

SDRUM 101 Software Defined Radio Receiver User Guide

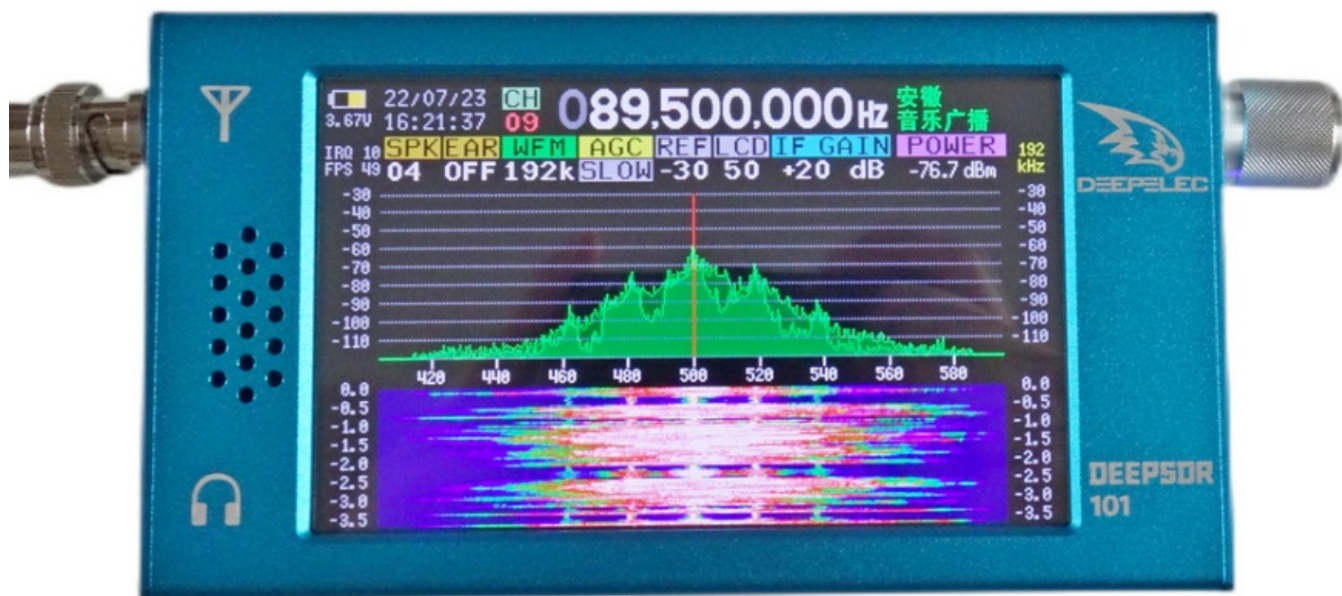
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SDRUM

SDRUM 101 Software Defined Radio Receiver



Product Information

The SDR 101 Software Defined Radio Receiver is a portable device that allows users to receive and demodulate radio signals. With a compact size of 160 x 86 x 22mm and a weight of about 310g, it is designed for easy portability.

Specifications

- **Use time:** about 10-12 hours (depending on volume and brightness settings)
- **Channel saving:** 99 channels can be preset
- **Body size:** 160 x 86 x 22mm (L x W x H)
- **Body weight:** about 310g (host only)
- **RF preamp gain:** fixed 20dB
- **Circuit Type:** Zero IF ZIF
- **Sideband suppression:** 55dB

Product Usage Instructions

1. Power On/Off

To power on the SDR 101, press and hold the power button until the device turns on. To power off, press and hold the power button again.

2. Volume and Brightness Settings

You can adjust the volume and brightness settings of the device according to your preference. Use the dedicated buttons or settings menu to make adjustments.

3. Channel Presets

The SDR 101 allows you to preset up to 99 channels. To preset a channel, tune to the desired radio station, enter the station name, frequency, and demodulation mode, then save it as a preset.

4. Antenna Connection

Connect the included BNC rod antenna to the antenna interface of the device. For better listening experience on medium wave radio, it is recommended to connect a dedicated medium wave loop antenna.

5. Earphone Usage

If you want to listen using earphones, make sure to adjust the volume setting of the earphone (EAR) before using them to avoid discomfort caused by excessive volume.

Frequently Asked Questions (FAQ)

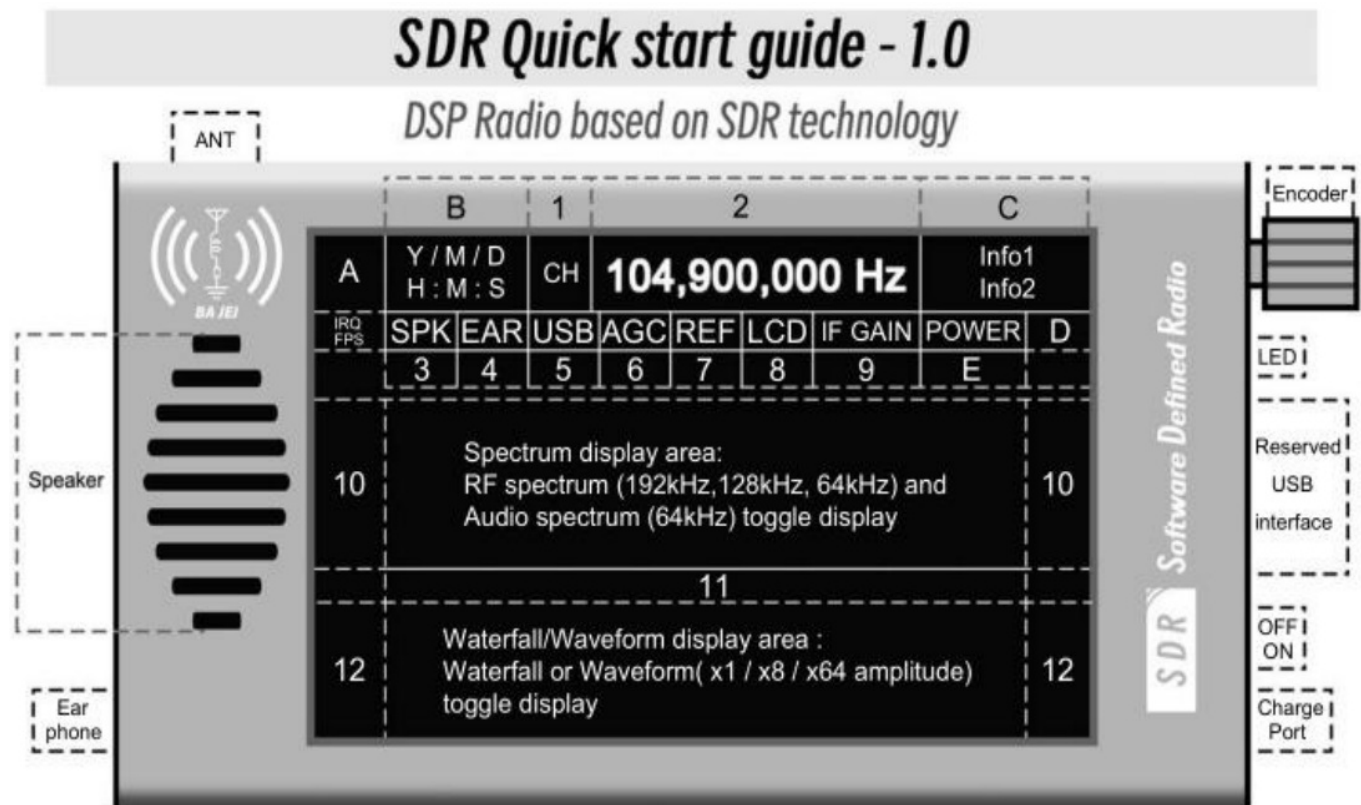
- **Q: What should I do if I experience mirror radio phenomenon?**

A: The SDR architecture of the device may cause mirror radio phenomenon if there is a strong broadcasting station nearby. To mitigate this, try adjusting the positioning of the device or use it in a different location.

- **Q: Can I use any type of antenna with the SDR 101?**

A: The input impedance of the antenna interface is 50. It is recommended to use a dedicated medium wave loop antenna for better listening effect on medium wave radio.

SDR 101 Software Defined Radio Receiver



Product description

- SDR-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 800×480 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 800×480 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)
- **Stepfrequency:** 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:** 160 x 86 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:** ≥ 55dB

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

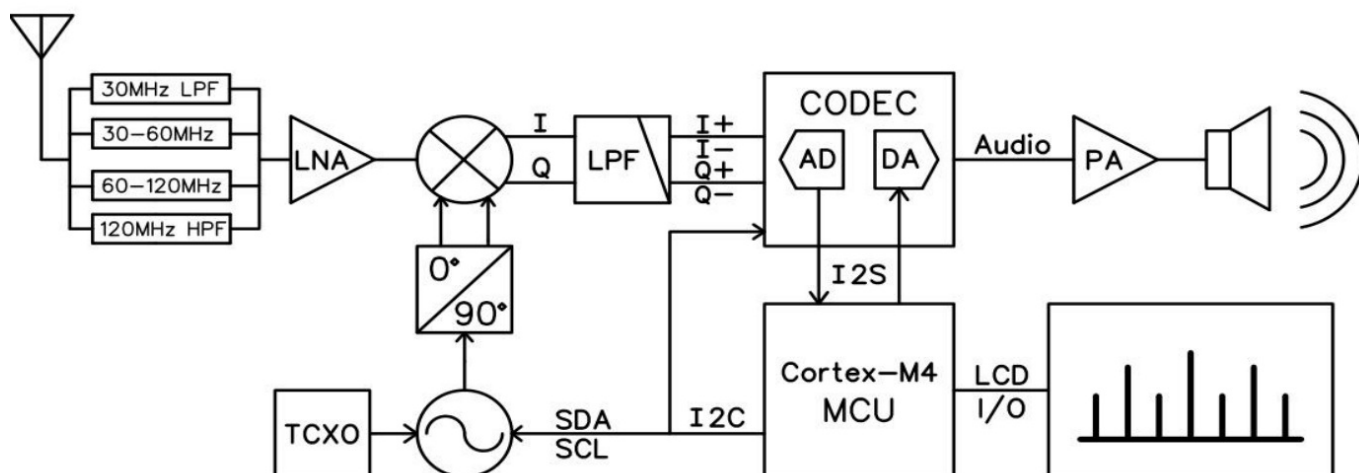
1. **Channel selection :** 1-99
2. **Frequency setting :** 100k – 149MHz, minimum step 1Hz
3. **Speaker volume(SPK) :** 0~35dB, 1dB step
4. **Earphone volume(EAR) :** 0~35dB, 1dB step
5. **Modulation :** CW, LSB, USB, AM, WFM, STE(FM stereo), I/Q
6. **AGC setting :** OFF, SLOW, MID, FAST
7. **Reference 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

- battery level display
- date and time settings
- **radio information display**: preset radio name capability
- display of current spectrum bandwidth
- (POWER) input power display

Receiver Block Diagram



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.

Taylor mixer references

Ultra Low Noise, High Performance, Zero IF Quadrature Product Detector and Preamplifier

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 nearby, 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	AM
Medium-wave	300,000	1,800,000	
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	USB
HAM Radio 20 metres	14,000,000	14,350,000	
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	
Airband Navigation	108,000,000	118,000,000	WFM
Airband Voice	118,000,000	137,000,000	
VHF Band	137,000,000	144,000,000	
HAM Radio 2 metres	144,000,000	148,000,000	AM
VHF Band	148,000,000	149,000,000	

Shipping list

1. SDR101 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

Documents / Resources



Protein Display Solution

SDR-111 is a DCP digital demodulation radio based on SDR software-defined radio architecture. It has a 170MHz wide spectrum and natural display capabilities, and cooperation with SDR4 sampling to realize a high-dynamic receiver with CH, 400, 1000, 1M demodulation functions. The whole machine adopts an aluminum alloy CNC shell, with a 6.5-inch 800x480 resolution high-brightness IPS LCD display, while maintaining compact and compact body.

Immediately like it is the outdoors, enjoy the natural scenery and the fun of fishing and time, anywhere!

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101 Software Defined Radio Receiver, 101, Software Defined Radio Receiver, Defined Radio R
eceiver, Radio Receiver, Receiver

References

- [User Manual](#)