# Technical Data

WATKINS-JOHNSON

*October 1996*

# VHF/UHF *Fast Miniceptor* Receiver WJ-8604A


The WJ-8604A is a small, frequency agile, lightweight VHF/UHF receiver designed for limited space applications. Its compact size, fast tuning speed, automatic internal functions and high-level interface make it ideal for a multitude of system applications.

The WJ-8604A supports the high-level interface and automatic functions of the *Miniceptor*, allowing access to powerful *Miniceptor* Control Software Receiver Family (MCS-1) applications, such as mission storage/retrieval and sweep data logging, and analysis.

WJ-8604A's frequency agility is the key to its tuning speed. When tuning manually, the receiver settles to within 10 kHz of final frequency in less than 300 µSec from the receipt of a frequency command. The WJ-8604A features the high dynamic range, low phase noise, multiple detection modes and excellent selectivity of larger receivers. See WJ-8607A Technical Data Sheet for detailed specifications.

## Features

- ❑ *Hypertronics multipin connector*
- ❑ *300 Sec tuning (worst case) to within 10 kHz*
- ❑ *2 to 512 MHz frequency range (2 to 2000 MHz with FE)*
- ❑ *High dynamic range tracking preselector (20 to 512 MHz with 10% nominal BW)*
- ❑ *Low phase noise*
- ❑ *68HC16 microcontroller*
- ❑ *SWEEP, STEP & Lockout, with channel occupancy*
- ❑ *Modular construction*
- ❑ *Low power: 19 W*
- ❑ *High-linearity demodulators*
- ❑ *Self-test of power supply & synthesizer operation*
- ❑ *Tunable IF output frequency*
- ❑ *Lightweight & small size*

**HEIGHT** 1.5 in (3.81 cm)
**WIDTH** 6.5 in (16.51 cm)
**DEPTH*** 12.2 in (30.99 cm)
**WEIGHT** 6 lbs (2.72kg)
(Additional with FE option)

* 15.05 in (38.23 cm) with FE

***Restricted International Distribution***

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Printed in the U.S.A.

*Receiver Connectors*

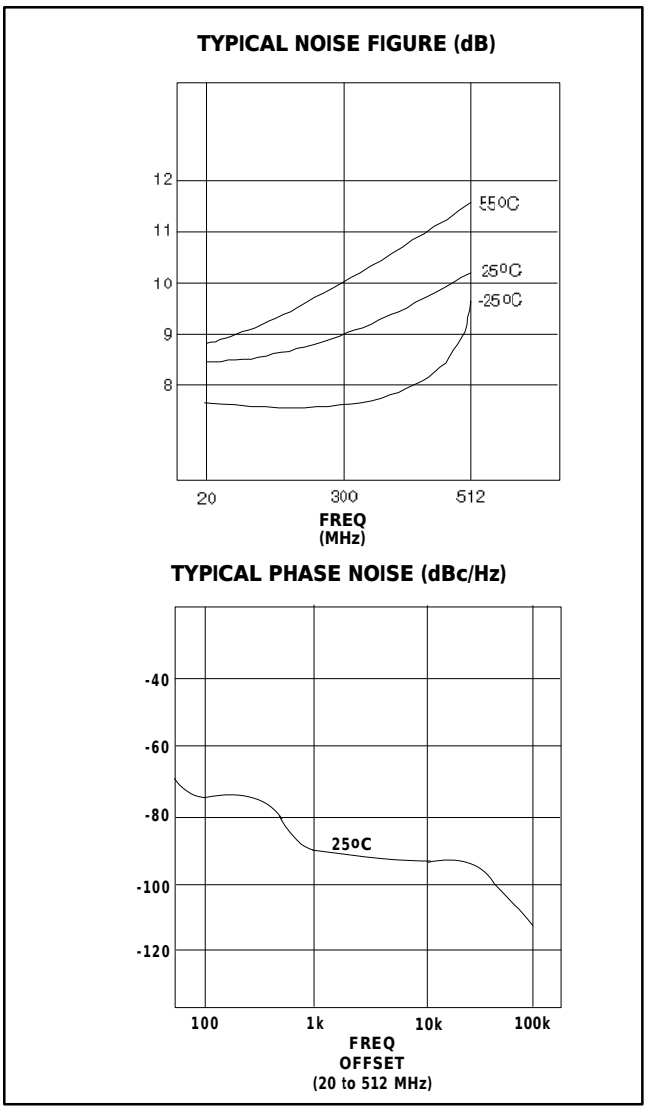
| I/O | Function * |
|---|---|
| Input | Antenna<br>External References<br>HPIL<br>DC Power |
| Output | Selected Video Output<br>FM Monitor<br>Signal Monitor or optional WBO<br>Selected 21.4-MHz IF<br>Switched Audio<br>Line Audio<br>HPIL<br>Phone |
| Bidirectional | Serial Control RS-232<br>COR & Spectrum Reversal |

* All receiver inputs & outputs pass through a Hypertronics multipin connector. Consult the factory for specific connector configuration.

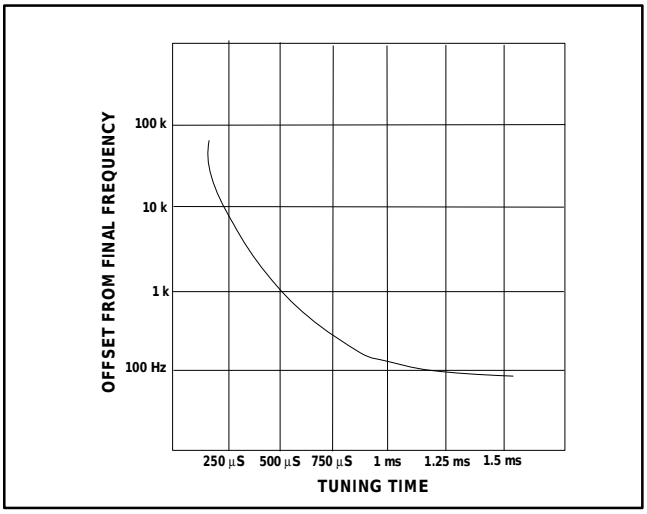
*IF Shape Factors*

| Bandwidth (BW) (kHz) | Shape Factor 60:3 dB BW | Sensitivity (dBm)[1] 20 to 512 MHz |
|---|---|---|
| 3.2[2,3] | 3:1 | -107 |
| 6.4[2] | 3:1 | -105 |
| 10[2] | 3:1 | -104 |
| 10G | 3:1[4] | -104 |
| 20[2] | 3:1 | -101 |
| 25G | 3:1[4] | -101 |
| 50[2] | 3:1 | -97 |
| 50G | 3:1[4] | -97 |
| 75[2] | 3:1 | -95 |
| 100[2] | 3:1 | -94 |
| 250 | 4:1 | -90 |
| 300 | 4:1 | -89 |
| 500 | 4:1 | -87 |
| 1000 | 4:1 | -84 |
| 2000 | 4:1 | -81 |
| 4000 | 4:1 | -78 |
| 8000 | 4:1 | -75 |

[1]Sensitivity Conditions: Based on 20 to 512 MHz receiver. Add 4 dB for FE.
AM—An input signal AM modulated 50% by a 1-kHz tone produces a minimum video output S+N/N ratio of 10 dB.
FM—An input signal FM modulated at a 1-kHz rate with a peak deviation equal to 30% of the selected IFBW produces a minimum video output S+N/N ratio of 17 dB. (Note: IFBWs ≦10 kHz require a 400-Hz modulation rate.)
[2]Not usable in 5th BW position.
[3]With the 3.2-kHz BW, the audio and video outputs are 6 dB less than published specifications.
[4]Denotes Gaussian filters. Shape factor 3:1 from 60:6 dB. High-speed operations in BW < 100 kHz requires Gaussian filters.




*Typical Performance Graphs*




*WJ-8604A Worst-case Tuning Time (2 to 512 MHz)*