna selector module. The ASU-8501 has four antenna input jacks (type N connector) enabling the operator to select one of four different antennas for interconnection with the receiver. This module is connected to the receiver by a single RF coaxial cable and a separate control cable. This option provides unique versatility. For example, in the channel scan mode the operator can program the specific antenna to be used for each frequency.

SPECIFICATIONS

Frequency Range	20 to 520 MHz
Frequency Tuning Resolution	1 KHz
Demodulation Modes	AM, FM, Pulse and CW/SW
Reference Accuracy	±1 PPM/week
RF Input Impedance	50 ohms nominal
RF Input VSWR	2.0:1 maximum
Receiver Noise Figure	7dB typical; 10dB maximum
Receiver Sensitivity	See Table 1
Image Rejection	90dB minimum
IF Rejection	90dB minimum
Automatic Gain Control	6dB maximum audio output variation from AGC threshold
IF Bandwidths	Three IF modules selected from Table 1; other bandwidths available as options

Receiver Control

- Local Keyboard entry of frequency, IF bandwidth, demodulation mode and threshold setting
- Remote Rear panel 25-pin jack, RS-232C protocol; select frequency, IF bandwidth, and demodulation mode

Temperature Range

- Operating..... 0° to +50°C.
- Storage -20° to +70°C.

Humidity.....	0 to 95%
Size	19" wide x 7" high x 24" deep (rack mountable)
Weight.....	40 lbs. nominal
Power.....	115/230 ± 10% VAC, 50-60 Hz, single phase, 75 watts maximum

RECEIVER CONTROLS, INDICATORS AND CONNECTORS

FRONT PANEL

Power ON/OFF	Push-button/circuit breaker combination switch
Power ON Indicator	Red neon light
Local/Remote Control	Toggle switch
Frequency Setting; IF Bandwidth Selection; Demodulation Mode Selection; Threshold Level Selection; Channel Memory	
Storage.	Two 4 x 5 keyboards
Frequency, IF Bandwidth, Demodulation, Threshold Level and Channel Display.	Four-line LCD panel
Headphone Output	8 ohm, 1/4-inch jack
Headphone Level Control	Continuously adjustable potentiometer, 0 to .1 watt

REAR PANEL

Antenna Input	Type N
Remote Control	25-pin D-subminiature
Carrier Operated Relay	NO and NC contacts on barrier strip
Demodulated Output	BNC female
AC Power Input	3-pin Corcom IEFI
AC Voltage Select	Slide switch 230/115

STANDARD RECEIVER CONTROL SOFTWARE (USING FRONT PANEL KEYBOARD)

- Manual Receiver Control from Keyboard
- Remote Control via RS-232C
- Frequency Scanning of up to 256 Present Channels
- Each Channel Individually Programmed for: IF BW, Demodulation Mode, Dwell Time, Antenna Polarization and Frequency
- Search/Acquisition Mode with Up to 5 Programmed Search Ranges

OPTIONS

- A. Frequency coverage from 20-2120 MHz
- B. IEEE-488 bus control
- C. High input, third order intercept point (OdBm typical, -5dBm minimum)
- D. Spectrum Display Subassembly SDA-8501 — solid state LCD display:

Viewing Size	2.75 x 5 inches
Sweep Width	0-3 MHz continuously adjustable
Resolution	10 KHz
Signal Amplitude Response	Logarithmic
Gain Control Range	80dB nominal
Sweep Rate	8 Hz nominal
Calibration Marker	21.4 MHz center frequency
- E. Additional IFs (4 maximum, for a total of 7 in the receiver)
- F. ASU-8501 Antenna Selector Module

TABLE 1**8601 RECEIVER SENSITIVITY VS. IF BANDWIDTH**

IF BANDWIDTH (KHz) ¹	RECEIVER SENSITIVITY (dBm) ²
5	-108
10	-105
20	-102
30	-100
50	- 98
75	- 96
100	- 95
300	- 90
500	- 88
1000	- 85
2000	- 82
2500	- 81
5000	- 78

NOTES:

1. Seven of the above can be installed in the 8601 at one time. Bandwidth specified at 3dB points. Other IF bandwidths available as special options.
2. AM sensitivity figures are for a 10dB S+N/N ratio with a 50% AM input test signal (1 KHz). FM sensitivity figures are the same but for a 17dB S+N/N ratio, the FM input test signal having a peak deviation equal to 30% of the listed IF bandwidth.

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