

**FEATURES:**

- FREQUENCY RANGE: 20 TO 500 MHZ
- SMALL SIZE: 1.75" HIGH, HALF-RACK
- UP TO 4 IF BW'S (10 KHZ - 8 MHZ)

**OPTIONS INCLUDE:**

- COMPUTER CONTROL
- SEARCH CONTROLLER
- TEMPEST

Reaction Instruments' Model 685A VHF Receiver covers the 20 to 500 MHz band. It is a compact half-rack unit operated either by front panel or computer control and can be used as a primary or hand-off receiver. AM and FM video detected outputs and audio are provided in addition to a 21.4 MHz IF output. Up to four user selected IF Bandwidths from 10 kHz to 8 MHz are available. Noise Riding Threshold/COR, AFC and AGC are provided.

Receiver Control is extremely versatile. The receiver can be controlled manually from the front panel, by RS-232C or IEEE-488 computer interfaces, or by a Reaction Instruments Model 6852 Search Controller which has been designed to optimize signal acquisition in a surveillance system.

The Model 685A can be expanded to provide a full surveillance system capability with the addition of a Frequency Extension Unit (to 1300 MHz), Search Controller, Signal Activity Monitor, Preselector, IF Display and Matrix Multicouplers.

The Model 685A VHF Receiver is packaged in a compact 1 3/4" high, half-rack chassis, and a rack adapter is available for mounting the unit in a standard 19" rack. Each of the companion units are similarly packaged and are mechanically designed to form a system which will occupy minimum rack space.



# MODEL 685A VHF/UHF RECEIVER

## PERFORMANCE SPECIFICATIONS\*

Frequency Range	20-500 MHz 20-1300 MHz (with optional Downconverter)
Frequency Resolution	1 kHz
Detection Mode	AM, FM
Outputs	IF, Video, Audio, C.O.R.
Tuning Speed (Nominal)	10 ms (Synthesizer)
Intermediate Frequency	21.4 MHz
RF Input Impedance	50 ohms
Input VSWR	2.5:1
Noise Figure	8 dB
Intermodulation	
IP3	0 dBm
External Reference (optional)	1 MHz
Internal Frequency Accuracy	+/-1:10 <sup>6</sup>
Image Rejection	90 dB
IF Rejection (21.4 MHz)	90 dB
Phase Noise	
20-500 MHz	-90 dBc in 1 Hz BW at 20 kHz
500-1300 MHz	-80 dBc in 1 Hz BW at 20 kHz
Conducted L.O.	-85 dBm
Internal Spurs	-110 dBm (referred to input)
AGC/MGC Range	100/70 dB
RF-Wideband IF Gain	25 dB minimum
IF Bandwidths	
-User Specified (4 max.)	10, 20, 50, 100, 300, 500, 1000, 2000, 4000, 6000, 8000 kHz (others available)
AM Sensitivity <sup>1,3</sup>	10 dB nominal
FM Sensitivity <sup>2,3</sup>	17 dB nominal

<sup>1</sup> AM sensitivity measured with 50% AM at 1 kHz rate

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

<sup>3</sup> Input -95 dBm, 100 kHz IF bandwidth

\* Specifications may vary depending upon options and are subject to change.  
Valid over 90% of the band



# MODEL 685A VHF RECEIVER

## PERFORMANCE SPECIFICATIONS (cont'd)

### Outputs

#### IF

Wideband	
Level	+25 dBr
BW	8 MHz
Narrowband	(option)
Level	-20 dBm (AGC'd)
BW	IAW with selected BW

#### IF Display

BW	8 MHz
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### Video

AM/FM	Selectable (single connector) Simultaneous (Optional)
Level	2 V pk-pk (50 ohms)
BW	dc to 1/2 IF BW

### Audio

Fixed Level	Rear panel
Level	1.7 Vrms (600 ohms)
BW	300-8000 Hz
Headphone	Front panel adjustable
Level	0 to 0.6 Vrms (600 ohms)
BW	300 to 4000 Hz

### COR

TTL

### Inputs

RF Input	
Level	-20 dBm to -110 dBm
External Reference	(Option)
Level	0.7 Vrms
Frequency	1 MHz
Stability	Better than 1:10 <sup>6</sup>

### Microprocessor

Type	8088
Memory	RAM - 8 K EEPROM - 32 K Power-down backup



# MODEL 685A VHF RECEIVER

## GENERAL

### Style

Each Unit 1 3/4" high x 20" deep half-rack chassis  
Rack Adapter For EIA 19" rack  
Available for 1, 2, 4, 6 units

### Connectors -

Input Signal Type N  
Output Signals BNC female  
Digital IEEE 488 (Optional)  
RS-232C (Optional)  
Communications (DE-15) (optional)

### Front Panel Audio

### Controls

Headphone Jack  
Freq., BW, NRT, AFC, AM/FM, MGC/AGC,  
MAN/AUTO, Clear, Enter, Audio Volume,  
Tuning, Keypad, Power

### Power

25 watts  
115 Vac 60 Hz (Standard)  
220 Vac, 50 Hz (Optional)  
others available (dc to 400 Hz)

### Temperature (Operating)

0° to 50°C

### Weight

12 lbs.

### EMI

TEMPEST (Optional)

## OPTIONS:

685A-1	IEEE-488 Interface	685A-BW	IF Bandwidths (Specify)
685A-2	RS-232C Interface	685A-T	Tempest
685A-3	Narrowband IF Output	6854	Freq. Extension
685A-4	Communications Interface	6851	Preselector
685A-5	External Reference	6852	Search Controller
685A-6	Simultaneous AM/FM	695A	IF Display