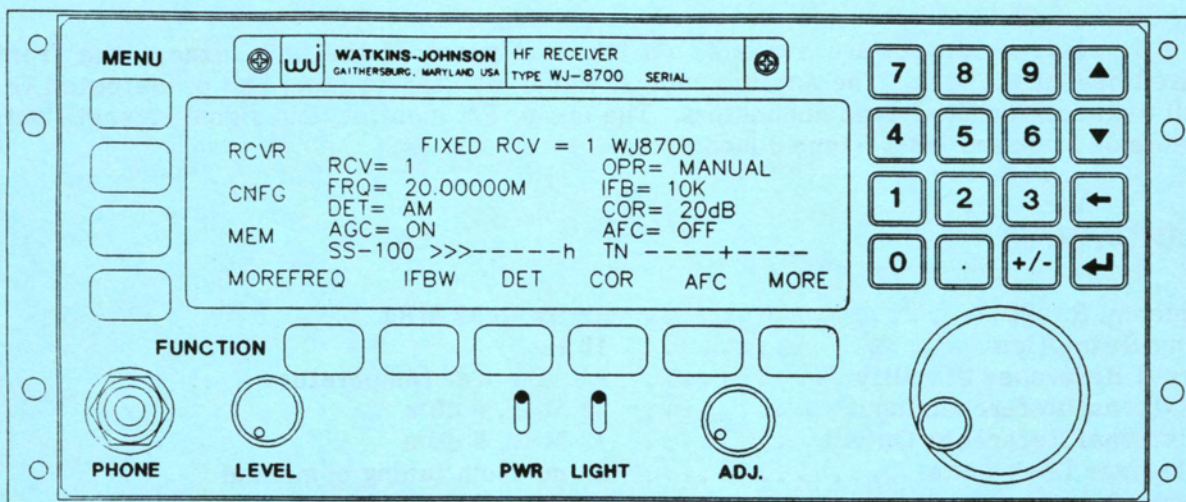




DEVELOPMENTAL SPECIFICATION

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WJ-8700 DUAL VLF/HF RECEIVER



FEATURES

- Frequency Coverage of 5 kHz to 32 MHz
- Compact Size, Two Receivers In 3.5-Inch Half Rack
- High Dynamic Range
- Microprocessor Controlled With Alphanumeric Display and Menu
- AM, FM, CW, LSB, USB Detection Modes
- Five IF Bandwidths
- Scan, Step and Lockout With 100 Memory Channels
- Suboctave Preselector
- RF Input Overvoltage Protection

DESCRIPTION

The WJ-8700 Dual VLF/HF Receiver is a compact microprocessor-controlled receiver intended to monitor or search the 5 kHz to 32 MHz frequency range. The compact size permits the mounting of four receivers in 3.5 inches of vertical space in a standard 19-inch rack. The front panel utilizes "Supertwist" Liquid Crystal Technology to provide a display of the receiver settings. All receiver functions are menu driven, with softkey access to different menu levels, providing powerful programming capability. The front panel can access either of the two receivers in the chassis or up to 29 other receivers within the system network.

Note: Controlled changes to Developmental Specifications may be made without notice to specification holders. Prior to use, contact Applications Engineering regarding the current specification status of the item described herein.

DESCRIPTION (Continued)

Fully synthesized local oscillators provide precise tuning from 5 kHz to 32 MHz in 10 Hz steps. External reference frequency input and output are provided which allow daisy chaining of the master reference signal. A tunable BFO swings ± 9.999 kHz in 1 Hz steps for full intelligence recovery when operating in CW and SSB modes.

The WJ-8700 Receiver features six selectable IF bandwidth slots, plus a 16 kHz "bypass" mode established by the first IF filter. A standard set of IF filters are available in several different configurations. When the ISB option is purchased, two of the filter slots are filled with the special upper and lower sideband filters.

All receiver outputs are available on the rear panel of the unit, except the front panel-mounted headphone jack. The antenna inputs, signal monitor outputs, and predetected IF outputs are all available on BNC-type connectors. The audio, FM monitor, and signal strength outputs are available on standard DB-25-type connectors.

SPECIFICATIONS

Frequency Range	5 kHz to 32 MHz
Tuning Resolution	10 Hz
Internal Reference Stability	± 1 ppm over temperature
External Reference Input	10 MHz, 0 dBm
External Reference Output	10 MHz, 0 dBm
Synthesizer Lock Time	20 ms from tuning command
Antenna Input	
Impedance	50 ohms nominal
Protection	+30 dBm maximum, auto-resetting
Conducted LO at RF Input	-100 dBm maximum
Detection Modes	AM, FM, CW, LSB, USB, optional ISB
IF Bandwidths	Three available sets

Set 1: -6 dB Bandwidths

	0.5 kHz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
Shape Factor	-----					
60 dB to 6 dB	8.0:1	5.0:1	2.5:1	2.5:1	4.0:1	3.0:1

Set 2: -3 dB Bandwidths

	0.25 kHz	0.5 kHz	3.2 kHz	6 kHz	12 kHz	16 kHz
Shape Factor	-----					
60 dB to 3 dB	4.0:1	4.0:1	2.5:1	2.0:1	3.0:1	3.0:1

Set 3: -3 dB Bandwidths (Included With ISB Option)

	0.25 kHz	0.5 kHz	USB	LSB	6 kHz	12 kHz	16 kHz
Shape Factor	-----						
60 dB to 3 dB	4.0:1	4.0:1	***	***	2.0:1	3.0:1	3.0:1

ISB Filter Characteristics	2900 Hz at 3 dB points minimum, equalized for optimum differential group delay. Band-pass ripple 1.5 dB p-p maximum (60 dB bandwidth, 4.3 kHz)
Predetected IF Output	455 kHz, -20 dBm nominal

SPECIFICATIONS (Continued)

Signal Handling Capabilities (1 to 30 MHz)

3rd Order Intercept Point	+24 dBm
2nd Order Intercept Point	+60 dBm
Reciprocal Mix	When operating in a 4 kHz BW at rated sensitivity, an undesired signal at 50 kHz separation and 85 dB higher in amplitude will not degrade the signal-to-noise ratio of the desired signal by more than 3 dB
Preselection	Automatically selected suboctave filters in nine bands between 1.6 and 32 MHz. Two low-pass filters from 5 kHz to 1.6 MHz
Gain Control Modes	Automatic, manual
Range	100 dB minimum
AGC Threshold	3.0 μ V typical
AGC Attack Time	10 ms typical
AGC Hold Time (Selectable)	50, 250, 3000 ms
AGC Decay Time	50 ms nominal
AGC Dump	2.0 ms from command
IF Rejection	90 dB minimum
Image Rejection	90 dB minimum
Internally Generated Spurious	-120 dBm equivalent input, maximum
Single Tone Spurious Rejection	-123 dBm equivalent for -50 dBm input signals
Sensitivity (1 MHz to 30 MHz)	

	<u>IF BW</u>	<u>Input Signal</u>	<u>Audio (S+N)/N</u>
CW	0.25 kHz	-119 dBm	16 dB
AM	6.0 kHz	-105 dBm (50% mod. 400 Hz)	10 dB
AM	12.0 kHz	-102 dBm (50% mod. 400 Hz)	10 dB
FM	16.0 kHz	-101 dBm (4.8 kHz peak deviation 400 Hz)	17 dB
ISB	2.90 kHz	-114 dBm	10 dB

Add 3 dB for all sensitivity specifications for tuned frequencies between 30 and 32 MHz.

**CW Sensitivity (5 kHz to 1 MHz)
(0.25 kHz IF Bandwidth)**

500 kHz to 1 MHz	A -117 dBm signal will produce at least 16 dB (S+N)/N at the audio output
50 kHz to 500 kHz	A -112 dBm signal will produce at least 16 dB (S+N)/N at the audio output
5 kHz to 50 kHz	A -60 dBm signal will produce at least 16 dB (S+N)/N at the audio output
Phase Noise	-115 dBc/Hz maximum at 10 kHz offset
IFM	1.5 Hz RMS maximum, 300 Hz to 3 kHz
Signal Monitor Output	Centered at 40.455 kHz, 500 kHz minimum BW, 0 dB above RF
Audio Outputs	
Power Output	250 mW RMS into 16 ohms, one output per receiver channel, unbalanced
(Rear Panel 1/4" Stereo)	
Line Level Output	0 dBm into 600 ohms, two per receiver channel
(Rear Panel)	
Headphone Output	250 mW RMS into 16 ohms, one per chassis
(Front Panel 1/4" Stereo)	
FM Monitor	DC coupled, 0.25 volts per kHz, into 600 ohms

SPECIFICATIONS (Continued)

Power Interrupt Stores memory channel data for up to five years. Upon power restoration receiver returns to previously tuned channel or frequency
 Power Requirements 115/230 VAC ±10%, 47 to 420 Hz
 Power Consumption 60 Watts maximum

Environmental

Operating Temperature Range -20 to +60°C (full specification compliance is 20 to 30°C)
 Relative Humidity Per MIL-STD-810D (Method 507.2)
 Vibration
 Random Per MIL-STD-810D (Method 514.3)
 Sinusiodal Per MIL-STD-167.1
 Shock Per MIL-STD-810C

Mechanical

Size 8.5" wide x 3.5" high x 20" deep
 Weight Less than 30 pounds

Connectors

Input/Output (Rear Panel Except Where Noted)

<u>Function</u>	<u>Type</u>	<u>Quantity/Description</u>
Antenna	BNC	One per receiver
Signal Monitor	BNC	One per receiver
Switched IF	BNC	One per receiver
External Reference Input	BNC	One per chassis
External Reference Output	BNC	One per chassis
Headphone	1/4" Stereo, front panel	One per chassis
Audio	1/4" Stereo	One per chassis
Line Audio	25-pin male	One per chassis
Remote Bus	Option dependent	One per chassis
Printer	9-pin female	One per chassis
Auxiliary	25-pin female	One per chassis
Net	9-pin male	One per chassis
Power Input	IEC 3-pin	One per chassis

WJ-8700 OPTIONS

The WJ-8700 Receiver is a dual receiver; therefore, certain optional features can be installed in either channel A or channel B of the unit. Options, such as the remote interface, cover both channel A and channel B of the unit. Those options which are channel dependent are designated WJ-8700/X, where the "X" denotes the receiver channel where the option is installed. Please note that each receiver channel requires a unique option list at the time of order.

WJ-8700 OPTIONS (Continued)

Channel-Dependent Options:

<u>Nomenclature</u>	<u>Description</u>
WJ-8700/XBW1	IF bandwidth configuration number 1: 0.5, 1, 2, 4, 8, 16 kHz (see text)
WJ-8700/XBW2	IF bandwidth configuration number 2: 0.25, 0.5, 3.2, 6, 12, 16 kHz (see text)
WJ-8700/XISB	Independent sideband detection, includes IF bandwidth configuration number 3: 0.25, 0.5, USB, LSB, 6, 12, 16 kHz (see text)
WJ-8700/XSM1	455 kHz signal monitor output, 16 kHz bandwidth. Replaces standard 40.455 MHz output
WJ-8700/XSM2	21.4 MHz signal monitor output. Replaces standard 40.455 MHz output

Unit-Dependent Options:

<u>Nomenclature</u>	<u>Description</u>
WJ-8700/488	IEEE-488 Remote Control Interface
WJ-8700/232	RS-232 Remote Control Interface
WJ-8700/188	MIL-STD-188 Remote Control Interface
WJ-8700/NFP	No Front Panel option. Deletes local control
WJ-8700/SGL	Single Receiver option. Deletes channel "B" from the unit