



FEATURES

- Frequency Range: 20 to 500 MHz
Optional Extension to 1300 MHz
- Fast Tuning
- Integral Search Controller
- Computer Control
- AM, FM, CW Detection Modes
Optional SSB
- Optional Tracking Preselector

DESCRIPTION

Covering the 20 to 500 MHz range, the Model 688 VHF/UHF Receiver offers the user a powerful combination of operational and control modes which, with a 1 ms tuning speed, make it highly effective for both surveillance and general communication applications. Standard features include narrowband and wideband 21.4 MHz IF outputs, audio, video and COR outputs, up to four selectable IF bandwidths, AM/FM/CW demodulators, and a 1 MHz reference input. A built-in search controller with 100-channel memory storage performs both memory and F_1 - F_2 scans. Optional features include an SSB demodulator, tracking preselector, simultaneous AM and FM video outputs and a 5 MHz or 10 MHz external reference input.

If additional frequency coverage is required, the Model 6881 Frequency Extender may be added which extends the upper limit of the receiver to 1300 MHz. The extender is designed as a companion unit which may be mounted on top of the receiver or on the side, together with an optional Model 695A IF Display.

When configured with an IEEE-488 interface, the Model 688 is capable of controlling a spectrum analyzer to form a powerful search and acquisition system. By storing up to ten complete search scenarios, the receiver can instantly recall a scan band and set up the spectrum analyzer to track activity.

The Model 688 is packaged in a half-rack chassis, 3-1/2 inches high by 20 inches deep, suitable for 19-inch rack mounting. The Model 6881 is packaged in a half-rack chassis, 1-3/4 inches high.

SPECIFICATIONS

Frequency Range	20-500 MHz 20-1300 MHz with the Model 6881 Frequency Extender
Frequency Resolution	1 kHz 10 Hz in SSB
Detection Modes	AM, FM, CW — Standard SSB — Optional
Outputs	IF, Video, Audio, COR — Standard Simultaneous AM/FM Video — Optional
Tuning Speed	1 ms, nominal
IF	21.4 MHz
Input Impedance	50 ohms
Input VSWR	2.5:1, nominal
Noise Figure	
20-500 MHz	6 dB typical, 8 dB maximum (add 4 dB when optional tracking preselector is installed)
500-1300 MHz	11 dB typical, 14 dB maximum
3rd Order Input Intercept Point	0 dBm
External Reference Input	1 MHz — Standard 5 or 10 MHz — Optional
Internal Frequency Accuracy	$\pm 1 \times 10^{-6}$
Image Rejection	90 dB, 20-500 MHz 65 dB, 500-1300 MHz
IF Rejection	90 dB (21.4 MHz)
Phase Noise	
20-500 MHz	-90 dBc in 1 Hz BW at 20 kHz
500-1300	-80 dBc in 1 Hz BW at 20 kHz
Conducted LO	-85 dBm
Internal Spurs	-105 dBm (referred to input)
AGC/MGC Range	70 dB, minimum
Wideband IF Gain	+25 dB, nominal
Sensitivity	-95 dBm in 100 kHz IF bandwidth
AM SNR	10 dB, nominal ¹
FM SNR	17 dB, nominal ²
IF Bandwidths	4, 10, 20, 50, 100, 300, 500 kHz
User Specified	1, 2, 4, 6, and 8 MHz
Outputs	
IF	
Wideband	
Level	+25 dBm nominal
Bandwidth	8 MHz

Narrowband Level	-20 dBm (AGC'd)
Bandwidth	In accordance with selected bandwidth
Video	
AM/FM	Selectable (single output) - Standard Simultaneous (two outputs) - Option
Level³	2 VP-p (50 ohms)
Bandwidth	dc to 1/2 IF Bandwidth
Audio	
Fixed Level	Rear panel
Level³	0 dBm (600 ohms)
Bandwidth	
AM/FM	300-8000 Hz
CW	Variable BFO
USB, LSB	300 to 2600 Hz - Optional
Headphone Level³	Front panel adjustable 0 to .25 Vrms (600 ohms)
Bandwidth	300-4000 Hz
COR	TTL
Inputs	
RF Input	
Level	-20 dBm to -110 dBm
External Reference	
Level	0.7 Vrms
Frequency	1 MHz - Standard 5 or 10 MHz - Optional
Stability	Better than 1×10^{-6}
Microprocessor	
Type	80188
Memory	RAM - 32K EPROM - 64K Power-down backup
Connectors	
Rear Panel	RF Input - Type N External Reference Input - BNC Outputs - BNC Control - IEEE-488 or RS-232C
Front Panel	Headphone Jack
Power	115/230 Vac, 47-420 Hz, 60 W
Temperature	0° to 50°C, Operating
Weight	25 lbs.
Style	Half-rack chassis, 3-1/2 inches high, 20 inches deep, designed for 19-inch rack mounting

¹AM sensitivity measured with 50% AM at 1 kHz rate

²FM sensitivity measured with deviation equal to 30% of selected IF bandwidth at a 1 kHz rate

³AM equal to 90%, FM equal to 95% of selected IF bandwidths at 1 kHz rate

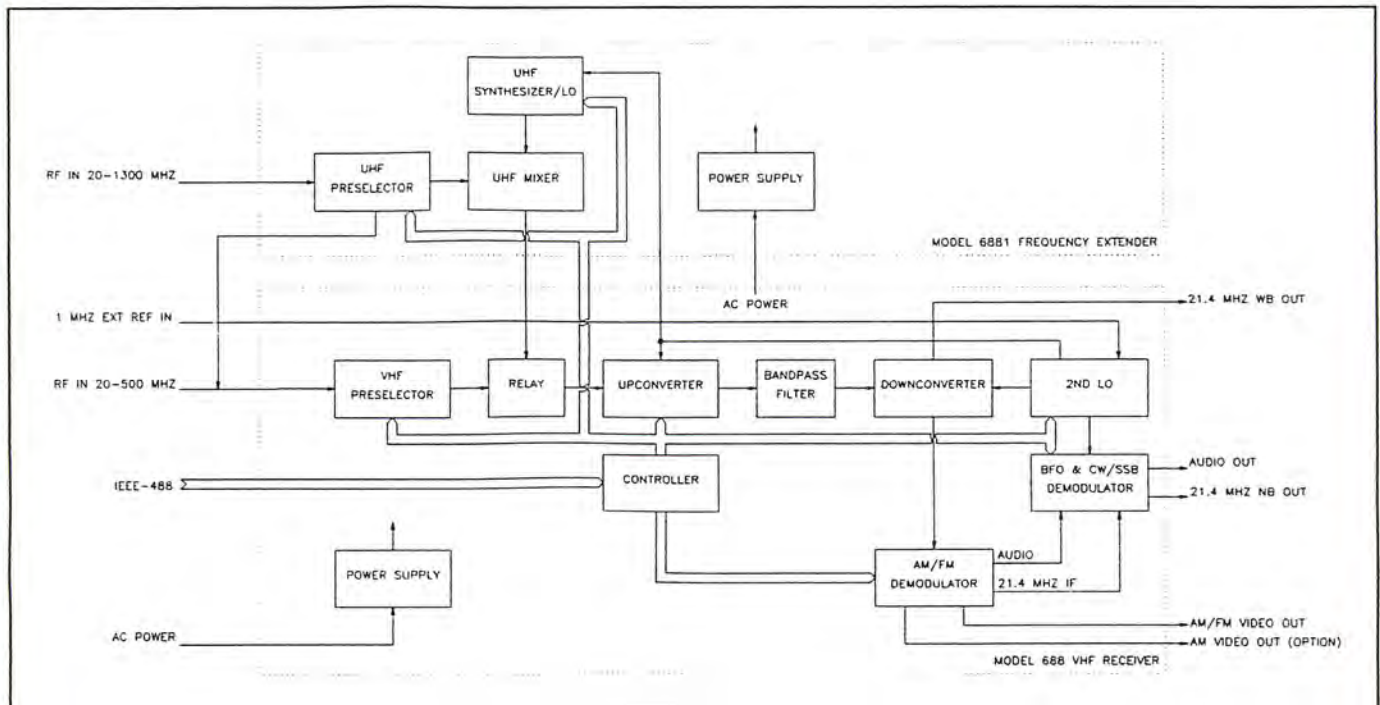
ORDERING INFORMATION

The Model 688 VHF/UHF Surveillance Receiver provides a frequency range from 20 to 500 MHz, four IF bandwidth filters (please specify), AM/FM/CW demodulation, an integral search controller, either IEEE-488 or RS-232C computer control, 21.4 MHz narrowband and wideband outputs, COR output, and a 1 MHz external reference input. SSB demodulation, a tracking preselector, simultaneous AM/FM video outputs, eight IF bandwidth filters, and 5 or 10 MHz external reference inputs are available as options. The Model 6881 Frequency Extender increases the upper frequency limit to 1300 MHz and is supplied with all necessary interconnecting cables. When ordering, please specify:

Option I20	RS-232C Control Interface (not available with option I30)	Option B55	500 kHz IF Bandwidth Filter
Option I30	IEEE-488 Control Interface (not available with option I20)	Option B16	1 MHz IF Bandwidth Filter
Option G03	Simultaneous AM/FM Video Output	Option B26	2 MHz IF Bandwidth Filter
Option B08	8 IF Bandwidth Filters (choose 4 additional filters)	Option B46	4 MHz IF Bandwidth Filter
Option B43	4 kHz IF Bandwidth Filter	Option B66	6 MHz IF Bandwidth Filter
Option B14	10 kHz IF Bandwidth Filter	Option B86	8 MHz IF Bandwidth Filter
Option B24	20 kHz IF Bandwidth Filter	Option F12	Tracking Preselector
Option B54	50 kHz IF Bandwidth Filter	Option M04	SSB Demodulator
Option B15	100 kHz IF Bandwidth Filter	Option E05	5 MHz External Reference
Option B35	300 kHz IF Bandwidth Filter	Option E10	10 MHz External Reference
		Option H02	No Front Panel

WARRANTY

All of Reaction Instruments' equipment is warranted for one year, except for damage caused by accident or misuse, provided the equipment is returned for repair to the plant in Herndon, VA



Model 688 Receiver Block Diagram

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