Edition 10/2007 V1.5

drb 30

PC - controlled Shortwave Receiver & Platform for Software Defined Radio (SDR)

30KHz - 30MHz
Allmode

DDS - VCO
1Hz Resolution
Dual Conversion
AGC integrated
DRM proved

• New option:
USB interface adapter

• Enhanced
DRM performance
>>> max. SNR

Drm SUPPORTER

DRB 30
Digital Radio Box

Universal reception up to 30MHz using PC & soundcard

NTi®
Rudolf Ille Nachrichtentechnik • P.O.Box 1703 • D-79507 Loerrach
Tel. +49 7621 / 14756 • Fax +49 7621 / 18840 • www.nti-online.de

Software Defined Radio

Software Defined Radio (SDR) is a radio system which replaces as much as possible functional blocks by software technologies that enable reconfigurable system architectures.
Thanks to continious progress in hardware technology standard PC systems and their soundcards are nowadays able to filter and demodulate those signals in realtime.
Furthermore there is also efficient SDR software available, many of them are freeware.

Benefits

As a summary there are the following benefits despite conventional solutions:
- Easy implemantation of future transmission & modulation standards
- Any possible filter configuration possible
- Integration of useful auxiliary functions like e.g. noise reduction
- High reproductibility by omission of analogue components with relating tolerances

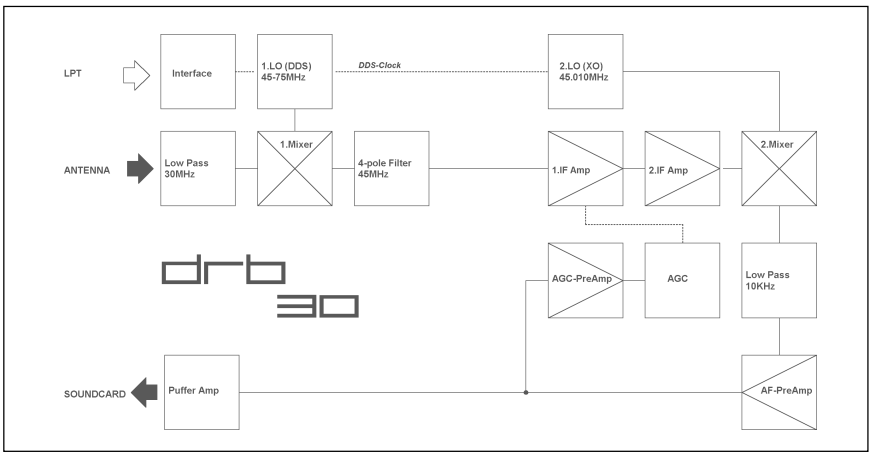
Working Principle

The external hardware converts the RF input signal to a low frequency IF signal. This IF signal is fed to the input of a PC soundcard. Filtering, demodulation and sound processing is done by the chosen SDR software. This principle is also state-of-the-art used for professional communication receivers.

DiRaBox Digital Radio Box DRB 30

The DRB 30 is a dual conversion superhet receiver including a direct digital synthesizer (DDS) for the local oscillator. The DDS principle combines small tuning steps with very low pase noise.
A high-IP actice mixer converts the RF signal to a high IF frequeny of 45 MHz. Two cascaded monolithic crystal 4-pole filters (PREMIUM version) guarantee in combination with a selective input low pass filtert for extraordinary performance concerning selectivity and image frequency rejection.
Next conversion is done to the very low second IF of 10KHz, which can be handeld by a standard PC soundcard. An integrated automatic gain control (AGC) always delivers the optimum level for the sound card.
The unit is controlled by the parallel interface (LPT/printer port) or via USB bus (adapter). Application software (Control Panel) is provided.

Block Circuit



Technical Data

Tuning Frequency: 30KHz - 30MHz (continous)
Tuning Steps: 1/5/10/50/100/500Hz & 1/5/9/10KHz selectable
Antenna Jacket / Impedance: BNC - socket / 50Ohms
Remote supply voltage 9V via 470Ohms serial resistor for an optional active antenna (int. switchable)
Max. Allowed Antenna Level : +10dBm typ. / saturation at -15dBm typ.
Sensitivity (0.15-30MHz): -124dBm (0.15µV) typ. noise floor / MDS
Intermodulation - free Dynamic Range: > 95dB typ.
Third Order Intercept Point IP3: +14dBm typ. (10.10 & 10.20MHz)
Frequency Stability (15min. warm-up period): +/- 1ppm typ.
DRM-Performance (9/10KHz): Max. SNR >35dB, typ. 40dB *
DDS - related Spurious Reception Attenuation: > 70dB typ.
Image Frequency Rejection: > 60dB / 1.IF
IF - Supression: > 80dB
10KHz - IF Output: Bandwidth 15KHz (-6dB) via 3.5mm stereo phone jack socket
PC Control Port / LPT: D-SUB (25-pin SUB-D male connector) **
Power Supply / Connector: 12-15V DC max. 200mA / 2.1mm DC-power socket (positiv inner)
Working Temperature: 0 - 40°C
Dimensions / Weight: 112 x 71 x 31mm / 0.15kg

Options

*** Available on request:** Selected version **DRB 30 PREMIUM** with guaranteed DRM-SNR > 40dB
**** Optional USB interface:** Plugable USB to parallel port adapter **DRB USB ADP** for control via USB bus