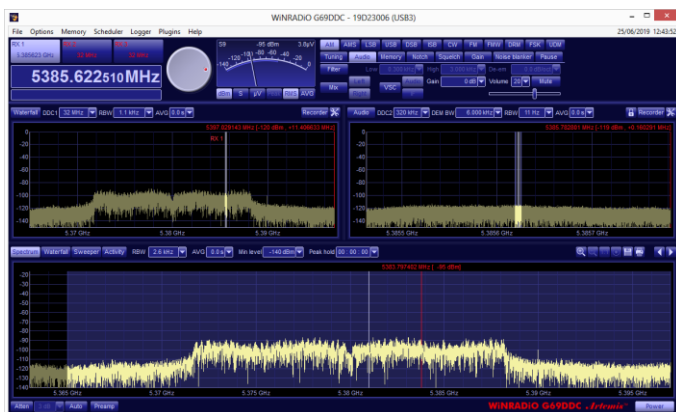


WR-G69DDC ARTEMIS

High-performance HF/VHF/UHF/SHF Software-Defined Receiver

- 8 kHz to 8 GHz frequency range
- Direct sampling & superheterodyne
- Digital down-conversion
- 16-bit 200 MSPS A/D converter
- 80/34 MHz-wide, real-time spectrum analyzer
- 32 MHz recording and processing bandwidth
- Continuously adjustable filter bandwidth down to 1 Hz
- Waterfall display functions and audio spectrum analyzer
- Audio and IF recording and playback
- Recording with pre-buffering
- Ultra-fast search speed 3 GHz/s
- High sensitivity
- Excellent dynamic range
- Excellent frequency stability (0.1 ppm)
- Test and measurement functions
- Networking version of application software available
- USB 3.0 and 1 Gb Ethernet (with PoE) data interfaces
- Numerous data and signal hw options
- Self-diagnostics with BIT and thermal management

The WiNRADiO WR-G69DDC 'Artemis' is a top performance, software-defined, wide-band, ultra-fast search speed 3 GHz/s, HF/VHF/UHF/SHF receiver. Two independent and mutually exclusive inputs are provided, one for each range: 8 kHz to 80 MHz and 43 MHz to 8 GHz. A real-time 80/34 MHz-wide spectrum analyzer is included with a 32 MHz wide instantaneous bandwidth available for recording, demodulation and further digital processing over the whole frequency range.



The receiver's superior performance results from its innovative combination of direct-sampling and superheterodyne, digital down-conversion architecture along with the use of leading-edge components and design concepts. These all result in excellent sensitivity, phase noise and dynamic range, highly accurate and stable tuning, high scanning speed and perfect demodulation.



These key features create a receiver in a class of its own, making it capable of filling not only the role of a monitoring receiver, but also that of a fast search receiver and measuring receiver, with many operational and instrumentation features not usually found on receivers of any price category

The entire 32 MHz DDC (digitally down-converted) bandwidth is available for recording and demodulation, and ideal for hopping frequencies analysis. Three demodulators allow the simultaneous reception and decoding of radio signals within the entire band.

The receiver interfaces to a Windows-compatible PC via USB 3.0, or 1 Gb Ethernet LAN port with PoE (Power over Ethernet functionality according to the IEEE 802.3at standard). Its modest power requirements are less than 20 Watts.

For the highest bandwidth use, connection is best via USB3 for short distances (up to 3m). As the G69DDCe is equipped with an Ethernet socket, semi-remote connection to a computer is possible via a long Ethernet cable (up to 100m in length). For longer distances or when located in a busy or remote network, the Networking CSO option is recommended.

The WR-G69DDCe also features optional external reference frequency inputs and outputs as well as 1PPS pulse input. In addition, stereo analog output is also possible, as well as wide audio (10 Hz-150 kHz). The special data port offers numerous possibilities which include GPIO (general purpose I/O), HSP (high speed data output), or traditional RS232 interface.

Yet again, WiNRADiO is presenting an advanced specification and unique combination of features to the general marketplace. The receiver is intended for government, military, security, surveillance, broadcast monitoring, industrial and demanding consumer applications.

Hardware

The receiver is very well shielded against interference, making it possible to operate in a noisy computer environment.



The RF input circuit features four preselector ranges for VHF and six ranges for UHF, with a switchable MW filter on Range 1. An attenuator provides adjustment in 3 dB steps plus the addition of a switchable preamplifier on Range 2. Two IF frequencies are employed, 1.6 GHz and 140 MHz.

Software

The WR-G69DDC control software provides a highly functional and logical user interface. There are several spectrum analyzer configurations available, including the 80/34 MHz full span with 2.6 kHz resolution. The scalable spectrum display can be viewed in either the standard or waterfall mode.

The digital down-converter provides 33 selectable output bandwidths ranging from 20 kHz to 32 MHz. The receiver's selectivity can be adjusted with 1 Hz resolution.

Recording and playback are also provided at the output of the digital down-converter, whereby a 32 MHz wide spectrum chunk can be recorded for later demodulation and post-processing.

The 16-bit 200 MSPS A/D converter contributes to an excellent dynamic range and ultra-fast sweeps with spectrum analyzer and waterfall displays, making the receiver useful for analysing many types of signal.

The user interface remains simple and intuitive to use, with a rich on-screen help facility. A flexible scheduler function allows unattended recording of each channel at specified dates and times.

A "toolbox" full of various test and measurement tools, such as frequency error, SINAD, THD and modulation meters, logger and scheduler, complement the entire package and make it possible to use this product as a measuring receiver, replacing much more expensive (and often less capable or less accurate) conventional test equipment.

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

Receiver type	Digitally down-converting software-defined receiver with two independent and mutually exclusive inputs
Frequency ranges	Range 1: 8 kHz to 80 MHz (direct sampling) Range 2: 43 MHz to 8 GHz (superheterodyne)
Tuning resolution	1 Hz
Mode	AM, AMS, LSB, USB, DSB, ISB, CW, FMN, FMW, FSK, UDM (user-defined mode), DRM mode (optional)
Range 1: 8 kHz to 80 MHz	
Image rejection	90 dB typ.
P1dB	-8 dBm typ.
IP3	+30 dBm typ.
Input damage level	+30 dBm
SFDR	105 dB
Noise Figure	16 dB
MDS	-128 dBm @ 10 MHz, 500 Hz BW
LO Phase noise	-145 dBc/Hz @ 10 kHz
Range 2: 43 MHz to 8 GHz	
Image rejection	60 dB typ.
P1dB	-15 dBm typ. (Preamp OFF) -32 dBm typ. (Preamp ON)
IP3	+6 dBm typ. (Preamp OFF) -11 dBm typ. (Preamp ON)
Input damage level	+30 dBm
SFDR	90 dB (Preamp OFF) 85 dB (Preamp ON)
Noise Figure	15 dB typ. (Preamp OFF) 6 dB typ. (Preamp ON)
MDS	-129 dBm @ 800 MHz, 500 Hz BW (Preamp OFF) -138 dBm @ 800 MHz, 500 Hz BW (Preamp ON)
LO Phase noise	-106 dBc/Hz @ 10 kHz typ.
Common specs for both, Range 1 and Range 2	
Internal spurious	below -100 dBm
RSSI accuracy	2 dB typ.
RSSI sensitivity	-140 dBm
Processing and recording bandwidth	20 kHz - 32 MHz over USB 3.0 20 kHz - 6.4 MHz over USB 2.0 20 kHz - 16 MHz over 1Gbps LAN
Demodulation bandwidth (selectivity)	1 Hz - 320 kHz (continuously variable in 1 Hz steps)
Spectrum analyzers	Input spectrum/waterfall, 80/34 MHz BW, 2.6 kHz RBW DDC spectrum/waterfall, 32 MHz BW, 1 Hz RBW Channel spectrum, 320 kHz BW, 1 Hz RBW Demodulated audio, 64 kHz BW, 1 Hz RBW
ADC	16 bit, 200 MSPS
Tuning stability	0.1 ppm (0 to 50 °C)
Antenna inputs	2 x 50 ohm (SMA connectors)
Output	24/16-bit digitized I&Q signal over USB/LAN interface
Interface	USB 3.0 USB 2.0 1 Gbit Ethernet with PoE (Power over Ethernet)
Self-diagnostics	BIT (Built-In test) of the signal and processing path Thermal management - temperature monitoring
Power supply	16 W (12 V/1.33 A), or 20 W (PoE - IEEE 802.3at)
Operating temperature	0 to 50 °C (with 12V PSU and via PoE with /LP HW option)
Dimensions	166 x 97 x 59 mm (6.5" x 3.8" x 2.3")
Weight	839 g (29.6 oz)

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