HOLO AUDIO

HOLO AUDIO
RED

User's Guide

HOLO AUDIO

CONTENT

PRECAUTIONS

Please turn off the power before plugging and unplugging the TF card. Hot swapping with power on may cause damage to the TF card!

QUICK START

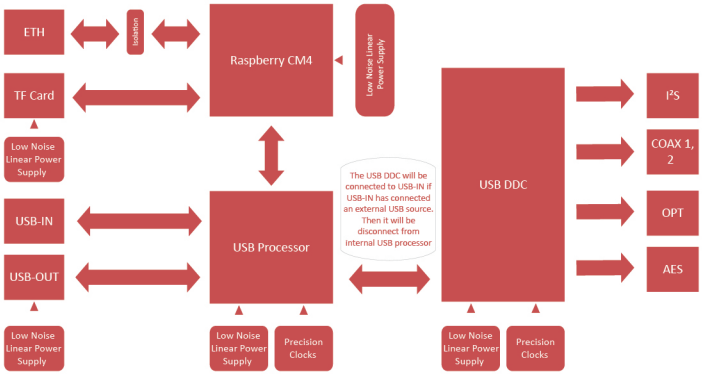
Before we dive into the exciting world the HoloAudio Red we wanted to take a moment to express our sincerest thanks to you. Seriously, you could have chosen any digital audio device out there, but you decided to trust us with your needs, and for that, we're truly grateful.

- Unpack the Red
- Unpack the MicroSD card (Micro-SD is already prepared with RedOS software)
- Before connecting the power cable Insert the SD Card into the Red (important!)
- Connect the IEC power cable

Use Red as a Digital Converter (USB to I2S or S/PDIF) follow "Set up the Red in DDC mode"
Use Red as Streaming Endpoint follow: "Set up the Red as a streaming bridge"

HARDWARE DESCRIPTION

RED is composed of multiple sets of ultra-low noise linear regulated power supplies, high-quality clocks, USB signal processors, USB DDC, Raspberry Pi CM4, etc. The internal block diagram is shown below:



When the USB-IN is effectively connected, the USB DDC will be connected to the USB-IN and disconnected from the USB processor; I²S, COAX-1, COAX-2, OPT, AES will simultaneously output the audio signal from the USB-IN.

HARDWARE SPECIFICATIONS

Digital Output

Note: When using USB output of the RED, Coax-1, 2, Optical and AES/EBU output will be inactive.

COAX-1, COAX-2, OPT, AES	PCM 44.1-192K 24bit
	DSD 64 DOP
USB	PCM 1.536Mhz / DSD1024
I²S	PCM 44.1K-768K (RopieeeXL will support up to PCM1.536Mhz)
	DSD 64-512X Native / DSD64 -256X DOP (RopieeeXL will support up to DSD1024)

Chassis Specifications

Size	2212x143x42mm - W x L x H(does not include overhangs)
Weight	2.4kg

Power Specifications

Power Input (Configurable, see the label on the bottom for more details)	220-230V 50/60Hz - Fuse Specifications 1A SB 5x20mm
	100-115V 50/60Hz - Fuse specifications 2A SB 5x20mm
Rated Power	15W (The actual power depends on the load)

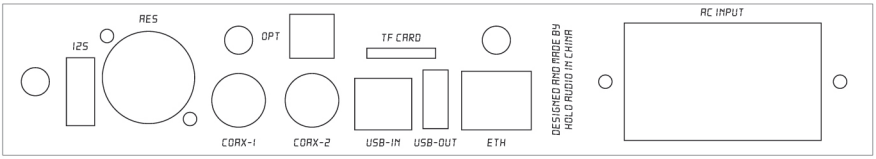
Appendix

Accessories	AC Power Cable x1 (USA Only)
	TF card (pre-installed RedOS) x1

FRONT PANEL

LED status indicator: the power indicator is green and steady, and the load indicator is red and flashing (it is normal to flash or turn off according to the load used)

REAR PANEL



From left to right (top to bottom) interfaces are: optical fiber, system TF card holder*, I²S*, AES, coaxial 1*, coaxial 2*, USB input, USB output, network port, AC power input

1.Do not hot swap the TF card while the power is on! Please turn off the power before inserting or removing the TF card.

2.I²S adopts LVDS differential transmission mode, and the pinout can be configured. Please refer to I²S output configuration for details. The physical interface form is the same as HDMI. An HDMI cable can be used but note that the electrical signal it transmits is I²S, not a conventional HDMI audio and video signal.

3.Coaxial 1 and coaxial 2 cannot be short-circuited.

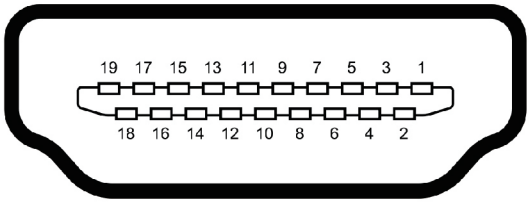
I²S OVER HDMI SPECIFICATIONS

I²s Output Configuration

Configure the I²S pinout through the DIP switch [1,2] at the bottom of the chassis,Set the DIP switch [3] to enable I²S_DSD_ON; DIP switch [4] sets I²S_MCLK frequency, ON is 45.1584M/49.152M, OFF is 22.5792M/24.576M.

Dip Switch[1: 2]	Pinout
00 (SW1: OFF, SW2: OFF)	Holo
01 (SW1: OFF, SW2: ON)	ALT2
10 (SW1: ON, SW2: OFF)	ALT1
11 (SW1: ON, SW2: ON)	ALT3

I²S Pinout



Pin	HOLO		ALT1		ALT2		ALT3	
	PCM	DSD	PCM	DSD	PCM	DSD	PCM	DSD
1	12S_DATA-	DSD_L-	12S_DATA+	DSD_L+	12S_DATA-	DSD_R-	12S_DATA+	DSD_R+
2	GND	GND	GND	GND	GND	GND	GND	GND
3	I2S_DATA+	DSD_L+	I2S_DATA-	DSD_L-	I2S_DATA+	DSD_R+	I2S_DATA-	DSD_R-
4	12S_BCLK+	DSD_BCLK+	12S_BCLK+	DSD_BCLK+	12S_BCLK+	DSD_BCLK+	12S_BCLK+	DSD_BCLK+
5	GND	GND	GND	GND	GND	GND	GND	GND
6	I2S_BCLK-	DSD_BCLK-	I2S_BCLK-	DSD_BCLK-	I2S_BCLK-	DSD_BCLK-	I2S_BCLK-	DSD_BCLK-
7	12S_LRCK-	DSD_R-	12S_LRCK+	DSD_R+	12S_LRCK-	DSD_L-	12S_LRCK+	DSD_L+
8	GND	GND	GND	GND	GND	GND	GND	GND
9	12S_LRCK+	DSD_R+	12S_LRCK-	DSD_R-	12S_LRCK+	DSD_L+	12S_LRCK-	DSD_L-
10	I2S_MCLK+	DSD_MCLK+	I2S_MCLK+	DSD_MCLK+	I2S_MCLK+	DSD_MCLK+	I2S_MCLK+	DSD_MCLK+
11	GND	GND	GND	GND	GND	GND	GND	GND
12	I2S_MCLK-	DSD_MCLK-	I2S_MCLK-	DSD_MCLK-	I2S_MCLK-	DSD_MCLK-	I2S_MCLK-	DSD_MCLK-
13	NC	NC	NC	NC	NC	NC	NC	NC
14	NC	NC	NC	NC	NC	NC	NC	NC
15	NC	NC	NC	NC	NC	NC	NC	NC
16	RSV	RSV	RSV	RSV	RSV	RSV	RSV	RSV
17	GND	GND	GND	GND	GND	GND	GND	GND
18	NC	NC	NC	NC	NC	NC	NC	NC
19	GND	GND	GND	GND	GND	GND	GND	GND

DDC OR NETWORK BRIDGE MODE

DDC Mode

When USB-IN is connected, the USB DDC will be connected to the USB-IN and disconnected from the USB processor; I2S, COAX-1, COAX-2, OPT, AES will simultaneously output the audio signal from the USB-IN.

Network Brdige Mode

When Micro-SD with RedOS is inserted and the LAN cable is connected (and USB-IN not connected), the RED will act as a network bridge.

Supported audio services are: Roon Ready, HQPlayer NAA, UPNP, AirPlay2, Squeezelite, Scream*, Spotify Connect and Tidal Connect

All services can be activated simultaneously*

Audio services can be enabled/disabled in the web-browser interface. The web-browser interface can be accessed via RED's IP address.

* Scream (Virtual network sound card for Microsoft Windows) can only be activated in standalone mode

SET UP THE RED IN DDC MODE

- Power off the Red
- Unplug LAN cable from the RED
- Plug the USB cable into the Red and Roon Core
- Plug the HDMI cable into the Red and your (Holo) DAC.
- Power On the Red

  Next steps are only for Roon installation
- Red should be visible in Roon Core => Audio Setup
- Enable the Red device in Audio setup (in Roon)
- Select the Red player to play music

SET UP THE RED AS A STREAMING BRIDGE

Note: Please make sure you do not change settings in RedOS if you don't know what you're doing. USB redirector is configured correctly and no need to make changes to its config normally.

When LAN cable is connected (and USB-IN not connected), the RED will act as a network bridge.

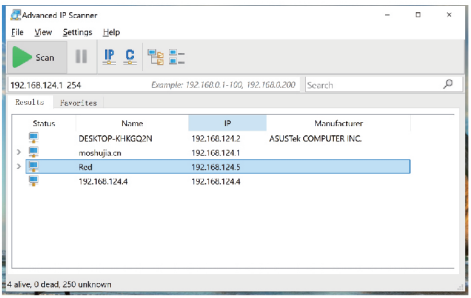
- Power off the Red
- Unplug the USB cable from the RED
- Connect the LAN cable into the Red (and make sure the SD Card is properly inserted)
- Plug the HDMI cable into the Red and your Holo DAC.
- Power On the Red

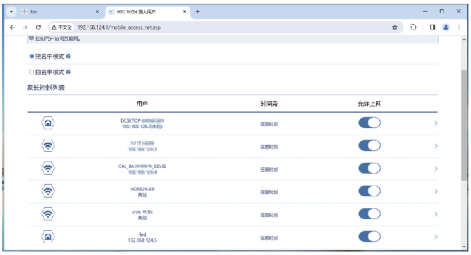
  Next steps are only for Roon installation
- Red should be visible in Roon Core => Audio Setup
- Enable the Red device in Audio setup (in Roon)
- Select the Red player to play music

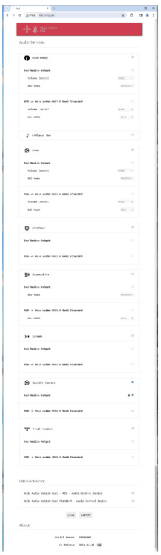
Note: If you can't find the Red it might not be available on your LAN. Check the IP address of the Red on your network. Open a web browser on your computer connected to the same (local) network and enter the IP address to access the RedOS page (configuration of the Red).

RED OS

If local network can resolute the domain name of RED. Use a browser to access http://red/config.php ; Or, find the IP address the corresponds to RED through your router's client list or use tools like an IP scanner to obtain the IP address. Then user a browser to access the IP address you just obtained.







Use RED's Native Output

- When using RED's native output (I²S, Coaxial, AES, Optical). Please select " Red Native Output " in each service item. Then set the Volume Control and DSD Mode options.

Use RED's USB Output

- When using RED's USB-OUT to connect DAC or USB DDC. Please select "USB -> (USB device name)" in each service item,such as "USB -> Holo Audio UAC2.0 Gen2.1 Enhanced" or "USB -> Holo Audio UAC2.0 Gen2 Standard" . Then set the Volume Control and DSD Mode options.

About Roon Ready

- When using Roon Ready , you can select both RED's native output (I²S, Coaxial, AES, Optical) and RED's USB-OUT to connect DAC or USB DDC at the same time, which device works depends on Roon's setup. If you select single device, it must be same with Roon's setup.

About Spotify Connect

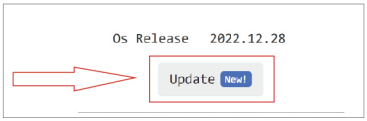
- When using Spotify Connect. The output device your selected will being exclusively occupied. A lock will be displayed. The output device you selected for Spotify Connect will be unchecked in other service items.

Save Configuration

- After you changed any setting, click [Save] button.

OS Update

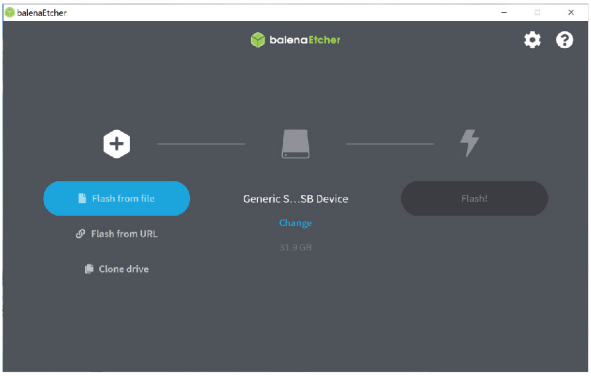
- When there is an Update【New!】button in the bottom of config page. Means that there is a new update available. Click Update【New!】and wait for the system update complete.



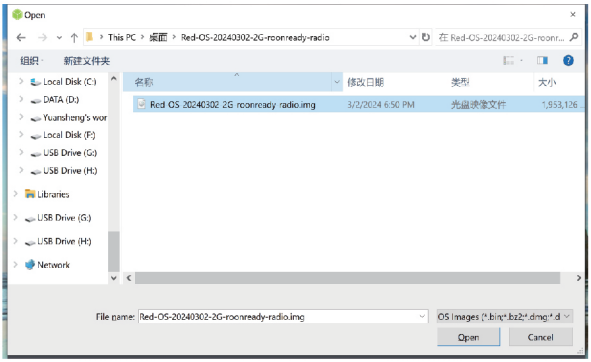
WRITE THE OPERATING SYSTEM TO THE TF CARD

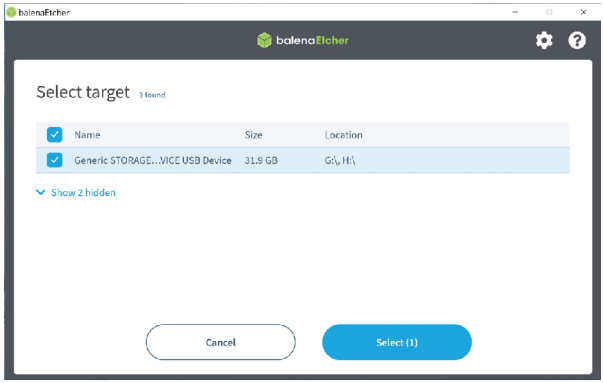
Caution: Do not hot swap the TF card with power on! Please turn off the power before plugging and unplugging the TF card

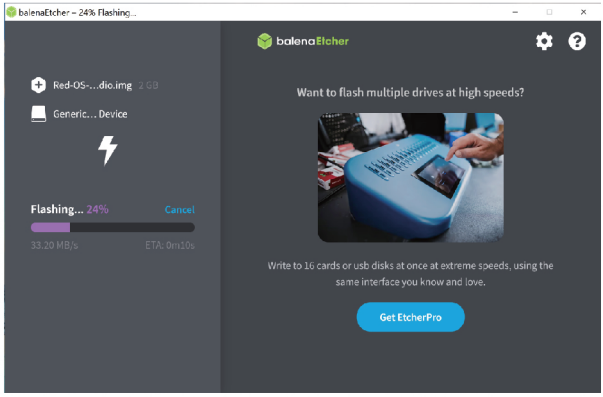
- Unzip the downloaded chosen operating system image file to get the .img file.
- Insert the TF card into the card reader and connect it to the computer.
- Run the balenaEtcher-Portable tool.



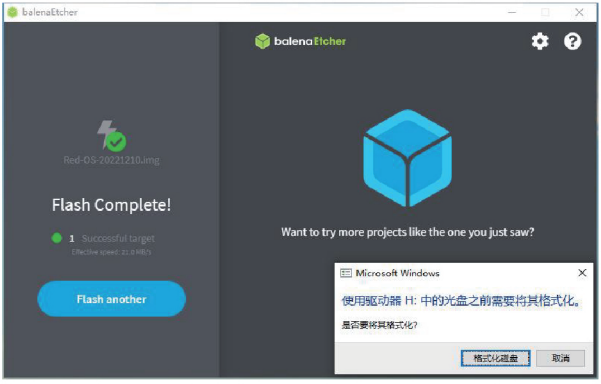
- Select the desired system image (.img file) in the BalenaEtcher-Portable software under "Flash from file", select the corresponding TF drive letter under " Select target ", and then select "Flash!" to start writing to the system. A dialog box will appear asking if you are sure, select "Yes".







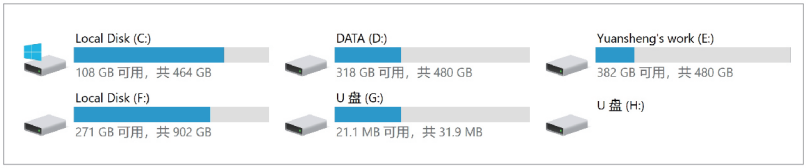
- It takes a few minutes to finish (it depends on the file size). When the " Flash Complete！ " dialog box appears, it means that the everything was successful.

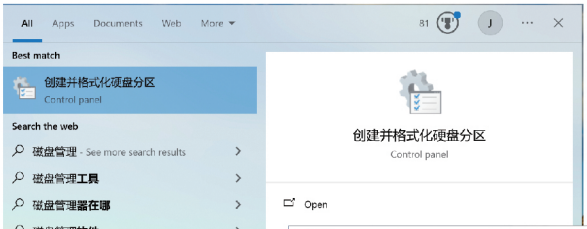


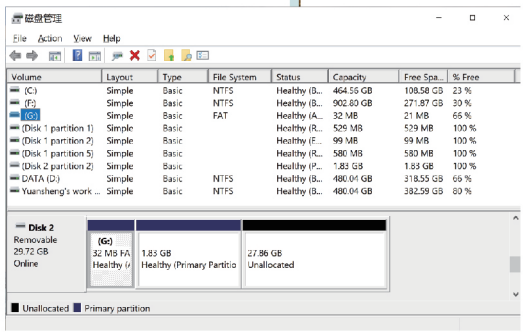
If the system prompts you to format, please remember not to format, click "Cancel" or "X", otherwise the system installed in the hidden partition may be erased and unable to enter the system.

COMMON ISSUE

- After the installation is complete, you will find that the displayed capacity of the TF card is lower than the original capacity. This is because only the boot partition in FAT format is displayed in the Windows system, only tens or hundreds of MB (according to the system written in the TF card), and the larger partition is the Linux partition, which is not displayed in the Windows system. It does not affect the work of the Raspberry Pi Linux (moodeaudio, volumio, etc...) system.
- If you want to use the drive for something else or want to install a new system, it will need to be formatted according to the instructions below. After the TF card is formatted using the Windows system "My Computer", the TF card will still be partitioned according to the Linux system and will not merge the TF partitions. You can use the Windows disk management tool for partition management to do this.

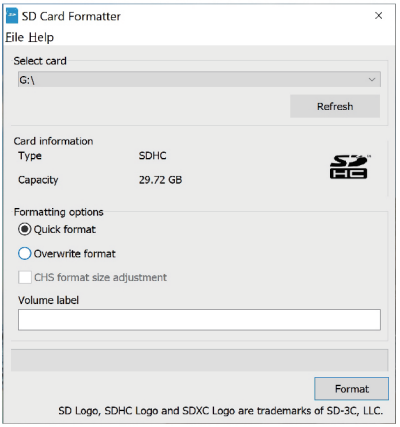




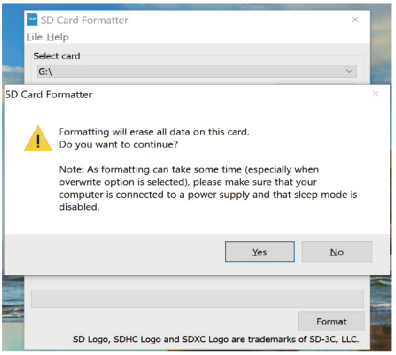


- In addition, you can use the SD Card Formatter tool to format the TF card. Proceed as follows:

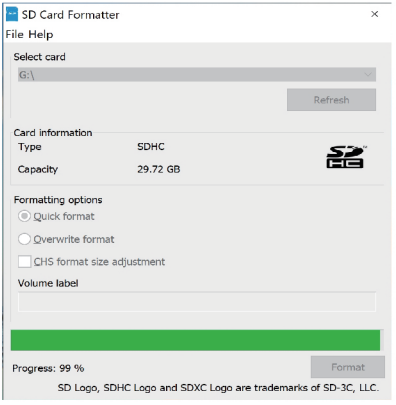
  Run SD Card Formatter and select the TF card to be formatted. **!!! Carefully check the drive letter that needs to be formatted to avoid the tragedy of formatting other disks!!!**



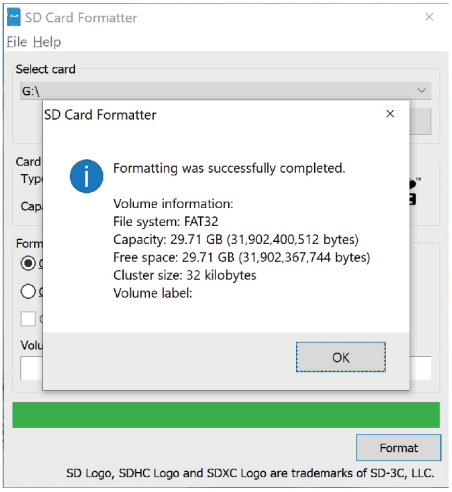
- After checking the letter of the drive that needs to be formatted, click "Format", and click "Yes (Y)" after a warning box pops up.



- Formatting...



- After the formatting is completed, drive capacity and storage space can be seen; click "OK" to close the software.



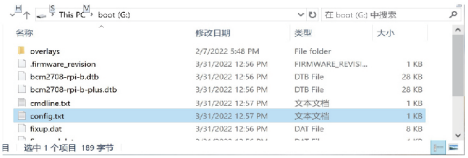
TURN ON USB

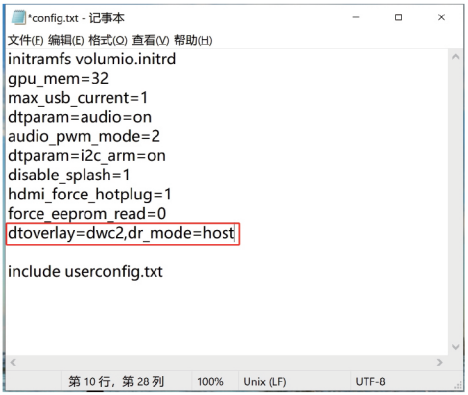
WHEN USING ALTERNATIVE SOFTWARE SOLUTION

- Because CM4 turns off USB by default to reduce power consumption, some systems need to configure it after writing to the TF card.

  Moode audio and RoPieeeXL systems are USB enabled and require no user configuration.

  After the Volumio system is written using balenaEtcher, it is necessary to add the USB enable configuration statement "dtoverlay=dwc2,dr_mode=host" to the config.txt file in the system TF card and save the txt file (shortcut key Ctrl+S)





HOLO AUDIO