



Digital Audio Noise Filter

GNR1

Operating Instruction

Version 1.0 Dec 2021



I. Introduction

GNR1 digital audio noise filter is an audio processing device integrating digital noise reduction and digital filtering. It can be widely used in the external audio processing sector of all types of wireless receiving equipment such as radio transceiver, receiver, radio, to effectively reduce the background noise, improve the signal-to-noise ratio, and improve the signal identifiable degree. GNR1 supports to connect external passive speaker, which can provide 3W audio output power; support independent adjustment of input/output sound volume; support selection of high/low input impedance; support audio double output ports (3.5mm stereo output, RCA output); support headphone output and automatic switch of headphone/speaker output.

II. Basic Indicators

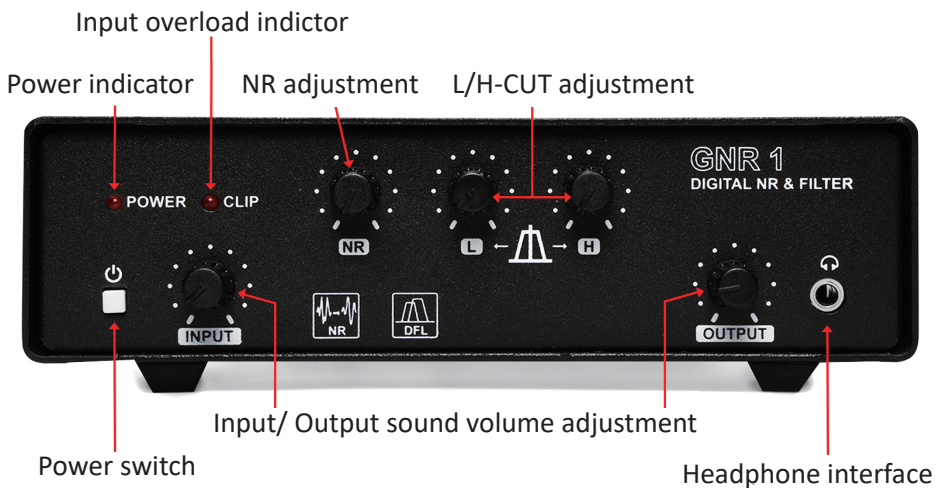
Digital denoiser SNR upgrade degree	More than 22dB	
Digital filter frequency response range	L-CUT adjustment range	5Hz-1280Hz
	H-CUT adjustment range	500Hz-5615Hz
Headphone driving power	100mW@Max	
Headphone output impedance	16~64Ω	
Input impedance range	Low impedance of 16Ω,	
Speaker output power	high impedance of 10kΩ	
	≥3W (8Ω, THD≤0.2%)	
Speaker output impedance	4~16Ω	
Operating voltage	DC12V:t15%	
Volume	159*44*143mm	



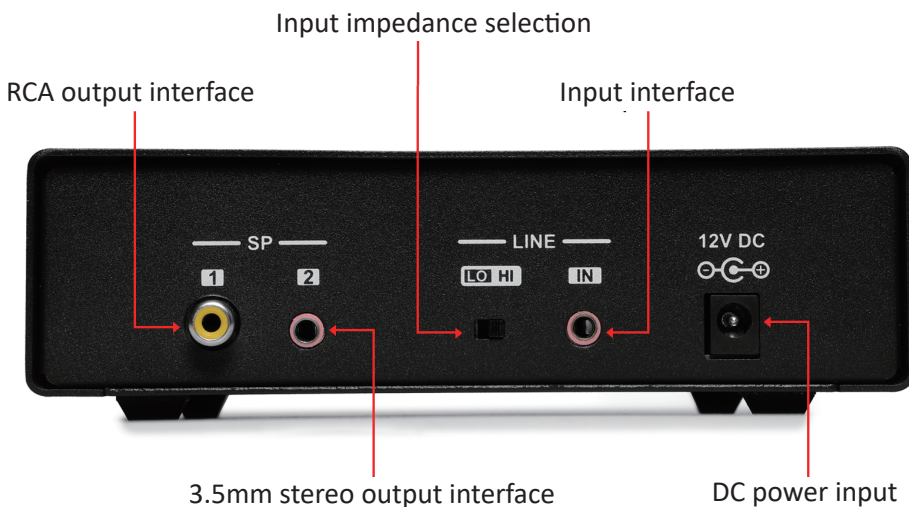
III. Operating Instruction

3.1 Description of Panel

Front panel



Rear panel





3.1.1 Wiring

The input is a mono channel, and its interface is a 3.5mm stereo jack. Two tracks are connected by the internal wiring. Do not use the mono channel jack, or you will cause a short circuit and no sound to the input!

The output is also a mono channel, with two jacks: RCA jack, 3.5mm stereo jack. This stereo interface also connects two channels in the device. Do not use the mono channel jack, or you will cause a short circuit and no sound to the output!

The external power is DC 12V $\pm$ 15%, you can directly use the 13.8V power of the radio equipment to supply power for this.

- *Do not use it under over-voltage! Do not directly power with 220VAC!*

3.1.2 Selection of input impedance

Reasonably select the high/low input impedance level for GNR1 according to the audio output impedance of the device you are using. You may turn down the output sound volume if you select it improperly.

3.1.3 Adjustment of input sound volume

You can adjust to the appropriate sound volume to keep a proper output sound volume and distortionless sound quality. You can adjust it in cooperation with the output sound volume. If the input audio amplitude is so high that the input is overloaded, the CLIP indicator on the panel will be on, so you should turn down the input sound volume at this time.

3.1.4 Adjustment of output sound volume

The knob controls the output sound volume of the speaker and headphone. You can adjust to an appropriate output sound volume without distortionless sound quality. If you need to use headphones to monitor the output, it is recommended to turn the knob left to the lowest sound volume, and then insert the headphones to avoid damage to your hearing due to too loud sound.

- *After inserting the headphone, the speaker output will be automatically cut off.*



3.1.5 NR noise reduction adjustment

This knob controls the NR noise reduction switch, and the 200-level noise reduction degree. Turn left to the end to turn off the NR. Turn to right to turn on NR noise reduction and increase the noise reduction degree by levels.

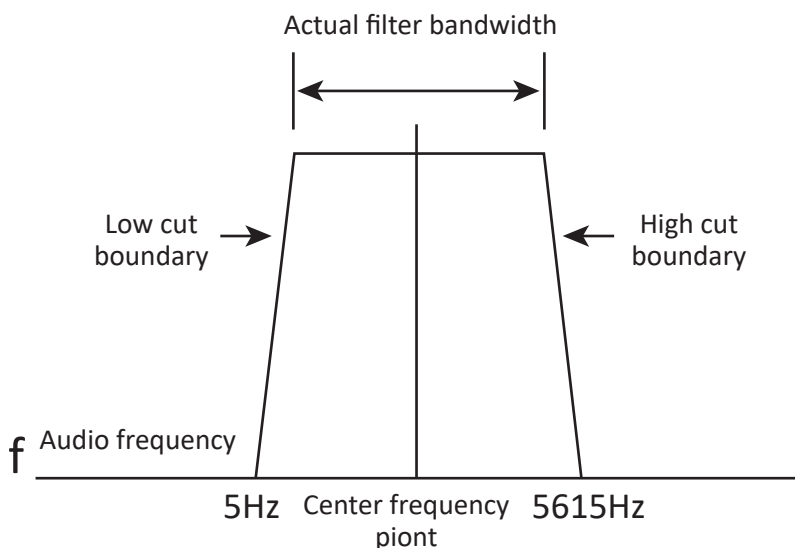
- *NR noise reduction will cause slight volume loss, so please reasonably adjust the noise reduction degree to get a comfortable listening experience.*

3.1.6 Adjustment of the digital filter

The digital filter can be adjusted by L and R, indicating the L-CUT low cut and H-CUT high cut adjustment. Turn the L knob left to the end, and the L-CUT low cut will be turned off. Turn the H knob right to the end, and the H-CUT high cut will be turned off.



Schematic Diagram of Filter Composition:



As shown in the figure on the right, the filter consists of L-CUT and H-CUT, and both work together to form an effective filter bandwidth.

L-CUT controls the low boundary frequency, which can effectively cut off the low-frequency component;

H-CUT controls the low boundary frequency, which can effectively cut off the high-frequency component;

In daily use, adjust according to your own listening preferences, subject to getting the best listening effect.

** Note: If the actual bandwidth of the filter is less than the useful bandwidth of the useful signal,*



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