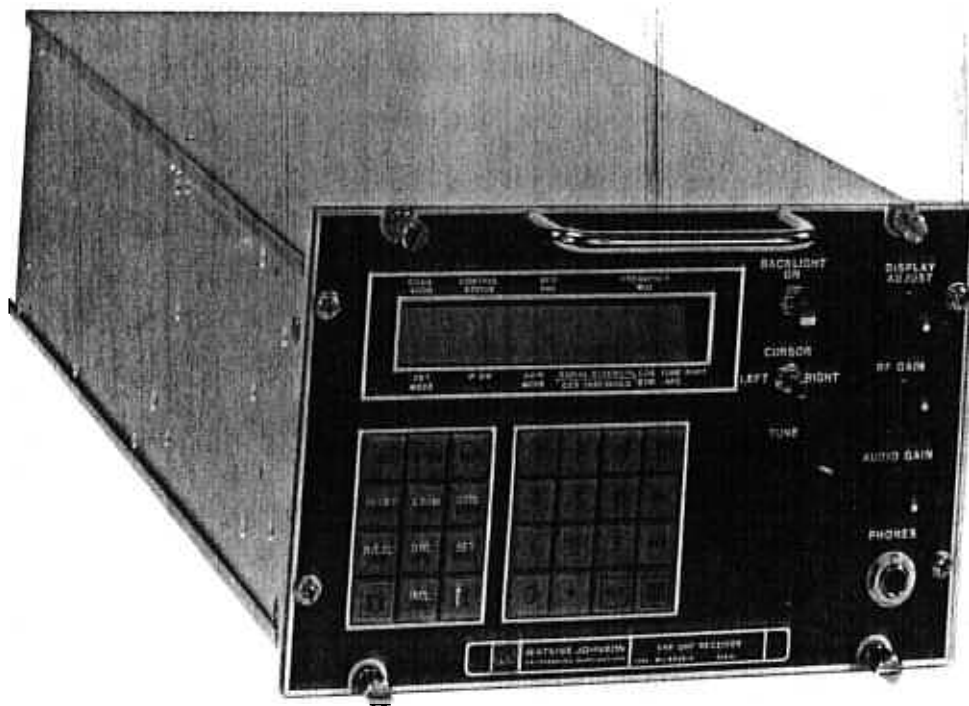


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# WJ-8628-4 VHF/UHF MASTER ACQUISITION RECEIVER



## FEATURES

- One receiver covering 20-512 MHz frequency range with optional 500-1100 MHz frequency extender
- Full local or remote control
- One-half rack, modular construction
- Low power consumption
- Low phase noise
- 100 Hz tuning resolution, fully synthesized
- Tunable preselection
- Wide dynamic range
- Four IF bandwidths (10 kHz to 4 MHz)
- AM, FM, CW and Pulse Detection (SSB and LOG optional)
- Digitally Refreshed Display option (X, Y, Z outputs to external display)
- Master/Slave function with up to 34 WJ-8628-1 or WJ-8627-X Receivers
- Indicating Microprocessor Front Panel with 48 character alphanumeric display

## DESCRIPTION

The WJ-8628-4 Receiver is a fully synthesized, microprocessor controlled receiver capable of local or remote control that tunes the 20-512 MHz frequency spectrum with a tuning resolution of 100 Hz. A frequency extender option expands spectrum coverage to 1100 MHz.

The receiver's microprocessor and general purpose keypad provide front panel control of the unit's operating parameters, and a Liquid Crystal Display module provides for a 48 character alphanumeric indication of operating status. The modular LCD features an adjustable viewing angle and backlighting circuit. An option provides circuitry to drive a digitally refreshed pan display. In addition to the keypad, frequency selection can be accomplished by a tuning knob. Another means of control is available via the WJ-9040 IOM108 I/O and its interface options IEEE-488, RS-232C or W-J serial buss.

The WJ-8628-4 can store up to 99 channels in its memory, including frequency lock-out. Each channel stores, in addition to frequency, all receiver operating parameters and a threshold

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## DESCRIPTION

carrier-operated-squelch (COS) level. Dwell time on signals above a selected COS level, in addition to dwell on frequency once COS drops below threshold, may be independently selected for channel scans.

The WJ-8628-4 is capable of talk/listen communication within its own or other WJ-9040 equipment frames. An illustration would employ the half-rack WJ-8628-4 as the Master VHF/UHF Receiver and two quarter-rack WJ-8628-1 Receivers as the slaves in one 5.25 by 19.00 inch equipment rack. The WJ-8628-4 capabilities would then include sending receiver command information to an addressed WJ-8628-1 Receiver. The WJ-8628-4 may also recall an addressed receiver to "monitor" its current active status. The monitored receiver's operating parameters would be continuously updated and displayed on the front panel of the "Master" WJ-8628-4. After receiving the active status of the addressed receiver, the WJ-8628-4 may also "slave" the addressed receiver so that any status change made in the Master is continuously updated and handed to the slave receiver. This capability may be expanded to control of up to 34 WJ-8628-1 VHF/UHF, WJ-8627-X VHF/UHF Handoff or WJ-8626-1 HF Receivers.

## SPECIFICATIONS

Frequency Range .....	20-512 MHz 20-1100 MHz with Frequency Extender
Image Rejection .....	80 dB, min.
IF Rejection .....	80 dB, min.
Noise Figure .....	10 dB max., (11 dB with Frequency Extender)
Detection Modes .....	AM, FM, CW, Pulse as standard, SSB Optional
Frequency Resolution .....	100 Hz
Synthesizer Tuning Speed .....	10 msec, max.
Phase Noise .....	-95 dBc/Hz at 10 kHz offset frequency (-90 dBc/Hz with Frequency Extender)
Input Impedance .....	50 $\Omega$ , unbalanced
Input VSWR .....	2.5:1, max.
Internal Spurious .....	-115 dBm, max.
Third Order Input Intercept Point .....	0 dBm, (-1 dBm with Frequency Extender) min.
Preselection .....	Tunable, nominal 10% BW
LO radiation .....	-100 dBm, (-90 dBm with Frequency Extender) max.
SM Output .....	21.4 MHz with 6 MHz nominal BW
IF Bandwidths .....	Four (4), customer selectable from 10 kHz to 4 MHz
Scan Capability .....	f1 to f2, and up to 99 memory channels
IF Output .....	-20 dBm at sensitivity level, 21.4 MHz
AM Stability with AGC .....	Video Output changes 6 dB maximum from AGC threshold to a level 100 dB above (or a maximum input of 0 dBm)
Manual Gain Control .....	100 Db, min.
Video Output .....	0.35 V rms minimum into 75 ohms under sensitivity conditions
Video Response .....	DC to 1/2 IF BW for FM 200 Hz to 1/2 IF BW for AM
Audio Response .....	200 Hz to 10 kHz, 1.25 V rms into 600 ohms at sensitivity condition
Squelch/COR .....	Adjustable threshold from noise level to 50 dB above noise. COR holds a nominal 4 seconds after carrier disappears.
Operating Temperature .....	0°C to 50°C
Size .....	5.2 inches (132.1 mm) high, 8.0 inches (203.6 mm) wide, 14.38 inches (365.3 mm) deep (WJ-9040 1/2 size unit)
Weight .....	25 lbs. (55.0 kg) maximum
Power Consumption .....	25 watts
Input Power Requirements .....	+29 V, +18 V, -18 V, +8 V Supplied by WJ-9040 EFR100
External Reference Required .....	50 MHz sinwave at 0 dBm with phase noise less than -115 dBc/Hz at 100 Hz, -145 dBc/Hz at 10 kHz

The RF portion of the WJ-8628-4 Receiver incorporates a voltage tunable preselector with a bandwidth of 10% of the tuned frequency across the 20-512 MHz frequency spectrum. The WJ-8628-4 Receiver thus provides excellent image and IF rejection (80 dB), reduced LO radiation (-100 dBm), and an excellent third order input intercept point (0 dBm) while maintaining a low noise figure (10 dB).

The synthesizer portion of the WJ-8628-4 provides fast tuning speed (10 msec) while maintaining low phase noise (-95 dBc/Hz at 10 kHz offset from the carrier). The synthesizer provides a tuning resolution of 100 Hz.

The IF portion of the WJ-8628-4 Receiver has a provision for up to four (4) IF bandwidths per receiver that are customer-selected and can be changed in the field (along with the FM demodulators) for added versatility. The 3 dB bandwidths can range from 10 kHz to 4 MHz. The detection modes available include AM, FM, CW, and Pulse as standard with SSB as an option. Simultaneous AM and FM audio, selectable AM or FM video output, signal monitoring and an IF output are available. Options include Log Detection mode and a Digitally Refreshed Display output.

## IF BANDWIDTH OPTIONS AND SENSITIVITY

3 dB IF Bandwidth	RF Level (dBm)
10 kHz	-105
20 kHz	-102
50 kHz	-98
100 kHz	-95
200 kHz	-92
500 kHz	-88
1 MHz	-85
2 MHz	-82
4 MHz	-79

AM – Input Signal AM modulated 50% by a 1 kHz tone, will produce a minimum video output (S+N)/N ratio of 10 dB.

FM – Input signal modulated at 1 kHz rate with a peak deviation equal to 30% of selected IF BW, will produce a minimum video output (S+N)/N ratio of 17 dB. (Note: A 400 Hz rate is required for 10 kHz and 20 kHz IF Bandwidth.)

## WJ-8628-4 RECEIVER CONNECTIONS

Twenty-five (25) Pin D Series Male Connector supporting the standard WJ-9040 System digital control I/O, DC input voltages and System Polled I/O structure.

RF ..... SMA Female Connector  
SM Output ..... SMA Female Connector  
Selected Video Output ..... SMA Female Connector  
IF Output ..... SMA Female Connector  
50 MHz Reference Input ..... SMA Female Connector

Auxiliary I/O Connector .... 9 PIN SRE Female Connector

### Pin Assignments:

Ground  
FM Audio Output  
AM/CW/SSB Audio Output  
Squelched Audio Output  
Signal Strength Output (Analog 0 to +10V)  
Carrier Operated Relay Control (open collector, 30 mA sink to ground for switching +24 Volt maximum external voltage)  
Carrier Operated Squelch (0 or 5 Vdc)  
AFC

## WJ-8628-4 OPTIONS

### SSB Demodulation

500-1100 MHz Frequency Extender  
Selectable Dual Antenna (RF) Inputs  
Log Detection  
Digitally Refreshed Display Output