



Embedded Computing, Timing and Telemetry Products

WR-G305i Wideband Scanning Receiver

Introducing a breakthrough

Convert your desktop PC into a most sophisticated radio monitoring station! The WiNRADiO **WR-G305i** is a software-defined PC-based wideband scanning receiver covering a frequency range from 9 kHz to 1800 MHz (expandable to 3500 MHz with an optional downconverter).

The receiver comes on a standard two-third length PCI card and is compatible with all modern desktop computers with an available PCI 2.2 standard slot.

Features

- Frequency range from 9 kHz to 1800 MHz (except cellular bands where required by law)
- Software-defined demodulation
- Extraordinary sensitivity
- Tracking front-end filters
- Excellent strong signal handling
- Real-time spectrum analyzer
- Spot-on tuning in 1Hz steps
- Accurate signal strength indicator
- Fast scanning speed
- Multiple squelch modes
- Very low phase noise
- DRM decoder option
- APCO P25 **decoder option**
- 3.5 GHz **downconverter option**
- Standard PCI interface

With the **Professional Demodulator Option**, the many additional features include:

- Continuously variable IF bandwidth 100 Hz - 15 kHz
- User adjustable filter selectivity
- WiNRADiO Digital Bridge™ compatibility
- Built-in test and measurement instrumentation
- Interactive block diagrams

Plug and Play installation

The **WR-G305i** is the first of our **G3 Series** of VHF/UHF **software-defined** receivers.

The "G3" stands for "the third generation": As the original, award-winning, first-generation WiNRADiO **WR-1000i** receiver was the world's first commercially available wide-band receiver on a PC card

when launched over a decade ago, the newly introduced **WR-G305i** is the world's first commercially available **software-defined** VHF/UHF receiver on a PCI bus card.

A **Software Defined Radio** (SDR) is such where demodulation and last IF (intermediate frequency) processing are done entirely in software. Usually this means using a DSP, but in the case of the G305i, this processing is done on a personal computer using a sound card (most modern PCs are now faster and more powerful than many DSPs were only a few years ago). So, if you own a PC, the chances are that you already own an important part of a software defined radio receiver!

In addition to the flexible and friendly **user interface**, with its numerous functions and facilities not normally available on any conventional receiver, the **WiNRADiO G305i** receiver excels particularly by the ability of its demodulators.

While the **Standard Demodulator** provides performance of a highly respectable scanning receiver including synchronous AM demodulation and a real-time spectrum scope, the optional **Professional Demodulator** offers even more: continuous IF filter bandwidth adjustment (in 1Hz increments), interactive block diagrams with two additional audio spectrum scopes, and even inbuilt THD and SINAD measurement facilities.

An optional DRM decoder/demodulator is also available.

The **WiNRADiO G305i**: A ground-breaking general-coverage receiver that opens many new possibilities in the world of both conventional and digital communications. Prepare to be amazed!



What's included?

The standard WR-G305i package includes:

- WR-G305i receiver card
- Application software
- Comprehensive user's manual
- Start-up antenna
- Audio lead
- BNC-to-SMA adapter

No external boxes, interface cables or power supplies needed - no clutter on your desk. Just plug in and experience scanning the bands as you never did before!

System requirements:

- PC with 500 MHz Pentium CPU or faster
- One free PCI slot
- Windows 98/ME/2000/XP/Vista
- Sound Blaster 16 (or compatible sound card)

Specifications

Receiver type DDS-based dual-conversion superheterodyne with software-defined last IF stage and demodulator Frequency range 9 kHz - 1800 MHz (3500 MHz with optional downconverter) *(except cellular radiotelephone frequencies where required by law)* Tuning resolution 1 Hz Mode AM, AMN, AMS, LSB, USB, CW, FMN Optional: ISB, DSB *(See Note 1.)* FMW *(See Note 2.)* Image/Spurious Rejection 60 dB IP3 0 dBm @ 20kHz MDS -135 dBm Spurious-free Dynamic Range 90 dB Phase noise -148 dBc/Hz @ 100 kHz RSSI accuracy 5 dB RSSI sensitivity 1 µV Selectivity (-6dB)

(See Note 3.)

AM	6 kHz
AMN	4 kHz
AMS	4 kHz
LSB, USB	2.5 kHz
CW	500 Hz
FM3	3 kHz
FM6	6 kHz
FMN	12 kHz
FMW (optional)	230 kHz

Scanning speed 60 channels/s max Sensitivity

(AM/SSB/CW 10dB S/N) (FM 12dB SINAD)

(See Note 4.)

Mode	0.15-500 MHz	500-1800 MHz
AM, AMS	1.7µV	1.85µV
LSB, USB	0.35µV	0.37µV
CW	0.2µV	0.25µV

FM3, FM6, FMN	0.7µV	0.8µV
FMW (optional)	2.0µV	2.0µV

Intermediate frequencies

IF1: 109.65 MHz
IF2: 12 kHz

Roofing filter 2 x 4-pole 20 kHz BW crystal filter Frequency stability 10 ppm (0 to 60° C) Antenna input 50 ohm (SMA connector) Output 12 kHz IF2 output *(sound card Line Input compatible)* Form factor 2/3 length PCI card Interface PCI 2.2 compliant Dimensions Length: 195 mm (7.68") *(excluding mounting bracket)* Height: 99 mm (3.90") *(excluding edge connector)* Thickness: 19 mm (0.75") *(incl. components on either side)* Weight 310 g (10.9 oz) Note:

1. The Professional Demodulator offers two additional demodulation modes, DSB and ISB.
2. The Wide-FM Option provides a separate wide-FM demodulator. The wide-FM demodulation is performed in hardware, using conventional hardware-based demodulation techniques, in order to ease the requirement of PC processing power which would otherwise be required for a signal of this bandwidth. In other words, the **Wide-FM Option** is an entirely separate receiver on its own right.
3. The Professional Demodulator offers continuously adjustable IF bandwidth from 100 to 15000 Hz in all narrow-band modes. The optional Wide-FM demodulator has a fixed bandwidth of 230 kHz.
4. The AM sensitivity is specified at 30% modulation for 10 dB S/N ratio. For 80% modulation, typical AM sensitivity of WR-G305i is 0.60 µV in 0.15-500 MHz range. The Professional Demodulator improves sensitivity further by making it possible to extend filter lengths, and adjust the IF bandwidth for optimum reception of the received signal. This results in a typical improvement by 2-3 dB on AM/SSB/FM and up to 10 dB on CW.

The following table illustrates the effect of the AM modulation depth and the Professional Demodulator on typical sensitivity figures:

Demodulator	AM Sensitivity (10 MHz, 10 dB S/N)	
	30% modulation	80% modulation
Standard	1.7 µV	0.6 µV
Professional	1.5 µV	0.45 µV

Specifications are subject to change without notice due to continuous product development and improvement.



1131 Rockingham Dr. Suite 110 Richardson, TX 75080
Dallas – 972.231.7337 **Austin** – 512.832.1070 **Houston** – 713.228.5400
 Toll Free – 800.460.9653 Fax – 972.231.5973
www.ventasinc.com info@ventasinc.com