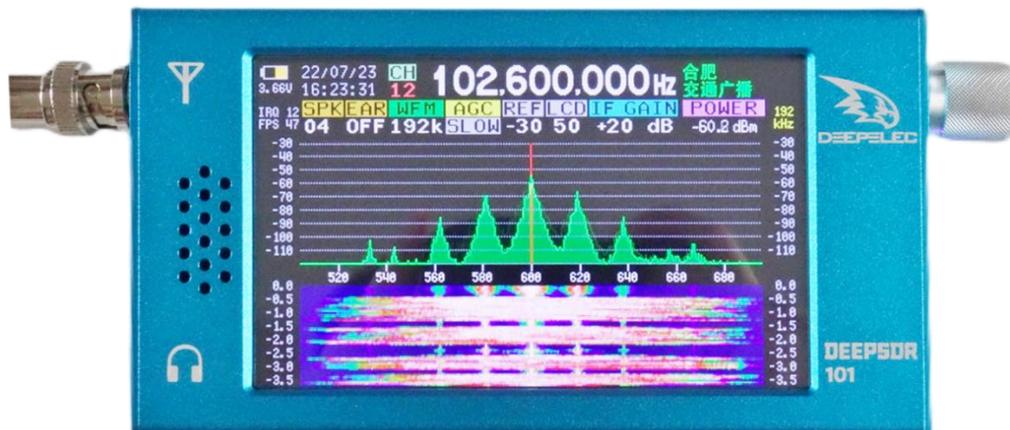


## DeepSDR 101 Software Defined Radio Receiver

**Product description**

DeepSDR 101 is a DSP digital demodulation radio based on SDR software-defined radio architecture. It has a 192kHz width spectrogram and waterfall display capabilities, and cooperates with 16bit sampling to realize a high dynamic receiver with CW, AM, SSB, FM demodulation functions. The whole machine adopts an all-aluminum alloy CNC shell, with a 4.3-inch 800x480 resolution high-brightness IPS LCD display, while maintaining a compact and compact body.

Immediately take it to the outdoors, enjoy the natural scenery and the fun of listening anytime, anywhere!

**Basic parameters**

Display technology: 4.3-inch IPS 800x480 resolution DC dimming bright LCD  
 Control method: resistive touch screen + rotary encoder  
 Frequency range: 100k - 149MHz  
 Working mode: CW, AM, SSB single sideband (LSB/USB), WFM, FM broadcast stereo (requires earphones)  
 Step frequency: 1Hz/10Hz/100Hz/1kHz/10kHz/100kHz/1MHz/10MHz  
 Spectral bandwidth: 192kHz, 128kHz, 64kHz, FFT real-time spectrum display  
 Antenna interface: BNC male, impedance 50Ω, maximum input power -20dBm  
 Reference crystal: TCXO 26MHz ±0.5ppm  
 Audio interface: support ordinary 3.5mm earphone or CTIA (American Standard) interface earphone  
 Speaker power: maximum 3W, 4Ω multimedia speaker  
 Charging port: USB Type-C, 5.0V/2A  
 Current consumption: about 250mA @ 5V  
 Battery capacity: 5000mAh/3.7V, 18.5Wh  
 Use time: about 10-12 hours, depending on the volume and brightness settings of the machine  
 Channel saving: 99 channels can be preset, preset radio station name, station frequency and demodulation mode  
 Body size: 136 x 74 x 22mm (L x W x H) (without protrusions)  
 Body weight: about 310g (host only)

**Receiver parameters**

RF preamp gain: fixed 20dB  
 Circuit Type: Zero IF ZIF  
 Sideband suppression:  $\geq 55$ dB

Frequency Range	Sensitivity	Demodulation	CW bandwidth : About 800Hz CW side tone : About 800Hz SSB bandwidth : About 2.6kHz AM bandwidth : About 9kHz WFM bandwidth : About 192kHz I/Q bandwidth : About 192kHz
MW:520k~1710kHz	10uV, SINAD 12dB	AM	
SW:3M~30MHz	1uV, SINAD 12dB	AM	
	0.25uV, SINAD 12dB	SSB/CW	
FM:87M~108MHz	1.5uV, SINAD 12dB	WFM	
	2.0uV, SINAD 20dB	WFM	
AIR:118M~137MHz	2.0uV, SINAD 12dB	AM	

Test conditions: 50 ohm input impedance, preamp 20dB on, AGC on

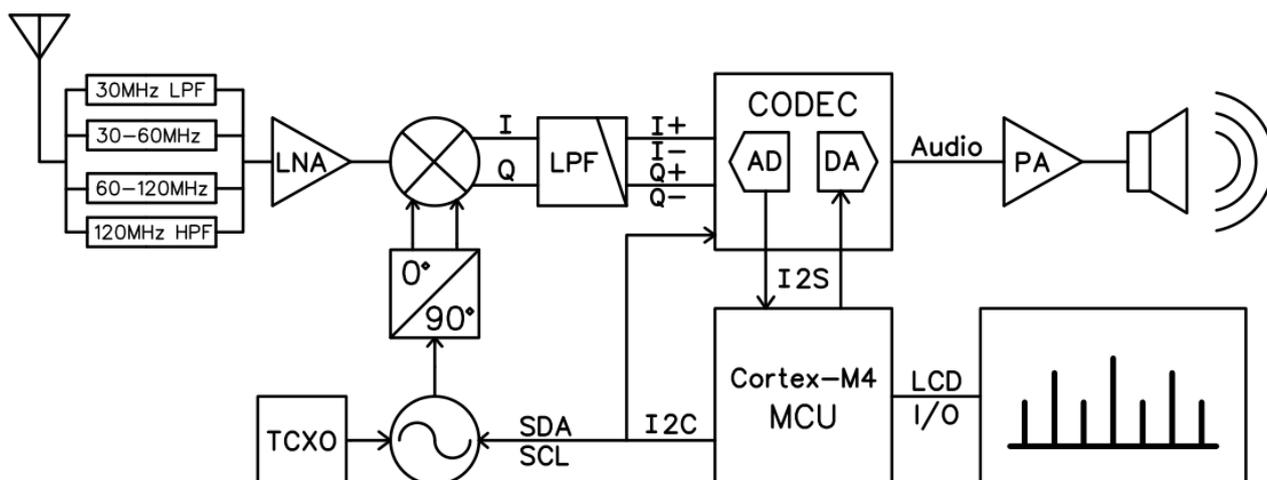
**Display control item list****Twelve items that can be selected by the encoder**

1. Channel selection : 1-99
2. Frequency setting : 100k – 149MHz, minimum step 1Hz
3. Speaker volume(SPK) : 0~35dB, 1dB step
4. Earphone volume(EAR) : 0~35dB, 1dB step
5. Modulation : CW, LSB, USB, AM, WFM, STE(FM stereo), I/Q
6. AGC setting : OFF, SLOW, MID, FAST
7. Reference level(REF) : -99~99dB, 1dB step
8. Backlight brightness(LCD) : 1%~99%
9. IF GAIN : -12~67dB, 1dB step
10. Spectrum style settings : Green fill, Green line, Blue fill, White line
11. Spectrum bandwidth settings : RF spectrum (192kHz, 128kHz, 64kHz) and Audio spectrum (64kHz)
12. Waterfall area settings: Waterfall or Waveform (x1 / x8 / x64 amplitude)

**Five items not selectable by the encoder**

- A. battery level display
- B. date and time settings
- C. radio information display: preset radio name capability
- D. display of current spectrum bandwidth
- E. (POWER) input power display

### Receiver Block Diagram



This product realizes frequency mixing based on the Tayloe Quadrature Product Detector method. The clock generator Si5351 generates two quadrature square wave signals with variable frequency as excitation, and realizes an ultra-low noise ZIF zero-IF receiver. The IQ signal obtained after mixing is output to the CODEC and collected by the MCU, and the DSP algorithm in the MCU completes the demodulation and display of the signal.

Tayloe mixer references:

Ultra Low Noise, High Performance, Zero IF Quadrature Product Detector and Preampfier  
[http://www.norcalqrp.org/files/Tayloe\\_mixer\\_x3a.pdf](http://www.norcalqrp.org/files/Tayloe_mixer_x3a.pdf)

### State of charge and discharge

Status		RED	Blue
Charge	charging	Blink	OFF
	full	ON	OFF
Discharge	discharging	OFF	ON
	low battery	OFF	Blink

### Attention points

1. The machine adopts SDR architecture. If there is a strong broadcasting station near you, the phenomenon of mirror radio may appear.
2. The input impedance of the antenna interface is 50Ω. For the medium wave radio, it is recommended to connect a dedicated medium wave loop antenna for better listening effect.
3. Please pay attention to the volume setting of the earphone (EAR) before using the earphone to listen to avoid discomfort caused by excessive volume.

## Supported frequency bands and coverage

ITU Region 3	Start	Stop	Modulation
Longwave	100,000	300,000	
Medium-wave	300,000	1,800,000	AM
HAM Radio 160 metres	1,800,000	2,000,000	
Medium-wave	2,000,000	3,000,000	
Shortwave	3,000,000	3,500,000	
HAM Radio 80 metres	3,500,000	3,900,000	
Shortwave	3,900,000	5,351,500	
HAM Radio 60 metres	5,351,500	5,366,500	
Shortwave	5,366,500	7,000,000	
HAM Radio 40 metres	7,000,000	7,200,000	LSB
Shortwave	7,200,000	10,100,000	
HAM Radio 30 metres	10,100,000	10,150,000	
Shortwave	10,150,000	14,000,000	
HAM Radio 20 metres	14,000,000	14,350,000	USB
Shortwave	14,350,000	18,068,000	
HAM Radio 17 metres	18,068,000	18,168,000	
Shortwave	18,168,000	21,000,000	
HAM Radio 15 metres	21,000,000	21,450,000	
Shortwave	21,450,000	24,890,000	
HAM Radio 12 metres	24,890,000	24,990,000	
Shortwave	24,990,000	28,000,000	
HAM Radio 10 metres	28,000,000	29,700,000	
Shortwave	29,700,000	30,000,000	
VHF Band	30,000,000	50,000,000	
HAM Radio 6 metres	50,000,000	54,000,000	
VHF Band	54,000,000	64,000,000	
FM broadcast	64,000,000	108,000,000	WFM
Airband Navigation	108,000,000	118,000,000	
Airband Voice	118,000,000	137,000,000	AM
VHF Band	137,000,000	144,000,000	
HAM Radio 2 metres	144,000,000	148,000,000	
VHF Band	148,000,000	149,000,000	

## Shipping list :

1. DeepSDR101 4.3-inch screen unit x1
2. USB-A to USB Type-C cable x1
3. BNC rod antenna x1 (expanded length 70CM, closed length 14CM)
4. Quick Start Guide x1
5. 4.3 inch screen protector film 1
6. Foldable machine stand x1
7. Resistive screen touch pen x1
8. EVA material protective bag x1