

## 565A RECEIVER



## FEATURES

The 565A Receiver provides AM, FM, CW, and pulse reception over the frequency range of 20 MHz to 1000 MHz using six plug-in tuning heads. Ranges of the tuning heads are 20 to 90, 90 to 260, 100 to 400, 200 to 425, 235 to 500, and 490 to 1000 MHz. One tuning head may be installed in the receiver at a time.

Up to three IF strips may be installed for selection by a front-panel switch. IF bandwidths are available from 10 kHz to 3 MHz. Optional IF bandwidths of 4 kHz and 4 MHz are available on special order. When the VH-101 (20 to 90 MHz) Tuning Head is in use, the maximum IF bandwidth available is 1 MHz up to 40 MHz, and 1.5 MHz above 40 MHz. The IF output center frequency from all tuning heads is 21.4 MHz. Crystal filters are used to establish bandwidths up to 100 kHz and LC filters for bandwidths wider than 100 kHz. For the demodulation of FM signals, built-in down conversion to 455 kHz and LC Foster-Seeley circuits are used for both the narrow and wide IF bandwidths. In the CW mode a tunable BFO operates in all bandwidths. A predetection IF output centered at 21.4 MHz is available at the rear panel of the receiver.

The receiver is designed to provide state-of-the-art signal-handling performance without sacrifice of noise figure or other receiver performance parameters. All design objectives have been met. The 565A Receiver delivers a 3rd order intermod intercept point of  $-10$  dBm referred to the input of the receiver. Thus, two  $-40$  dBm signals within the input

passband produce a 3rd order intermod product which is 60 dB below the level of the input signals.

The 565A Receiver is provided with a built-in signal monitor which gives a visual display of signal activity over a frequency range of up to 1.5 MHz on both sides of the tuned frequency. The sweep width of the display is continuously variable by means of a front-panel control up to 3 MHz maximum dispersion. A 21.4 MHz crystal-controlled marker oscillator built into the display may be used to indicate the exact center of the receiver's IF passband. By providing the marker oscillator, the need for a tuning meter is eliminated.

Tuning heads for the 565A Receiver are designated as follows:

Type	Frequency Range
VH-101	20-90 MHz
VH-103	90-260 MHz
VH-105	200-425 MHz
VH-107	100-400 MHz (2 bands: 100-200 and 200-400 MHz)
UH-101	235-500 MHz
UH-104	490-1000 MHz

All active elements in the 565A Receiver and tuning heads are solid state with the exception of the CRT in the spectrum display. A carrier-operated relay (COR) in the

For Further Information Please Contact:

## WATKINS-JOHNSON COMPANY

700 Quince Orchard Road, Gaithersburg, Maryland 20878  
(301) 948-7550 TWX: 710-828-0546 Telex: 89-8402 Cable: WJCEI

Printed in U.S.A.

DECEMBER 1984

Supersedes Technical Data Sheet 165.55  
dated April 1984

Specifications subject to change without notice.

receiver has an adjustable threshold control and a COR release delay switch so that the release time can be set to approximately 0.5, 5, or 15 seconds. The relay has DPDT contacts which are brought out to a rear-panel barrier strip. Audio squelch is provided by the threshold set with the COR threshold control. There is no delay, however, in blanking the audio output following the loss of the input signal. The output of the receiver's video amplifier is fed to a rear-panel BNC connector. A screwdriver-adjust gain control for the video amplifier is also located on the rear panel. The receiver operates from a 115 or 220 Vac, 48-420 Hz prime power source. It mounts in a standard 19-inch rack.

IF bandwidth modules for the 565A Receivers are designated as follows:

Type	IF Bandwidth
WJ-9930-10	10 kHz
WJ-9930-20	20 kHz
WJ-9930-20LP	20 kHz
WJ-9930-50	50 kHz
WJ-9930-50LP	50 kHz
WJ-9930-100	100 kHz
WJ-9930-200	200 kHz
WJ-9930-300	300 kHz
WJ-9930-500	500 kHz
WJ-9930-1M	1 MHz
WJ-9930-2M	2 MHz
WJ-9930-3M	3 MHz

## SPECIFICATIONS

Frequency Range .....	
Types of Reception .....	
IF Bandwidths .....	
Intermediate Frequency .....	
Predetection IF Output .....	
BFO Tuning Range .....	
COR Sensitivity .....	
COR Range .....	
COR Operate Time .....	
COR Release Time .....	
AM Output Stability with AGC .....	
Sensitivity:	
AM .....	
FM .....	
Tangential Sensitivity .....	
Gain Control Characteristics:	
Pulse AGC, 3 MHz Bandwidth .....	
Manual Control Range .....	
Signal Monitor Selection:	
Sweep Width .....	
Resolution .....	
Sweep Rate .....	
Marker Frequency .....	
Flatness of Response .....	
CRT Display .....	

20 to 1000 MHz using five plug-in tuning heads

AM, FM, CW, and Pulse

Up to three front-panel selectable IF bandwidths are provided. The customer may select bandwidths between 10 kHz and 3 MHz as shown above

21.4 MHz

21.4 MHz center frequency; provides 100 mV, minimum, into 50 ohm load for input signals above AGC threshold  $\pm 8$  kHz, minimum; operates in all IF bandwidths

6 dB below input signal levels specified for 10 dB (s+n)/n for each tuner and IF bandwidth

Continuously adjustable to operate on minimum threshold input signals and up to -40 dBm input

25 ms, maximum

0.5, 5, and 15 sec, all  $\pm 25\%$ . Selected by front-panel switch

Output changes by no more than 6 dB from input signal levels specified for 10 dB (s+n)/n for each tuner and IF bandwidth to -10 dBm (UH-104 to -20 dBm)

The listed input signal level in dBm, AM modulated 50%, by a 1 kHz tone, will produce 10 dB (s+n)/n, minimum, when used with the tuner specified in Table 1

The listed input signal levels in dBm, FM modulated at a 1 kHz rate with a deviation equal to 30% of the IF bandwidth, will produce 17 dB (s+n)/n, minimum, when used with the tuner specified in Table 1

Input signal levels 6 dB lower than those in Table 1 will produce tangential sensitivity for pulse signals with a repetition rate equal to .01 of the IF bandwidth and a 10% duty cycle

Charge time sufficiently short to permit pulse widths as narrow as 1  $\mu$ sec and as wide as a square wave. Discharge time sufficiently long to operate with PRR of 100 pps 70 dB, minimum

0 to 3 MHz, continuously adjustable

10 kHz

22.5 Hz  $\pm 2.0$  Hz

21.4 MHz  $\pm 0.01\%$

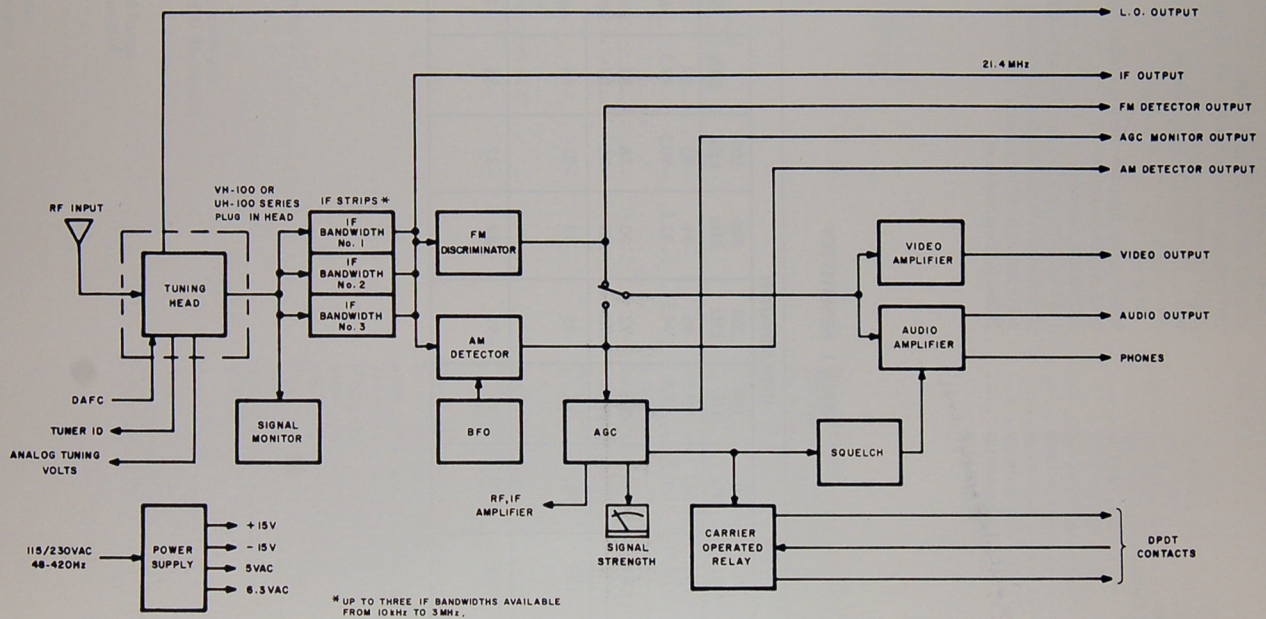
$\pm 1$  dB

1 inch by 3 inches (3 ASP1 Tube)

Video Output Power . . . . .	1 Vrms into 100 ohm load
Video Amplifier Response . . . . .	Within 3 dB from 20 Hz to 2 MHz
Audio Output Power . . . . .	100 mW, minimum, into 600 ohm load balanced, at phone jack or at rear-panel barrier strip
Audio Frequency Response . . . . .	Within 3 dB from 100 Hz to 20 kHz
Operating Temperature Range . . . . .	0°C to 50°C
Non-operating Temperature Range . . . . .	-40°C to 85°C
Humidity . . . . .	95% relative humidity over operating temperature range (without condensation)
Altitude . . . . .	15,000 feet, maximum
Input Power . . . . .	115 Vac $\pm 10\%$ , or 220 Vac $\pm 10\%$ , 48 to 420 Hz
Power Consumption . . . . .	25 watts (with tuning head) approximately
Dimensions . . . . .	3.5 inches high, 19 inches wide, and 16 inches deep
Weight . . . . .	28 lbs. (with tuning head)

TABLE 1. SENSITIVITY

TUNER	IF BANDWIDTH									
	10 kHz	20 kHz	50 kHz	100 kHz	200 kHz	300 kHz	500 kHz	1 MHz	2 MHz	3 MHz
VH-101	-109	-106	-102	-99	-96	-94	-92	-89	-86	-84
VH-103	-107.5	-104.5	-100.5	-97.5	-94.5	-92.5	-90.5	-87.5	-84.5	-82.5
VH-105, UH-101	-105	-102	-98	-95	-92	-90	-88	-85	-82	-80
UH-104	-103	-100	-96	-93	-90	-88	-86	-83	-80	-78
VH-107 Band 1 (100-200 MHz)	-108	-105	-101	-98	-95	-93	-91	-88	-85	-83
VH-107 Band 2 (200-400 MHz)	-104	-101	-97	-94	-91	-89	-87	-84	-81	-79



565A RECEIVER  
SIMPLIFIED BLOCK DIAGRAM