RAPNAS MF-1

Network audio system(built-in amplifier)
OWNER'S MANUAL

IMPORTANT SAFETY INSTRUCTIONS

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
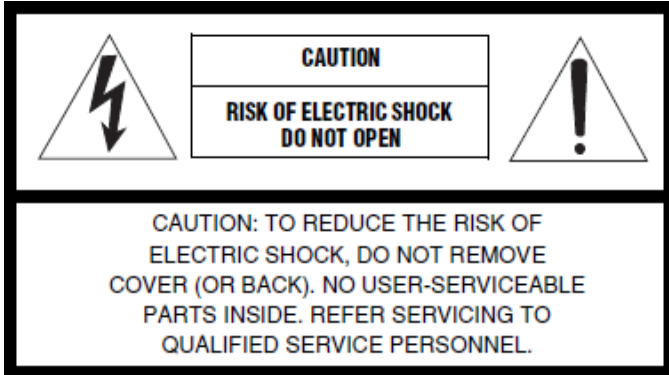
• Explanation of Graphical Symbols

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1 Read these instructions.
2 Keep these instructions.
3 Heed all warnings.
4 Follow all instructions.
5 Do not use this apparatus near water.
6 Clean only with dry cloth.
7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10 Protect the power cord from being walked on or pinched particularly at plugs, convenience Receptacles, and the point where they exit from the apparatus.
11 Only use attachments/accessories specified by the manufacturer.
12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13 Unplug this apparatus during lightning storms or when unused for long periods of time.
14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

We Want You Listening For A Lifetime

We group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion – and, most importantly, without affecting your sensitive hearing.
Since hearing damage from loud sounds is often undetectable until it is too late, We recommend you to avoid prolonged exposure from excessive volume levels.

FCC, IC and CE Statement

FCC requirements

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

IC warning statements

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
les dispositifs fonctionnant dans la bande de 5150 à 5250MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.
The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).
Cet conforme à la norme NMB-003 du Canada.

CE Declaration Of Conformity Hereby, Machine Technology (SZ) Co. , Ltd. Declares that this RAPNAS MF-1 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

CAUTION: READ THIS BEFORE OPERATING YOUR UNIT.

1. To assure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.
2. Install this sound system in a well ventilated, cool, dry, clean place - away from direct sunlight, heat sources, vibration, dust, moisture, and/or cold. For proper ventilation, allow the following minimum clearances.
   Top: 10 cm (4 in.), Rear: 10 cm (4 in.), Sides: 6 cm (2.5 in.)
3. Locate this unit away from other electrical appliances, motors, or transformers to avoid humming sounds.
4. Do not expose this unit to sudden temperature changes from cold to hot, and do not locate this unit in an environment with high humidity (i.e. a room with a humidifier) to prevent condensation inside this unit, which may cause an electrical shock, fire, damage to this unit, and/or personal injury.
5. Avoid installing this unit where foreign object may fall onto this unit and/or this unit may be exposed to liquid dripping or splashing. On the top of this unit, do not place:
   – Other components, as they may cause damage and/or discoloration on the surface of this unit.
   – Burning objects (i.e. candles), as they may cause fire, damage to this unit, and/or personal injury.
   – Containers with liquid in them, as they may fall and liquid may cause electrical shock to the user and/or damage to this unit.
6. Do not cover this unit with a newspaper, tablecloth, curtain, etc. in order not to obstruct heat radiation. If the temperature inside this unit rises, it may cause fire, damage to this unit, and/or personal injury.
7. Do not plug in this unit to a wall outlet until all connections are complete.
8. Do not operate this unit upside-down. It may overheat, possibly causing damage.
9. Do not use force on switches, knobs and/or cords.
10. When disconnecting the power cable from the wall outlet, grasp the plug; do not pull the cable.
11. Do not clean this unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.
12. Only voltage specified on this unit must be used. Using this unit with a higher voltage than specified is dangerous and may cause fire, damage to this unit, and/or personal injury. We will not be held responsible for any damage resulting from use of this unit with a voltage other than specified.
13. To prevent damage by lightning, keep the power cable and outdoor antennas disconnected from a wall outlet or this unit during a lightning storm.
14. Do not attempt to modify or fix this unit. Contact qualified service personnel when any service is needed. The cabinet should never be opened for any reasons.
15. When not planning to use this unit for long periods of time (i.e. vacation), disconnect the AC power plug from the wall outlet.
16. Be sure to refer to the "Troubleshooting" section for common operating errors before concluding that this unit is faulty.
17. Before moving this unit, press A to set it to standby mode and disconnect the AC power plug from the wall outlet.
18. Condensation will form when the surrounding temperature changes suddenly. Disconnect the power cable from the outlet, then leave this unit alone.
19. When using this unit for a long time, this unit may become warm. Turn the power off, then leave this unit alone for cooling.
20. Install this unit near the AC outlet and where the AC power plug can be reached easily.
21. The batteries shall not be exposed to excessive heat such as sunshine, fire or the like. When you dispose of batteries, follow your regional regulations.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This unit is not disconnected from the AC power source as long as it is connected to the wall outlet, even if this unit itself is turned off by A. This state is called the standby mode. In this state, this unit is designed to consume a very small quantity of power.

Radio waves may affect electro-medical devices. Do not use this unit near medical devices or inside medical facilities.

Do not use this unit within 20 cm (8.5 inches) of persons with a heart pacemaker implant or defibrillator implant.
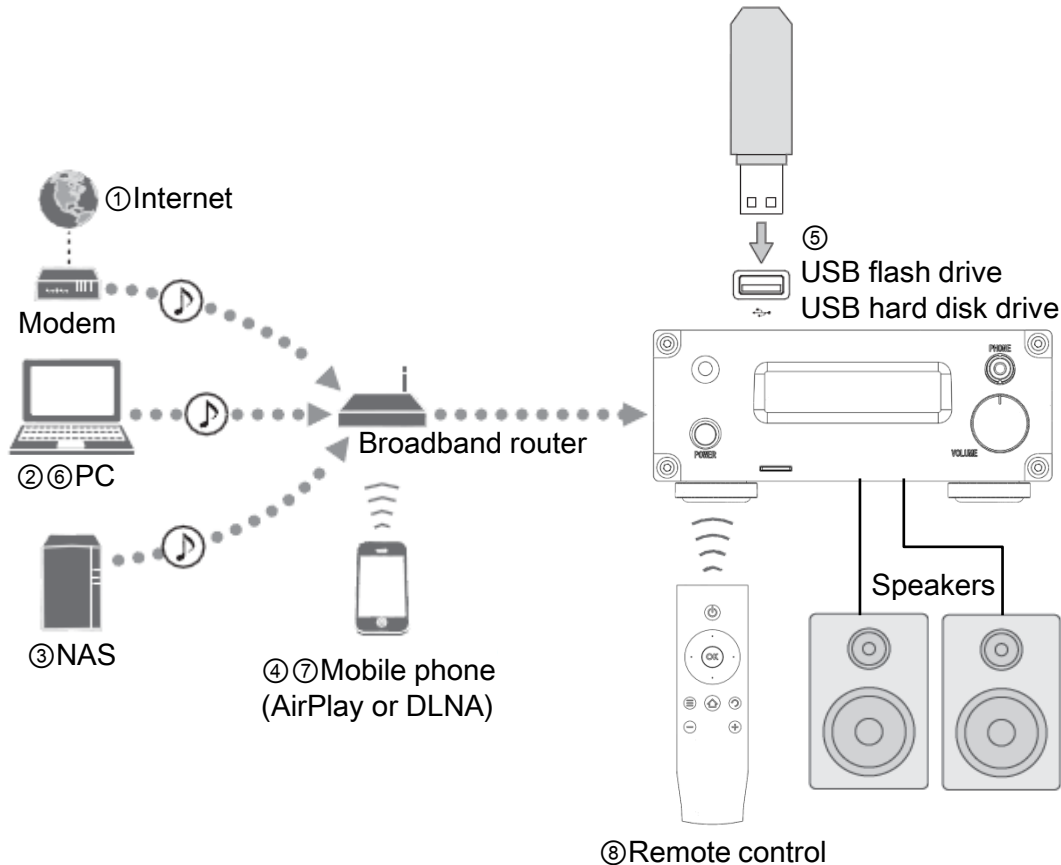
■ Notes on remote controls and batteries
- Do not spill water or other liquids on the remote control.
- Do not drop the remote control.
- Do not leave or store the remote control in the following conditions:
  – places of high humidity, such as near a bath
  – places of high temperatures, such as near a heater or stove
  – places of extremely low temperatures
  – dusty places
- Insert the battery according to the polarity markings (+ and -).
- Change all batteries if you notice the following conditions:
  – the operation range of the remote control narrows
  – the transmit indicator does not flash or is dim
- If the batteries run out, immediately remove them from the remote control to prevent an explosion or acid leak.
- If you find leaking batteries, discard the batteries immediately, taking care not to touch the leaked material. If the leaked material comes into contact with your skin or gets into your eyes or mouth, rinse it away immediately and consult a doctor. Clean the battery compartment thoroughly before installing new batteries.
- Do not use old batteries together with new ones. This may shorten the life of the new batteries or cause old batteries to leak.
- Do not use different types of batteries (such as alkaline and manganese batteries) together. Specification of batteries may be different even though they look the same. Danger of explosion may happen if batteries are incorrectly replaced.
- Before inserting new batteries, wipe the compartment clean.
- Dispose of batteries according to your regional regulations.
- Keep batteries away from children. If a battery is accidentally swallowed, contact your doctor immediately.
- When not planning to use the remote control for long periods of time, remove the batteries from the remote control.
- Do not charge or disassemble the supplied batteries.

Table of Contents

What you can do with this unit (Network Audio)

• This unit as a player with built-in amplifier, can be used not only for USB storage playback but also as a network player.
You can play from a media server (PC,NAS,etc.) on the same network or connect to an AirPlay / DLNA device.
In addition, Internet radio and streaming service can be received in an environment connected to the Internet.
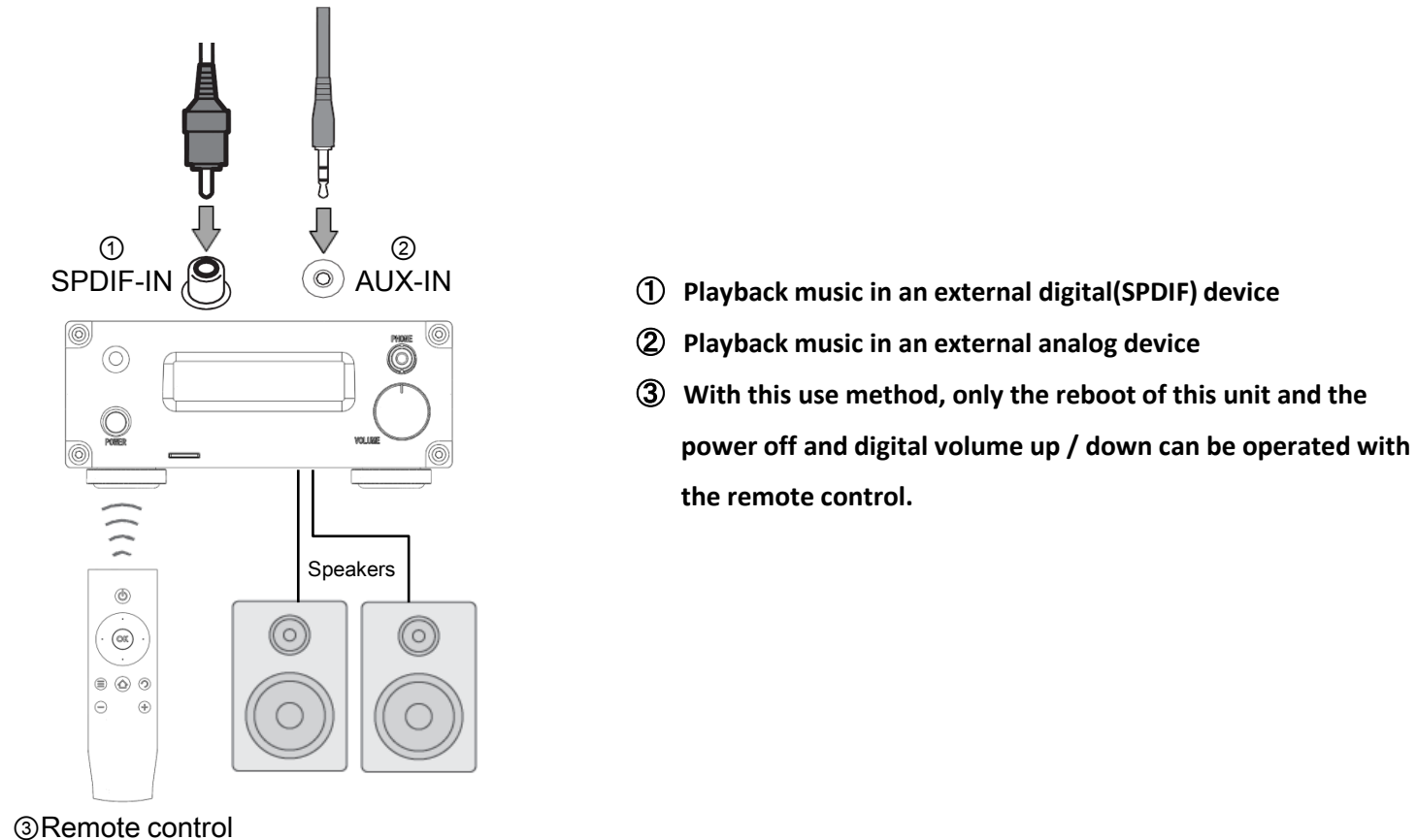

① Internet

Modem

②⑥ PC

③ NAS

Broadband router

④⑦ Mobile phone
(AirPlay or DLNA)

⑤ USB flash drive
USB hard disk drive

Speakers

⑧ Remote control

① **Playback the Internet radio and Spotify etc. streaming**

② **Play back music files stored on your PC (support Roon bridge)**

③ **Play back music files stored on your NAS**

④ **Play back your mobile with AirPlay or dlna connect**

⑤ **Play back music in an USB device**

⑥ **You can operate this unit on the PC**

⑦ **You can operate this unit on the Mobile phone**

⑧ **If it is easy operation you can do it from the remote control**

✓ **Note**
If you use streaming services such as Spotify, you will need to subscribe to the service (charged) by yourself.

What you can do with this unit (Wire connection input)

• By wired connection to an external playback device, this unit can be used as a Integrated amplifier.

① **Playback music in an external digital(SPDIF) device**

② **Playback music in an external analog device**

③ **With this use method, only the reboot of this unit and the power off and digital volume up / down can be operated with the remote control.**

✓ **Note**

In case of digital (SPDIF) input, you can use digital volume of DAC, digital volume can not be used with analog input.

What you can do with this unit (USB-DAC)

• This unit can be used as a USB-DAC by connecting PC with a USB conversion cable B and C.

①②

USB conversion
cable C

Speaker

USB conversion
cable B
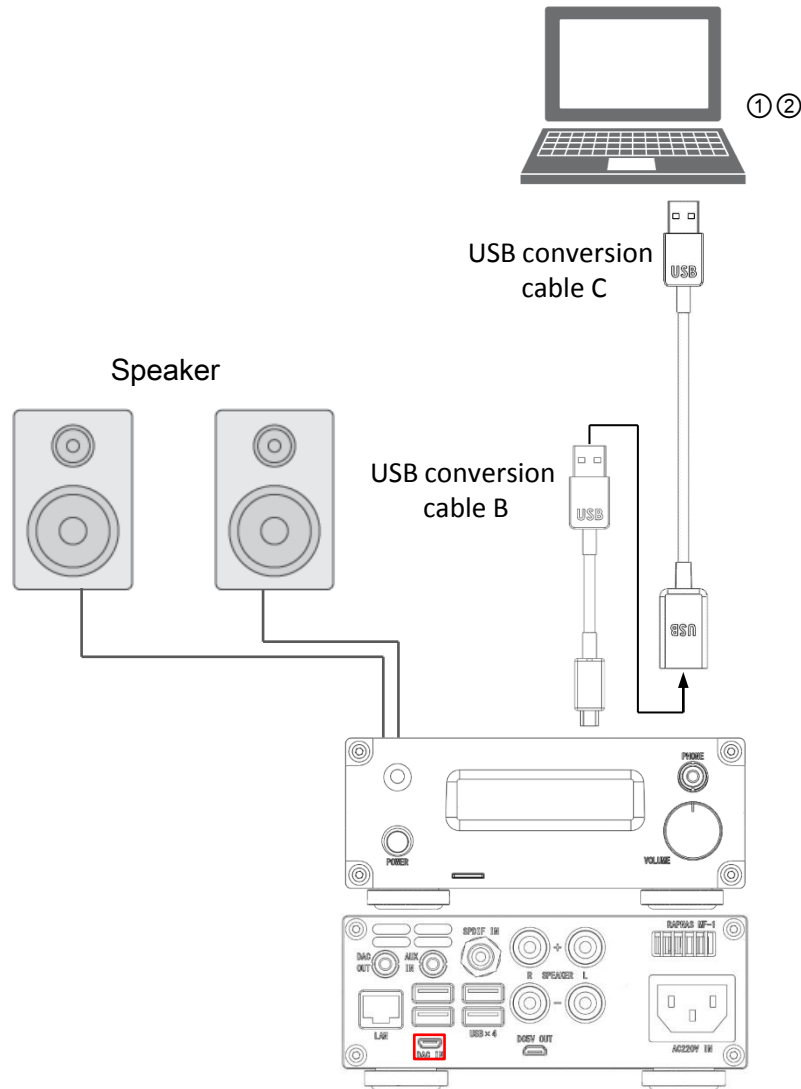
① **Support foobar2000**

② **Support JRiver Media Center**

③ **Support Audirvana Plus**

Accessories

• Confirm the package contents and useful points of this manual.

◆ Supplied accessories
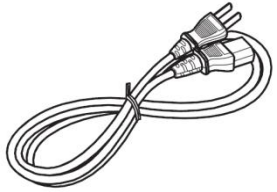
Power cable
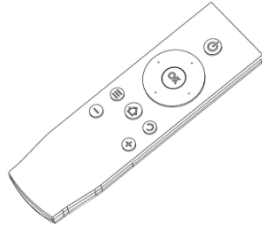
Remote control
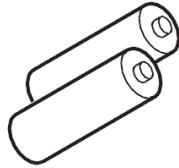
AAA battery

USB conversion cable A

USB conversion cable B

USB conversion cable C
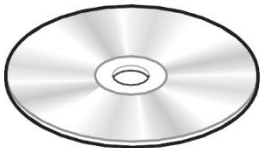
CD-ROM
•MicroSD card Backup (image file)
•Owner's manual (PDF file)

Micro SD card
(volumio2 based rapnas distribution)

◆ About this manual

• **Instructions and illustrations used in this manual refer to the RAPNAS MF-1, unless otherwise specified.**

• **How to operate this unit is described mainly using the WindowsPC and remote control.**

• **iOS and Android mobile devices are collectively referred to as "mobile devices."**

Remote control preparation

◆ Installing batteries
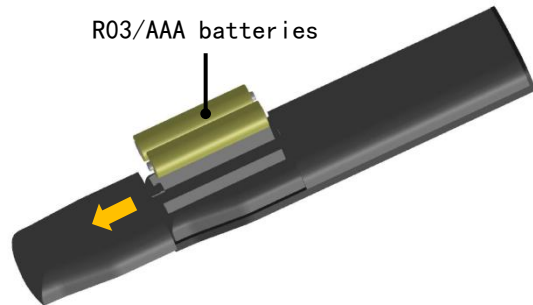
R03/AAA batteries

Remove the cover from the back of the remote control and insert two AAA batteries with their (+) (-) ends oriented in the case as shown. Replace the cover.

If the distance required between the remote and the main unit decreases or if the unit stops responding to the remote buttons, replace both batteries with new ones.
Dispose of the used batteries according to the instructions on them or requirements set by your local municipality.

◆ Operation range

About 6 meters

30° 30°
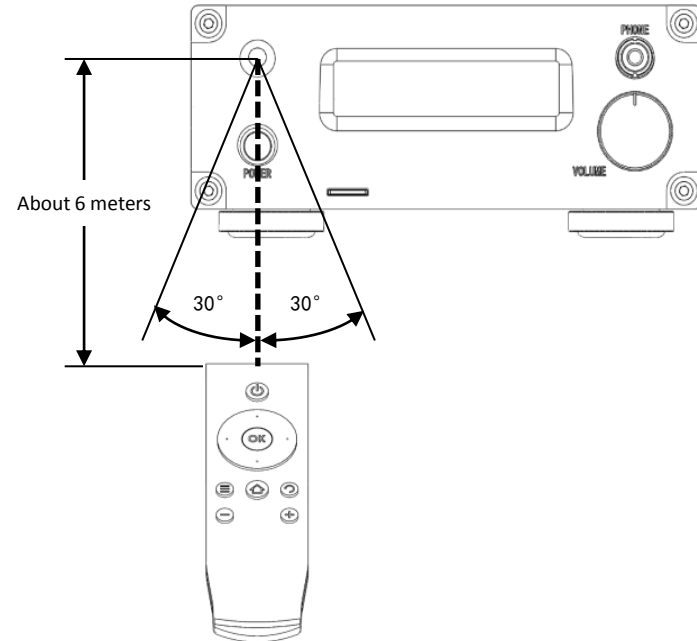
Aim the remote control directly at the remote control sensor on the main unit during operation.

Names and functions of parts (remote control)

• Familiarize yourself with all parts and these functions.
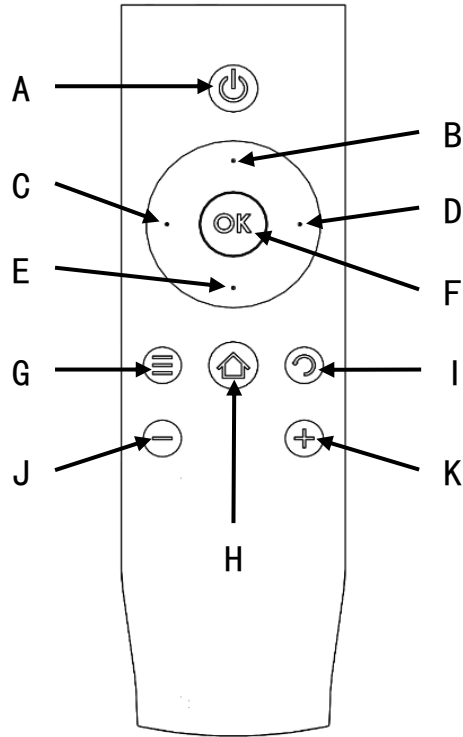
A) Power off or Reboot Decision button *1

B) Skip backward button

C) Fast-reverse button

D) Fast-forward button

E) Skip forward button

F) Play/Pause button

G) Change display button

H) Stop or Power off selection button

I) Reboot selection button

J) Volume down button *2

K) Volume up button *2

*1: Pressing the (I) button first, pressing this button shifts the system to power off.
Pressing the (J) button first, pressing this button shifts the system to reboot.

*2: With these buttons you can raise or lower the DAC's digital volume (display volume value).It has nothing to do with amp volume at the latter stage.

Part name (Front)

• Familiarize yourself with all parts and these functions.
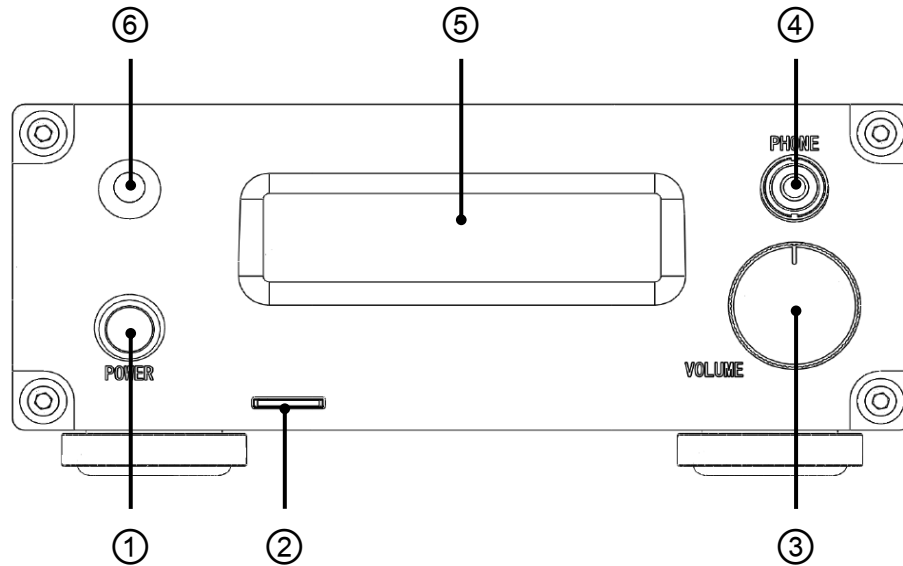
◆ Front panel

① Power Switch

② microSD card slot

③ Pre-Amplifier Volume knob

④ Headphones jack (3.5mm stereo) mini plug

⑤ Front panel OLED display

⑥ Remote control sensor

Part name (Rear)

• Familiarize yourself with all parts and these functions.

◆ Rear panel
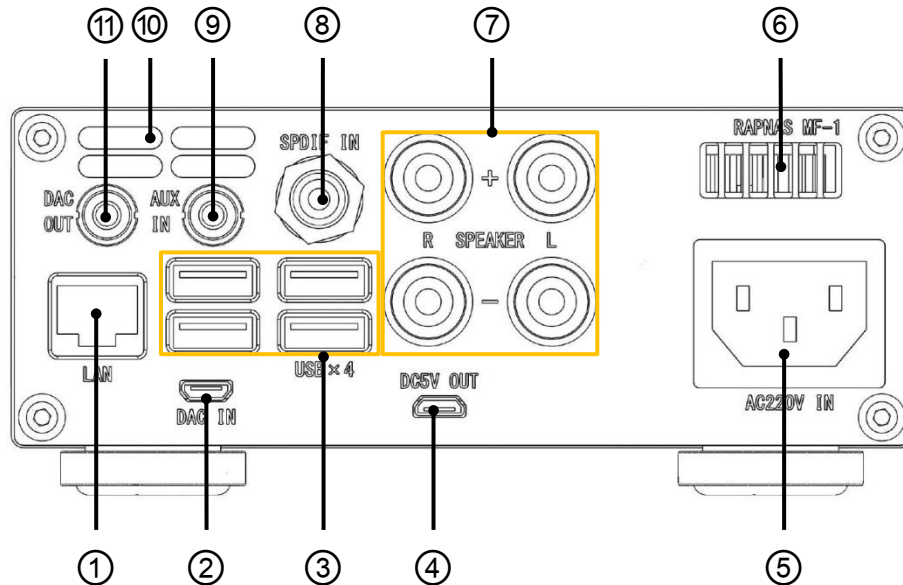
① Wired LAN (RJ-45x1)

② USB-DAC IN (micro USB B)

③ USB expansion port (USB type A × 4)

④ DC5V OUT (micro USB B)

⑤ Power supply (AC 100-120V or AC200-240V)

⑥ Exhaust port 1

⑦ Speaker terminal

⑧ SPDIF-Digital IN (RCA coaxial plug)

⑨ AUX-Analog IN (3.5mm stereo mini plug)

⑩ Exhaust port 2

⑪ DAC-Analog OUT (3.5mm stereo mini plug)

Part name (Side)

• Familiarize yourself with all parts and these functions.

◆ Side panel
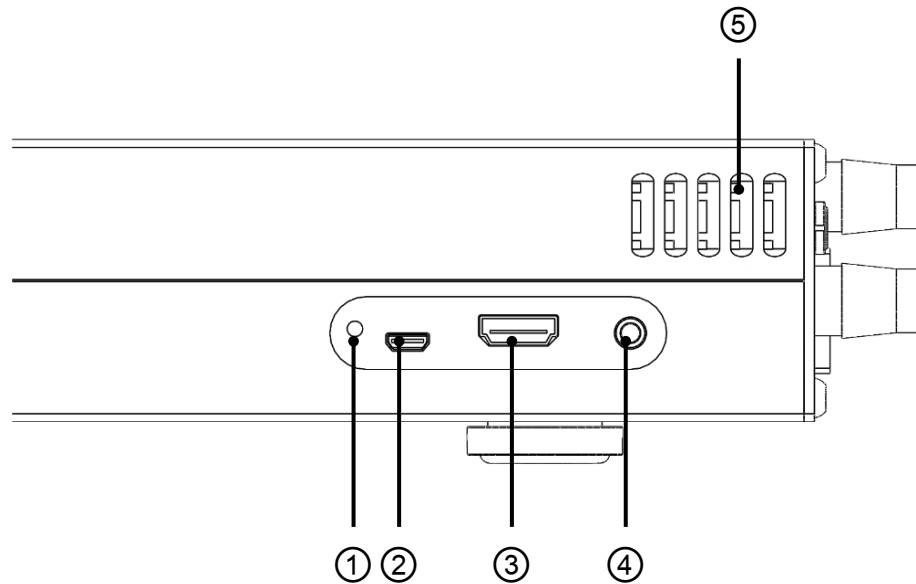
① ACTION-LED (MicroSD card read or write indicator)

② DC5V IN (For special use : microUSB B)

③ HDMI TYPE A (Video and audio output)

④ 3.5mm 4section mini plug (Video and audio output)

⑤ Exhaust port 3

Connecting speakers

◆ Attention

・This unit is compatible with speakers that have 4–8Ω nominal impedance. If speakers with impedance of less than 4 Ω are used, the protection circuit could operate, causing sound output to stop. In some cases, this unit or the speakers could be damaged.

・The red speaker terminals are positive (+) and the black speaker terminals are negative (-). Generally, the (+) wire of the speaker cable is marked to distinguish it from the (-) wire of the cable. Connect the marked wire to the red (+) terminal and the unmarked wire to the black (-) terminal.

・If the exposed core wires at the tips of the speaker cables should touch other cables or terminals, an electrical short might occur.

・ Never allow speaker cables to cause a short.

・ To prevent hum and noise, avoid bundling the cables together with the AC power cord or other cables.

◆ How to connect speakers

・Connection method A (Recommendation)

Insert a 4 mm banana clip (not included) to the end of the cable and insert it into the speaker terminal hole of this instrument.

Right Speaker   Left Speaker

Banana Plug
Diameter 4mm
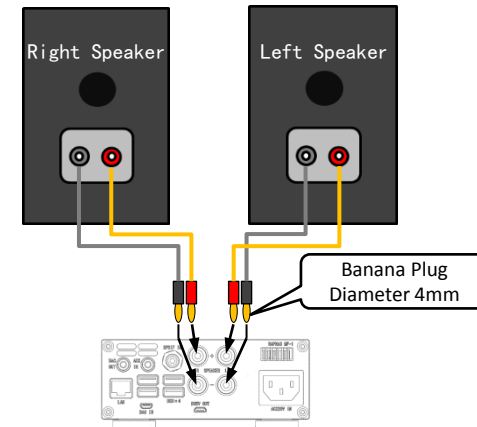
・Connection method B

Remove about one centimeter of insulation from the end of the speaker cable and twist the core wires well.

Turn the terminal cap counterclockwise to loosen it.

Insert the wire into the hole in the terminal post and turn the terminal cap clockwise to securely connect it.
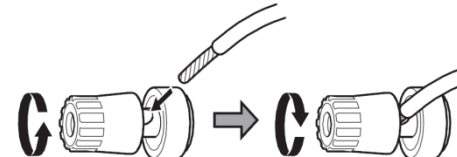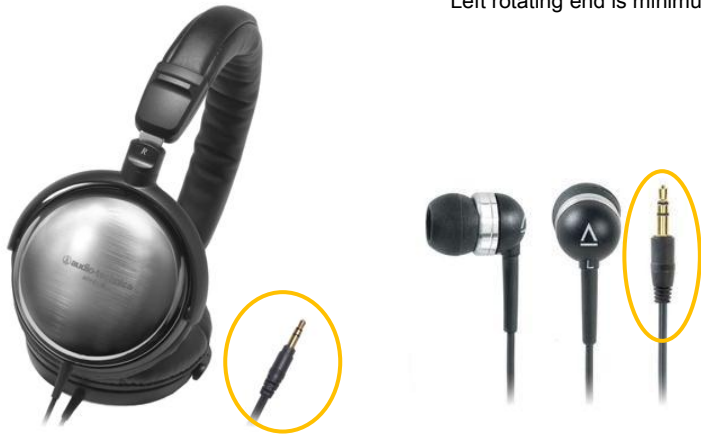
Connecting headphone

◆ PHONES jack

This headphone amp circuit uses a three-pole connector with Common left and right for grounding. Ordinary 3.5mm stereo mini plugs with 3 poles can be used.
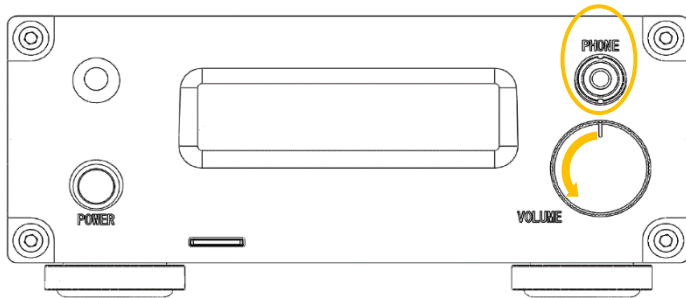
Left rotating end is minimum volume

◆ CAUTION

While wearing headphones, do not connect or disconnect them, turn the unit on or off, or switch the headphone amp gain.
Doing so could result in a sudden loud noise that could harm your hearing.
Always set the amplifier volume to minimum before connecting and unconnecting headphones on. (Left rotating end is minimum volume)
To prevent hearing loss, do not raise the volume level excessively when using headphones.

Connecting to a network (PC/NAS/Internet connection)

◆ Connecting to a network (PC/NAS/Internet connection)

You can play back music files stored on your PC or NAS, audio contents on the Internet radio, by connecting this unit to a network.

Connect with a commercially available STP (shielded twisted pair) network cable (CAT-5 or higher, straight-through)


Network cable

PC

NAS

Broadband router

Modem
Internet
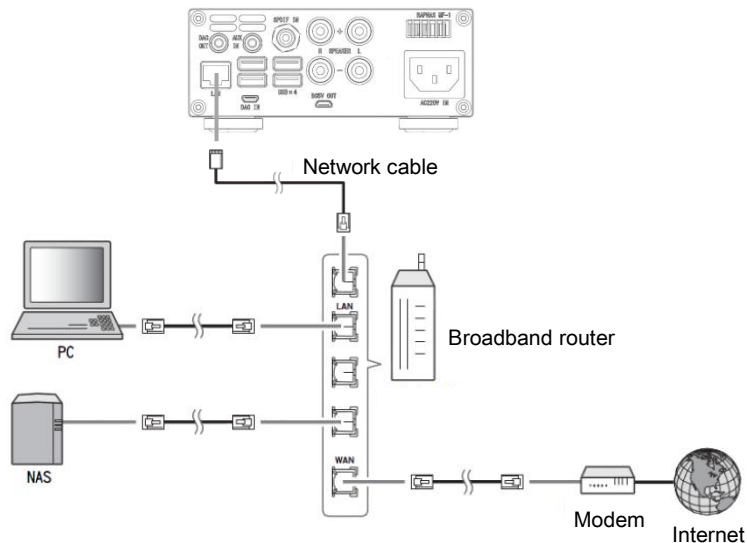
➤ CAUTION

- For details on Internet connection, refer to the owner's manuals of your network devices.
- If you are using a router that supports DHCP, you do not need to configure any network settings for the unit.
- Wired connections are recommended for devices other than the mobile to ensure high sound quality.
- Some security software installed on your PC or the firewall settings of network devices (such as a router) may block the access of the unit to the network devices or the Internet. In this case, change the setting of the security software or network devices.
- When setting the subnet manually, each server must be connected to the same subnet as the unit .wearing headphones, do not connect or disconnect them, turn the unit on or off, or switch the headphone amp gain. Doing so could result in a sudden loud noise that could harm your hearing. Always set the amplifier volume to minimum before connecting and un connecting headphones on. (Left rotating end is minimum volume) To prevent hearing loss, do not raise the volume level excessively when using headphones.

Basic connection of this unit

• Below is a description of the basic connection state that should be done before turning on the power supply.

◆ Rear panel
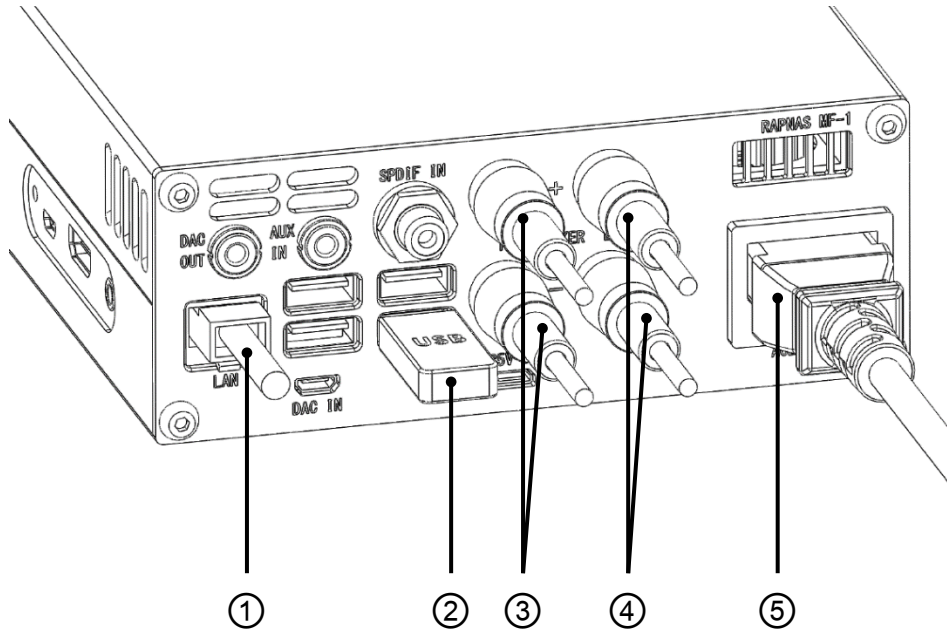
① Connect with your home router and LAN cable.

② Connect USB storage that saved the music source. (USB flash memory, USB external hard disk etc.)

③ Connect the right speaker cable.

④ Connect the left speaker cable.

⑤ Connect the Included power cord. (Do not connect to household outlet yet.)
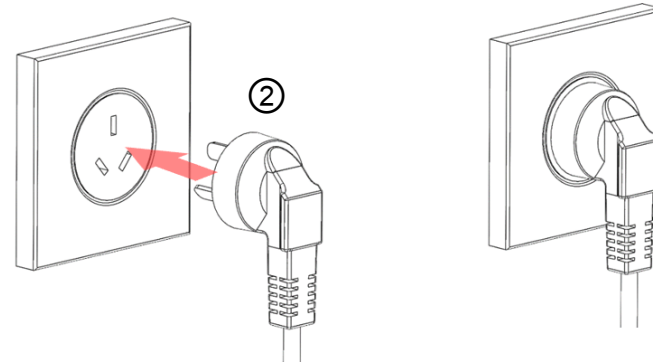
Stand by before use

• Familiarize yourself with all parts and these functions.

◆ Front panel
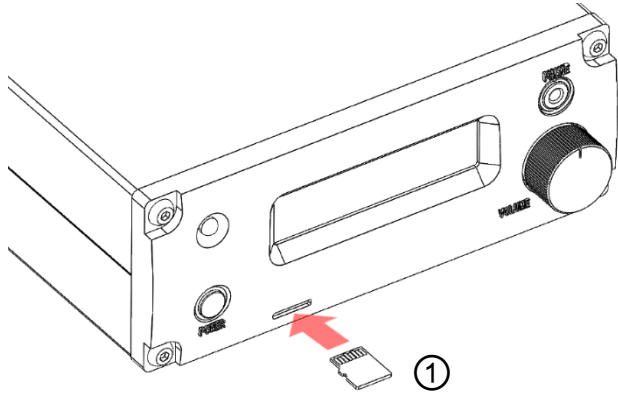
① **Insert the supplied micro SD card into the card slot. Be sure to insert with electrode slit face up. (To remove the card, push it again and it will be discharged in front.)**

◆ Connect the power plug

② **Finally connect the power plug to the household outlet.**

➢ Caution
Before connecting the plug, check that the power supply voltage of the home matches the voltage specification of this unit. It can be confirmed at the end A or B of the serial number.
A corresponds to AC 100 - 120V
B corresponds to AC 200 - 240V
If it is different, you should never connect.

Power ON

• Familiarize yourself with all parts and these functions.

◆ Front panel
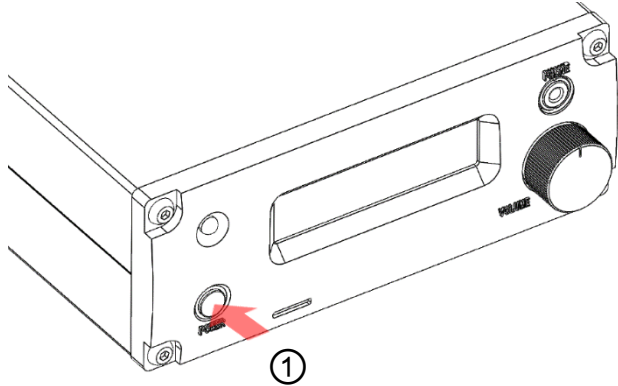
① **Press and release the POWER button on the panel for about 0.5 seconds. When the power turns on, the back of the amplifier volume knob glows blue. Wait approximately 40 seconds from the power ON until the startup is completed.**

② **The letter of Figure 1 is displayed on the front panel OLED, After a few seconds the start up completed when Figure 2 is displayed.**
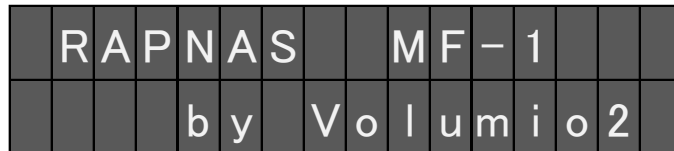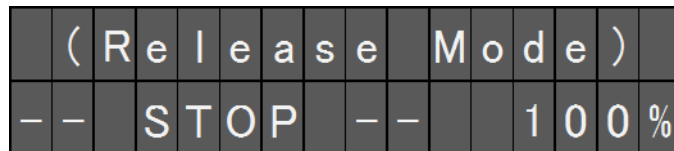
②

R	A	P	N	A	S		M	F	−	1		
			b	y		V	o	l	u	m	i	o	2

Figure 1

(	R	e	l	e	a	s	e		M	o	d	e	)
−	−		S	T	O	P		−	−		1	0	0	%

Figure 2

Mode and initial display of DAC

• There are three modes depending on the usage conditions of the DAC, and this mode is displayed on the OLED at the beginning of system startup.

◆ Release Mode

Condition under which the built-in USB-DAC is released to the outside. (OLED display status is Figure1)

As shown in Figure4, nothing is connected to the DAC-IN.

Or when it is connected to an external personal computer via a conversion cable. It is a mode to connect with foobar2000 etc.

Figure 1

```
( R e l e a s e   M o d e )
- -   S T O P   - -     1 0 0 %
```

◆ USB-DAC Mode

As shown in Figure5, DAC-IN and USB port are connected by conversion cable B. And the output device setting of the volumio playback option described later is "RAPNAS USB audio 2.0". (OLED display status is Figure2)

It is a mode that USB-DAC is preferentially used in volumio. Playback of PCM and DSD (Native) sound source Is possible.

Figure 2

```
( U S B - D A C   M o d e )
- -   S T O P   - -     1 0 0 %
```

◆ I2S-DAC Mode

As shown in Figure5, DAC-IN and USB port are connected by conversion cable B. And the output device setting of the volumio playback option described later is "RAPNAS I2S-DAC". (OLED display status is Figure3)

Bypass USB conversion and send I2S signal directly to DAC, so pure playback is possible.

Although the playable format is limited to PCM, If DSD is 256 or less, it will automatically convert to PCM 384 KHz and play it.

Figure 3

```
( I 2 S - D A C   M o d e )
- -   S T O P   - -     1 0 0 %
```
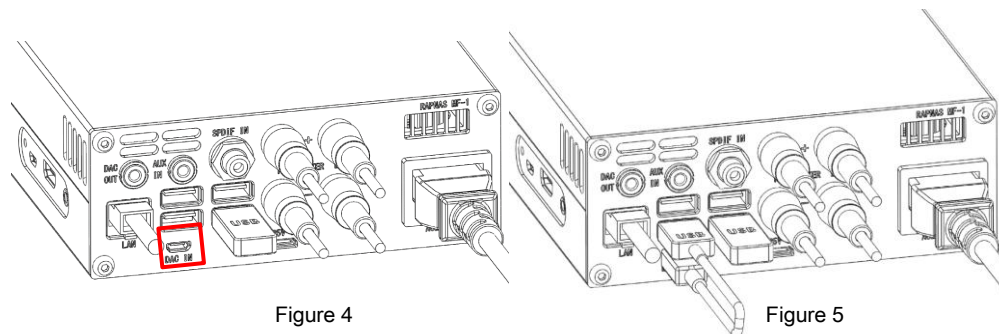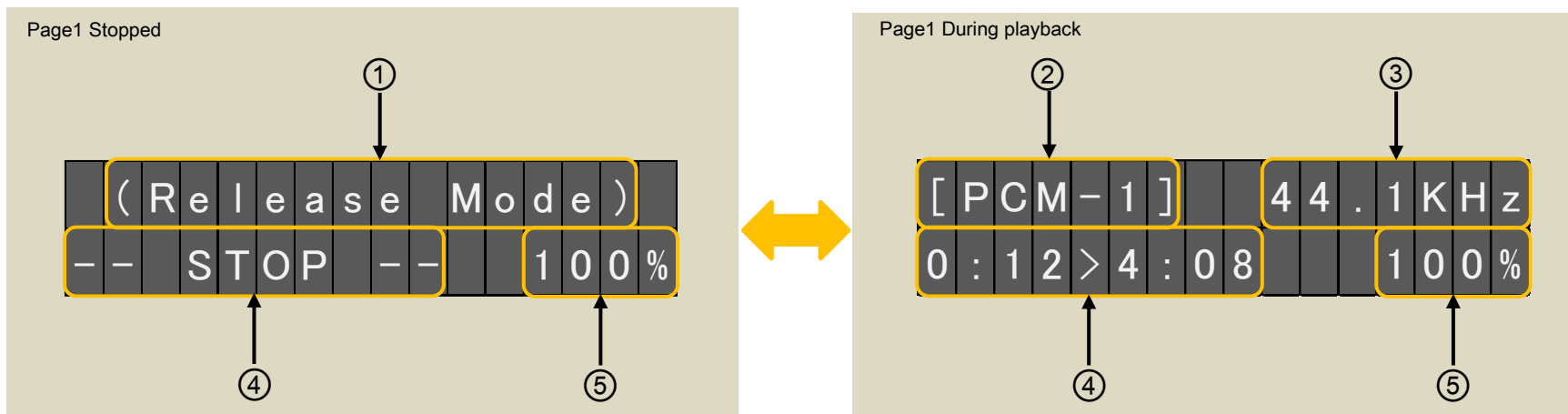

Figure 4

Figure 5

Front panel OLED display (page1)

- The display content of the front panel is the structure of 3 pages, the first page is displayed at the beginning. The page switches from 1 → 2 → 3 → 1 each time "Change display button" on the attached remote control is pressed.

Page1 Stopped

①
```
( R e l e a s e   M o d e )
- -   S T O P   - -     1 0 0 %
```
④ ⑤

Page1 During playback

② ③
```
[ P C M - 1 ]     4 4 . 1 K H z
0 : 1 2 > 4 : 0 8     1 0 0 %
```
④ ⑤

① **DAC mode**

  (Release Mode): When USB-DAC is released

  (USB-DAC Mode): Set RAPNAS USB-DAC in volumio

  (I2S-DAC Mode): Set RAPNAS I2S-DAC in volumio

② **Format and DAC input stream**

  PCM-1: I2S direct input of PCM

  PCM-2: Input via USB-DAC of PCM

  PCM-3: External PCM input to USB-DAC

  DSD-2: Input via USB-DAC of DSD

  DoP-2: Input via USB-DAC of DoP

  DSD-3: External DSD input to USB-DAC

  SPDIF: Direct input of SPDIF

③ **Sampling rate**

  PCM-1: Support 44.1KHz-384KHz

  PCM-2: Support 44.1KHz-768KHz

  PCM-3: Support 44.1KHz-768KHz

  DSD-2: Support DSD64-DSD512

  DoP-2: Support DSD64-DSD256

  DSD-3: Support DSD64-DSD256

  SPDIF: Support 44.1KHz-192KHz

④ **Playback status**

  -- STOP --: Stopped

X:XX>X:XX or X:XX!X:XX : When volumio playing music from the queue, that time is displayed.

・When the middle mark is > : During playback

・When the middle mark is ! : Paused

・Left term is playing time, right term is ending time

 -- LINK --: When playing from other than the queue, will be displayed.

⑤ **Current value of DAC digital volume**

   0 to 100% (-127 to 0dB)

Front panel OLED display (page2)

Page2 Stopped

① ③ ④

```
2018/07/25  21:30
-- STOP  --    100%
```

Page2 During playback

② ③ ④

```
Music  is  VFR - O
0:01>4:57       100%
```
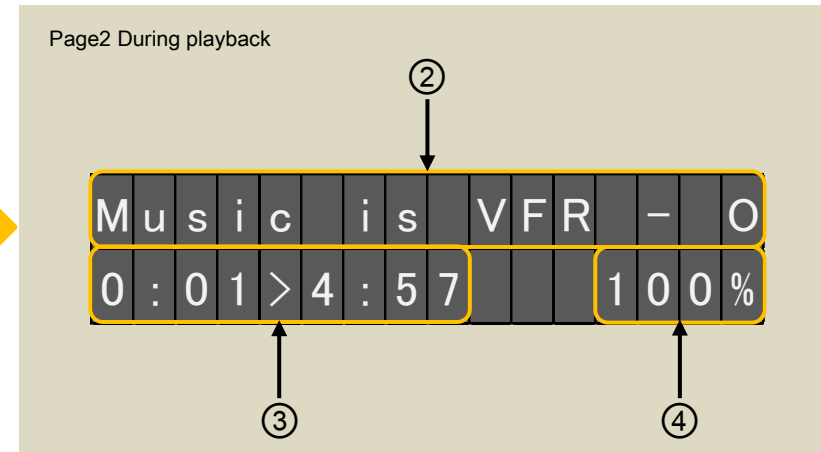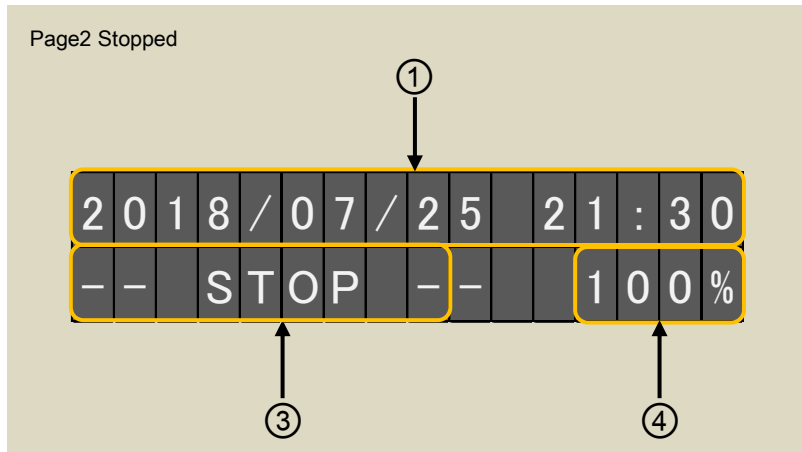
① **Current date and time**

If the time zone is not set, world

standard time will be displayed.

Since the date and time information is

acquired from the Internet, correct

date and time will not be displayed if

you are not connected to the Internet.

② **While playing from volumio's queue, artist and title**

information will be displayed.(If there is more than 16

letters of information, it will be scrolled)

When playing from other than the queue, the date and

time will be displayed.

③ **Playback status**

Same as page1

④ **Current value of DAC digital volume**

Same as page1

Front panel OLED display (page3)

Page3

E : 1 9 2 . 1 6 8 . 1 . 1 0 1

W : 1 9 2 . 1 6 8 . 2 1 1 . 1

① ②

Page3 option1

T u r n   o f f   d i s p l a y

a f t e r   3   s e c o n d s .

Page3 option2

− −   N o w   R e b o o t   − −

S e t   e t h 0   t o   D H C P
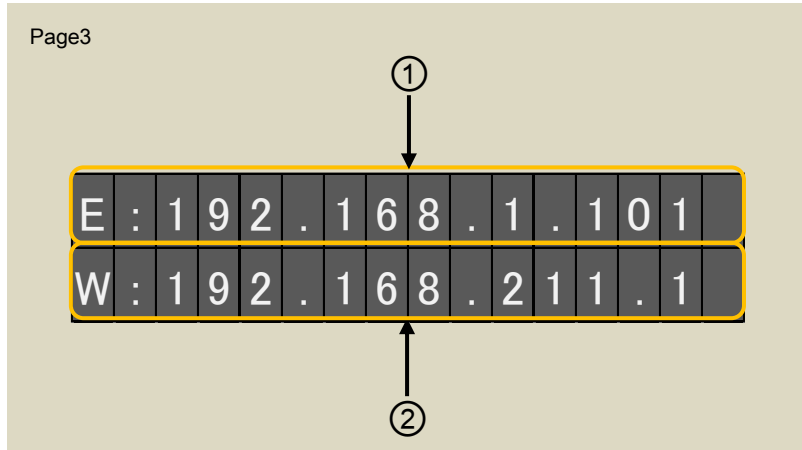
① Wired LAN connection IP address

  If there is no connection, "no connection" is displayed

② Wireless LAN connection IP address

  However, if the IP address is 192.168.211.1, it means

  that it is functioning as an access point.

  If there is no connection, "no connection" is displayed

Option1

  If you continue to display page 3 for more than 5 seconds

  with the DAC volume set to 100%, the display changes to

  option 1, and after 3 seconds, the display turns off.

  This is aimed at reducing the CPU load and increasing the

  sound quality by stopping the display program.

Option2

  When rebooting from the remote control or volumio Web

  UI while displaying Page 3, option 2 is displayed and

  rebooting is performed.

  After rebooting, volumio sets the wired LAN connection

  to DHCP (automatic acquisition), and it becomes invalid if

  previously static IP address was set.

Front panel OLED display (exception)

Exception 1

```
Connection  fails
waiting  retry...
```

Exception 2

```
Shutdown  due  to
high  temperature
```

Exception 1

It is displayed when communication for display could not be performed normally due to some cause.

The system automatically attempts to resume communication, but if it does not return to normal display even after 1 minute or more, you need to restart or turn off the power once.

Exception 2

When the CPU temperature reaches 75° it is a display that the system automatically shifts to shut down.

When turning on the power supply again must be wait until the case becomes room temperature.

Launch Web UI

Description uses windows 7 google chrome.
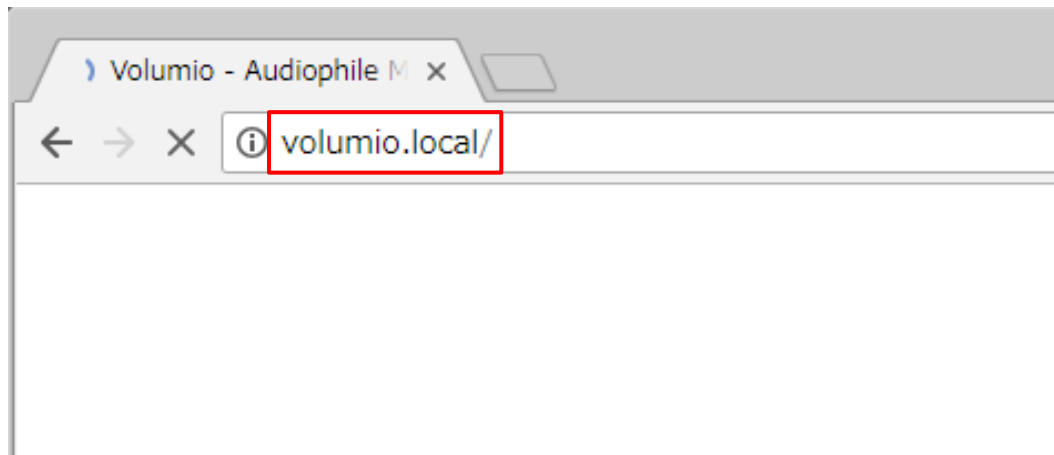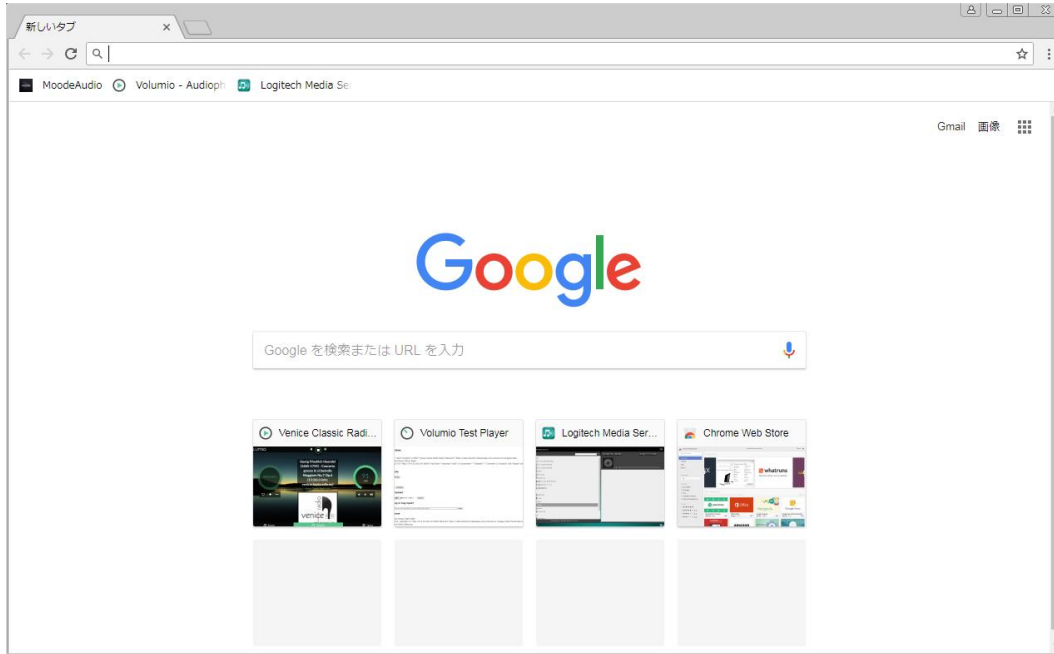
① Launch a PC on the same network and launch Web (google chrome).

② Enter **volumio.local/** in the URL field and press the enter key.

What is volumio?

Volumio is a free and Open Source Linux Distribution, designed and fine-tuned exclusively for music playback. It runs on a variety of devices, typically small and cheap computers like the Raspberry PI, but also on low power PCs, notebooks or thin clients.

By flashing (installing) Volumio on any of this platforms, it will then become an headless Audiophile Music Player. Headless means that the only way to control it will be with another Mobile phone, computer or tablet.

This is made possible by Volumio's UI: a web applications that runs on any device with a browser, and that allows an easy and intuitive control of your playback sessions. All communications between the webapp and Volumio will happen through your home network.

We added a program to this volumio, and it will function exclusively for RAPNAS.

Volumio Web UI

- The playback screen is displayed as the initial screen.

Displays source information during playback (or standby).

Click to play start/stop previous and next.

Click to display setting menu.

Displays source output type and playback time.

Display DAC digital volume rate.

Click to display Add conditions to the source being played.

Click to From left to right
Decrease the volume, Mute, Increase volume.

Click to display You can browse where music sources are located.

Click to display music waiting for playback.

Queue screen function

① **Click queue at the bottom right of the screen.**

③ **Feature Description.**

It plays downward from the clicked song.

Click the icon to function. From left icon to
· Random play
· Repeat playback
· Save to Playlist
· Empty the queue

Click on ✕ to delete the song from the queue.
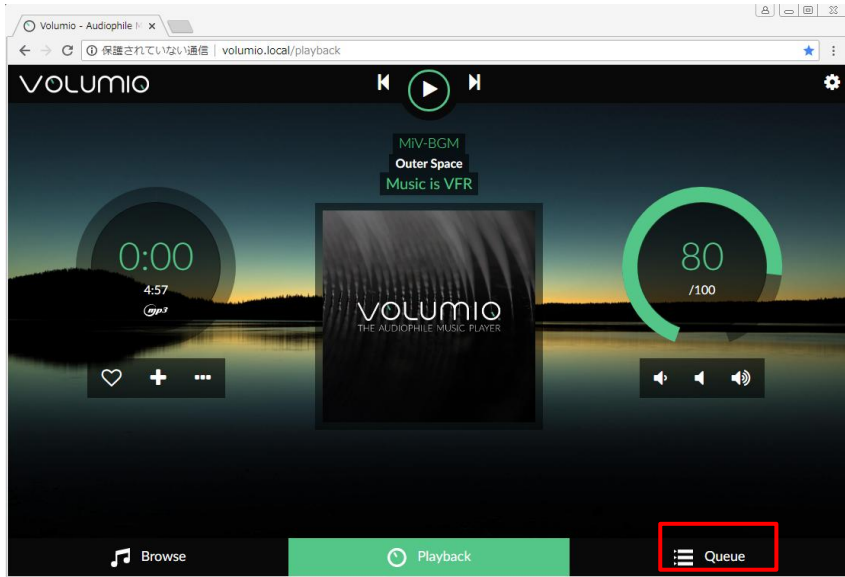
② **The songs currently in the queue are displayed.**
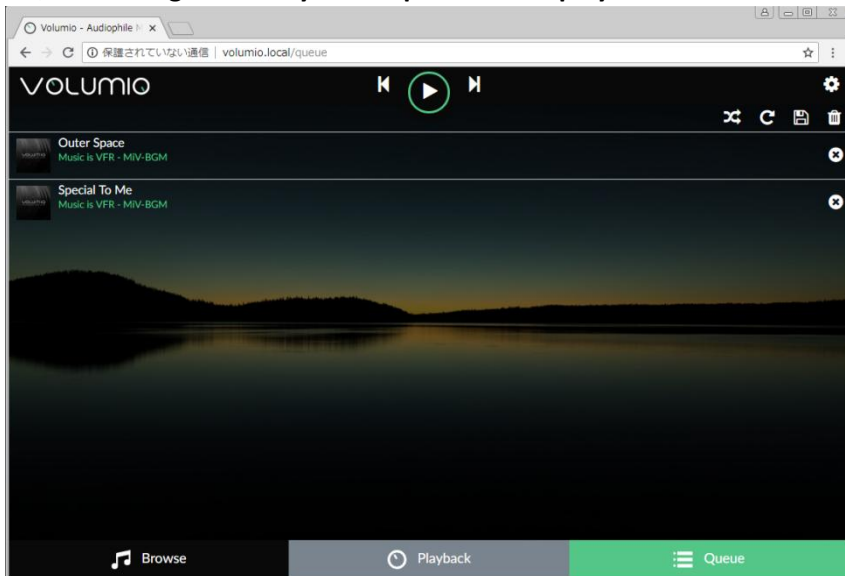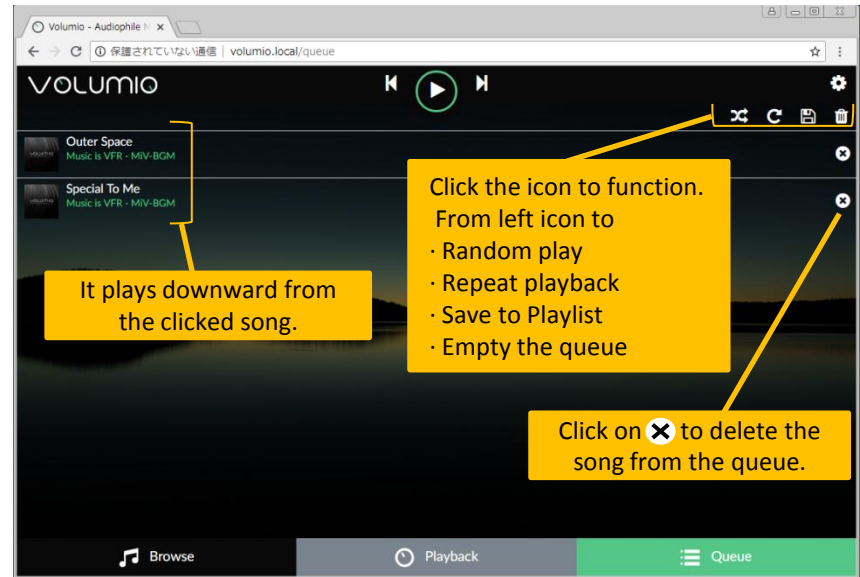
④ **Empty the queue here before the next section.**

Click the trash can icon.

✓ **Note**
Emptying the queue makes it impossible to demonstrate playback by the method in the "Quick Guide" in another booklet.
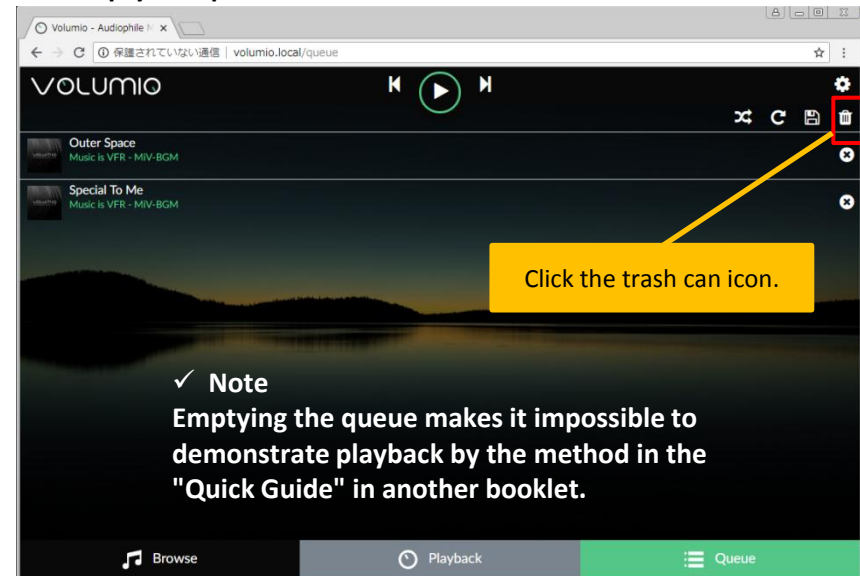
Select storage

① **Click browse at the bottom left of the screen.**
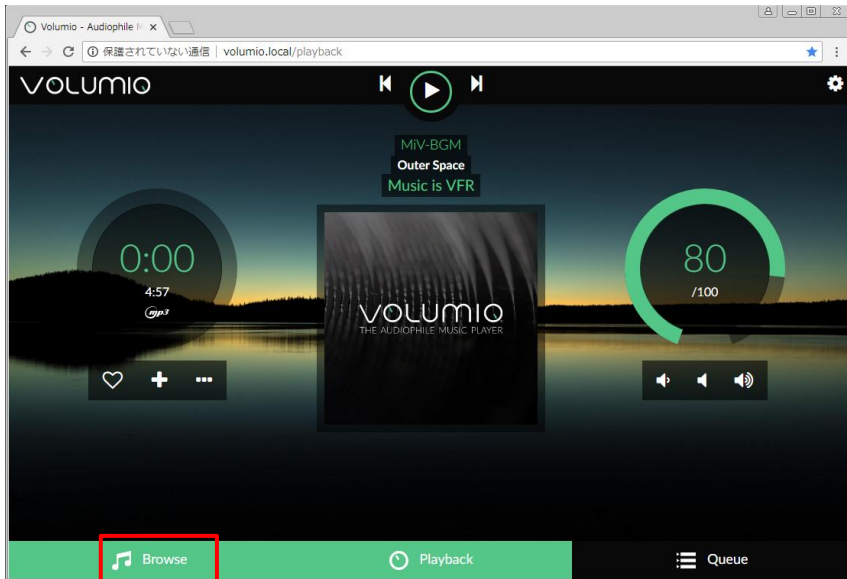
② **Click Music Library.**
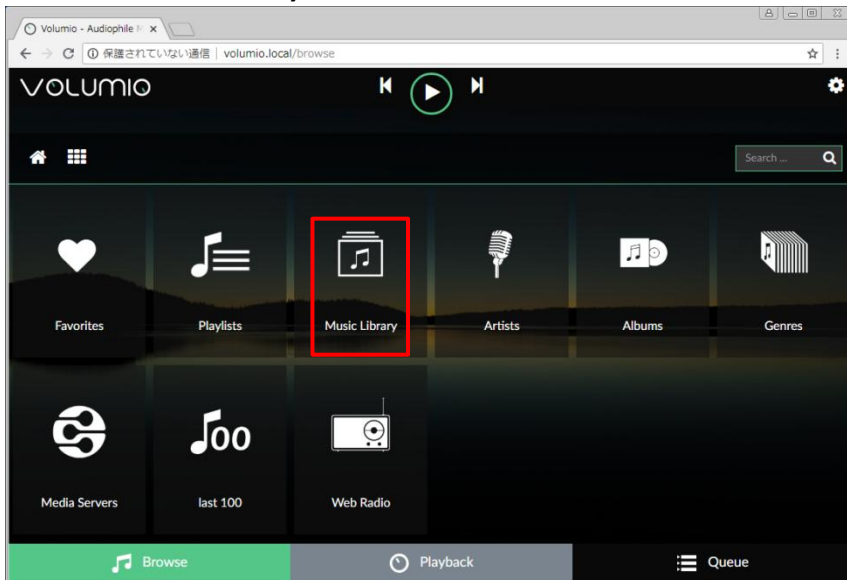
③ **Click INTERNAL. (INTERNAL is a storage location in micro SD card)**
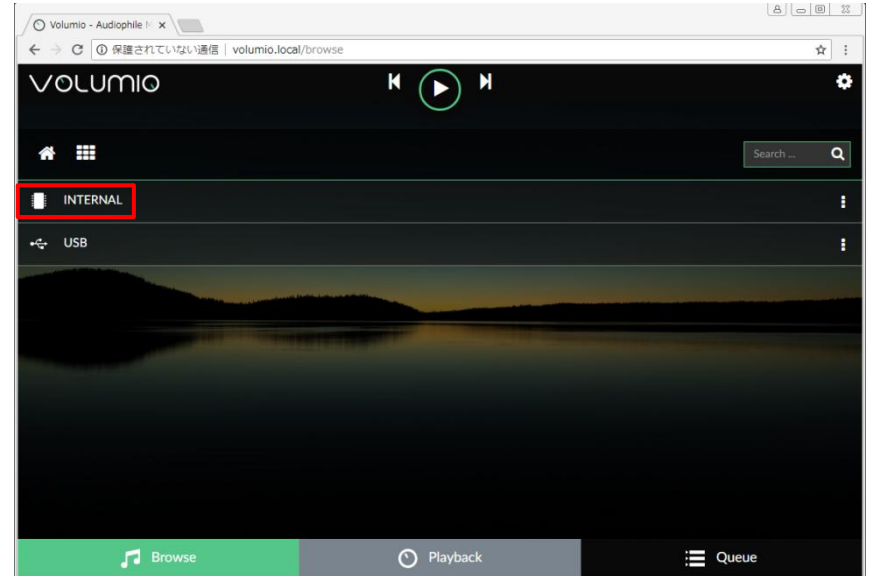
④ **Two demo songs will be displayed.**
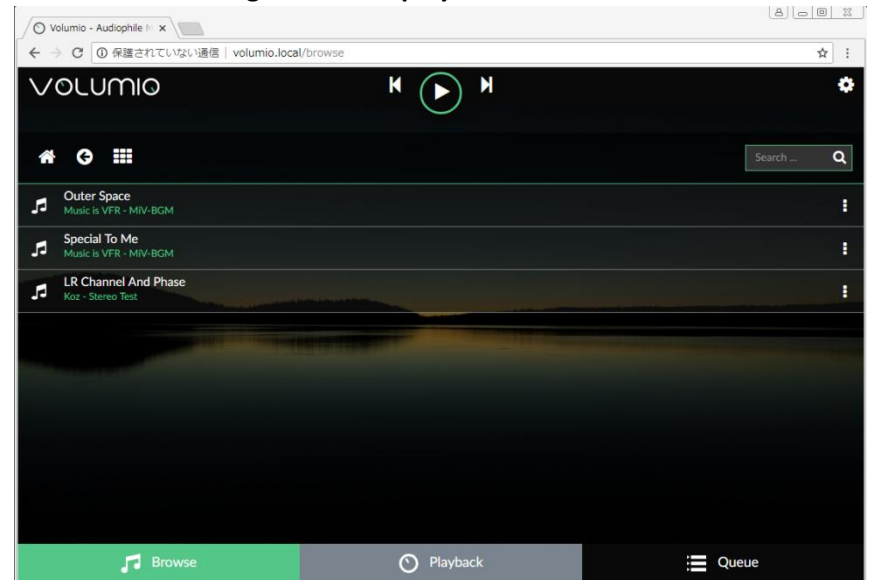
Playback LR Stereo Test

① **When you click the ⋮ at the right end of the title "LR Channel And Phase" , the menu is displayed. Here we select "Add to queue"**
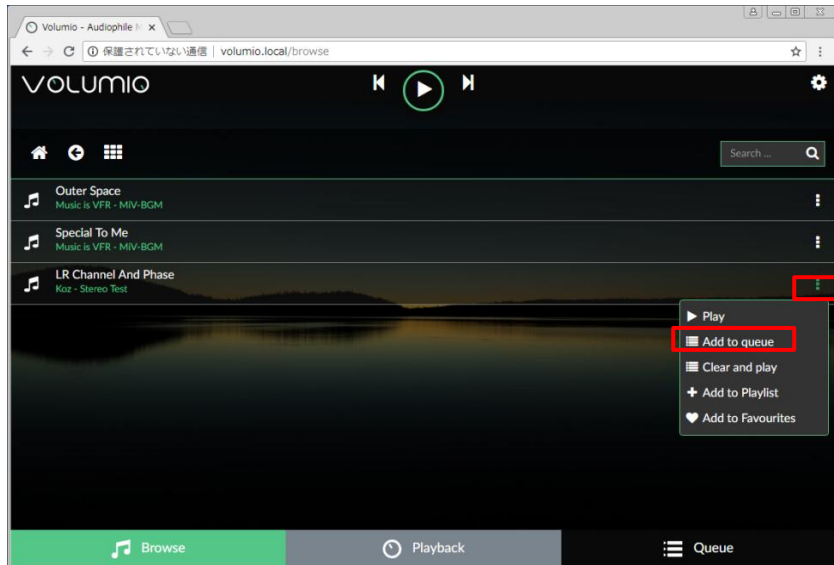
Item Function

[Play]: When clicked, the title is added to the queue and playback starts.(You can do the same thing by directly clicking the title name)

[Add to queue]: Add title to queue.

[Clear and play]: The queue is first emptied, the title is added to the queue, and playback is started.

[Add to Playlist]:   Save the title to an arbitrary Playlist name.   *1

[Add to Favorite]:   Save the title to an favorites.   *1

*1: The saved title can be selected from the Browse screen on the previous page.

② **When you return to the queue screen, a title has been added.**
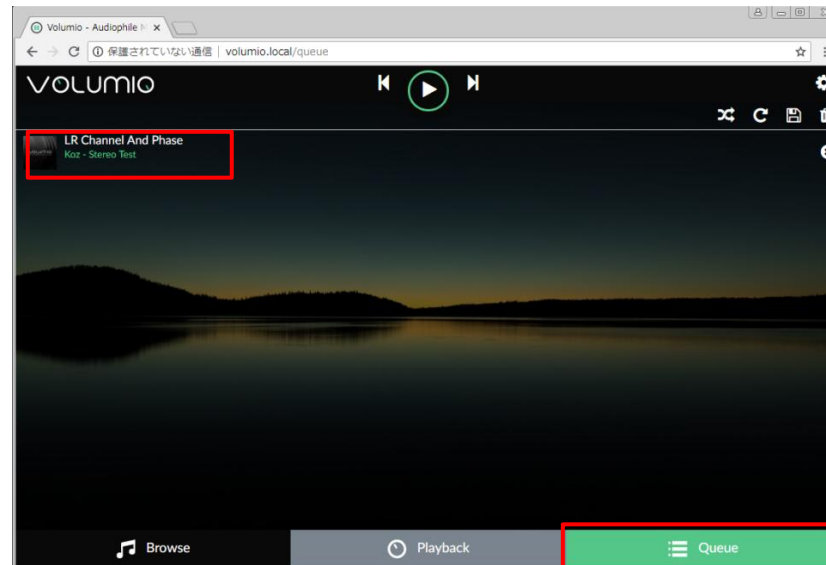
③ **Click the title on the queue screen or move to the playback screen and click the ▶ to start playback.**
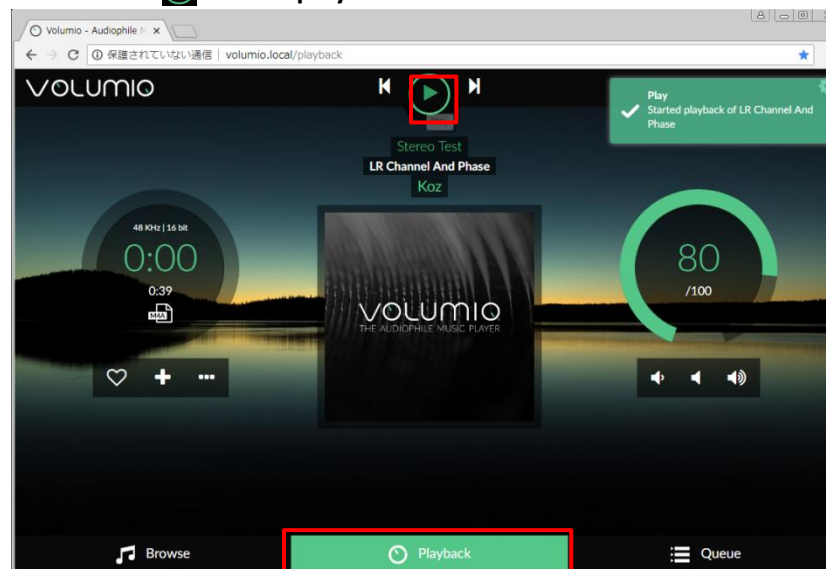
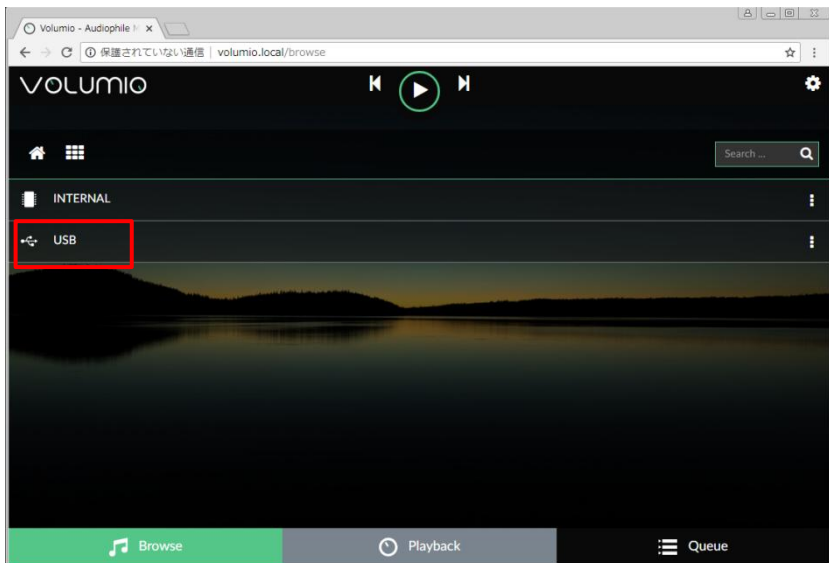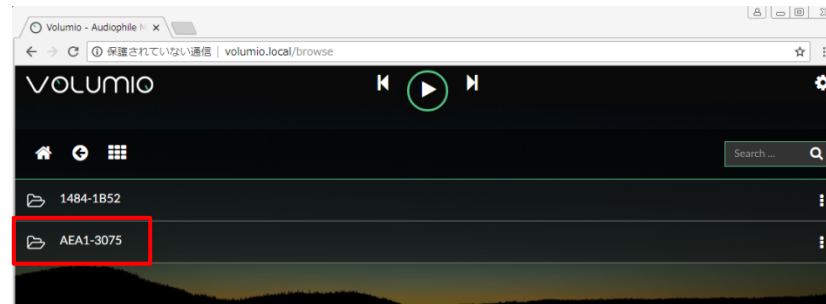# Playback from USB storage

① First of all, plug in the USB storage that recorded the sound source that can be played on this instrument in any position on the rear panel USB expansion port x 4.
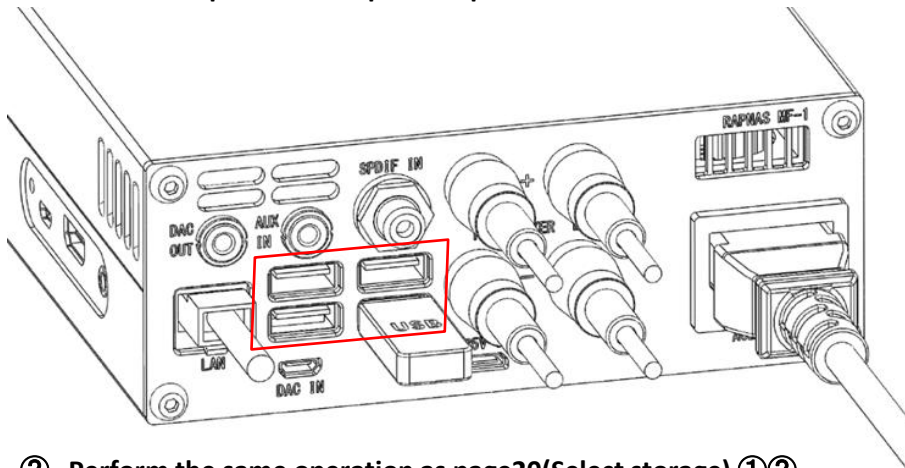

② Perform the same operation as page20(Select storage) ①②.

③ Click USB.

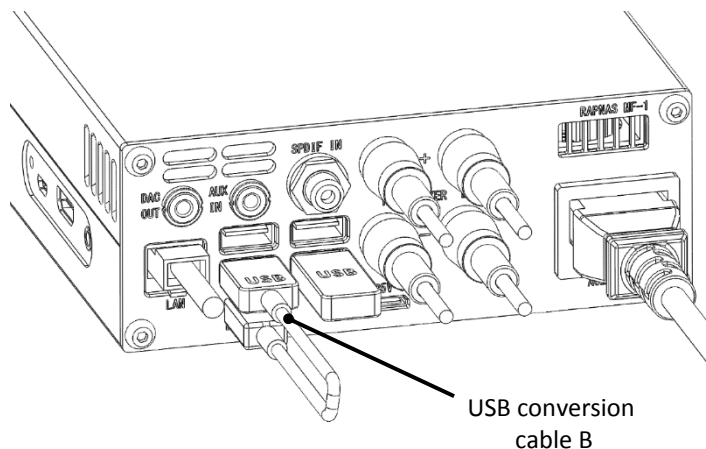④ The distinguished name of the connected USB storage is displayed. Click the USB name you want to play.

④ The folder name or file name are displayed according to the directory structure in the USB storage. You can directly click on the desired folder or file, or add it to the queue and play it.

Folder name (or Album name)

File name (song title)
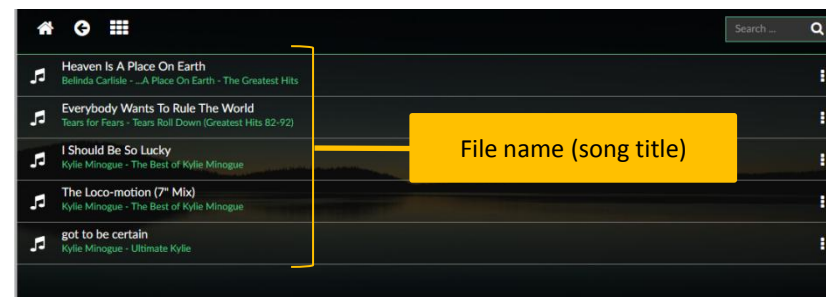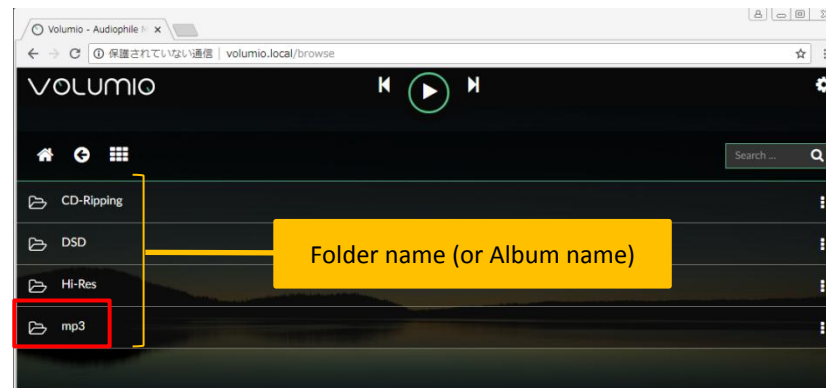
DSD Native Playback

• In the case of performing native playback of DSD in Volumio, two preparations are required beforehand. Work should be done with playback stopped.

① Connect the rear panel DAC - IN and USB expansion port with the included USB conversion cable B.

USB conversion cable B

② Follow "Change DAC mode" on page 23 to switch the output device for the volumio playback option to RAPNAS USB-DAC. Preparation is completed when the following figure is displayed in the OLED.

Afterwards, it is only selecting and playing the sound source of DSD format with volumio.

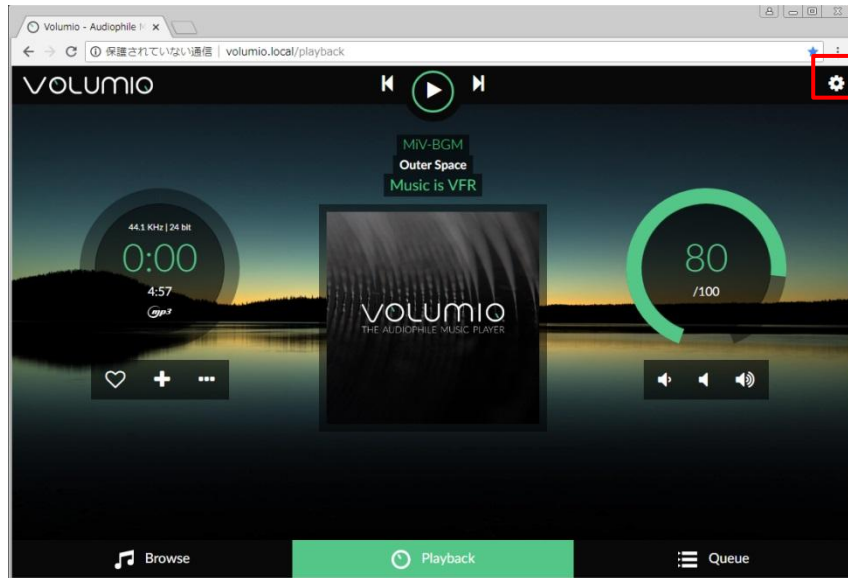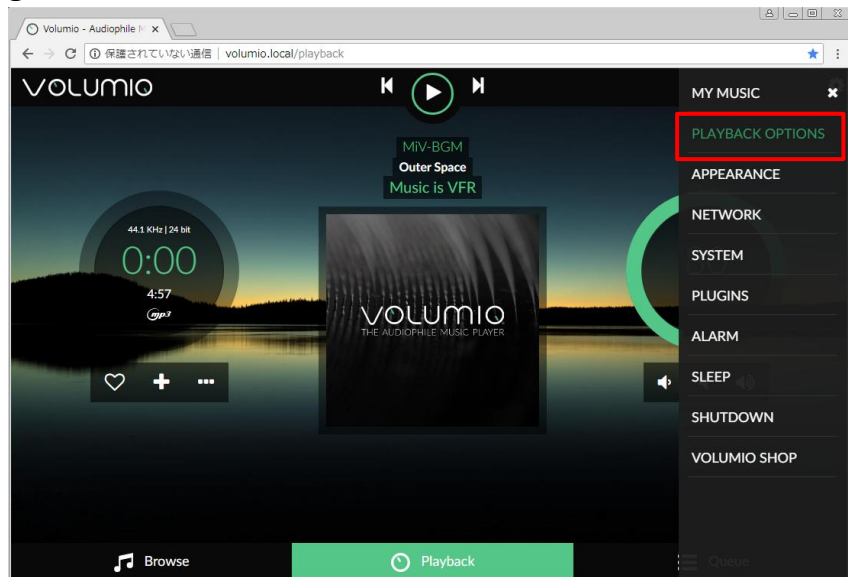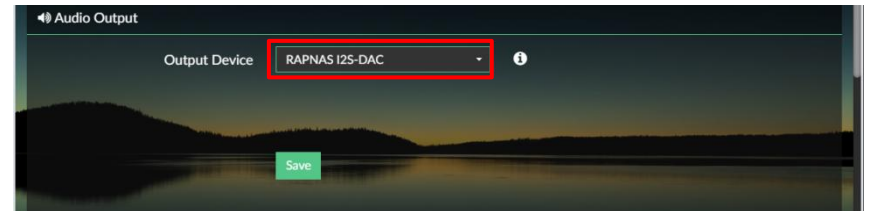During DSD playback, the OLDE will display as shown below.

Change DAC mode

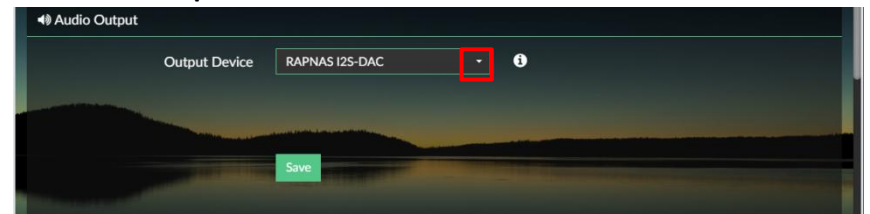① Click the gear icon in the upper right corner of the UI screen.
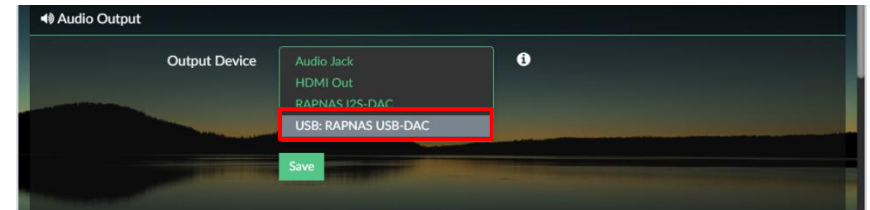

② Click the "PLAYBACK OPTIONS" on the side menu.

③ By default, Output Device is "RAPNAS I 2 S – DAC"
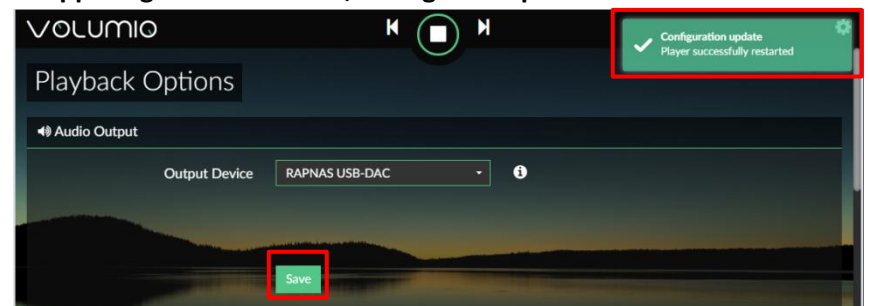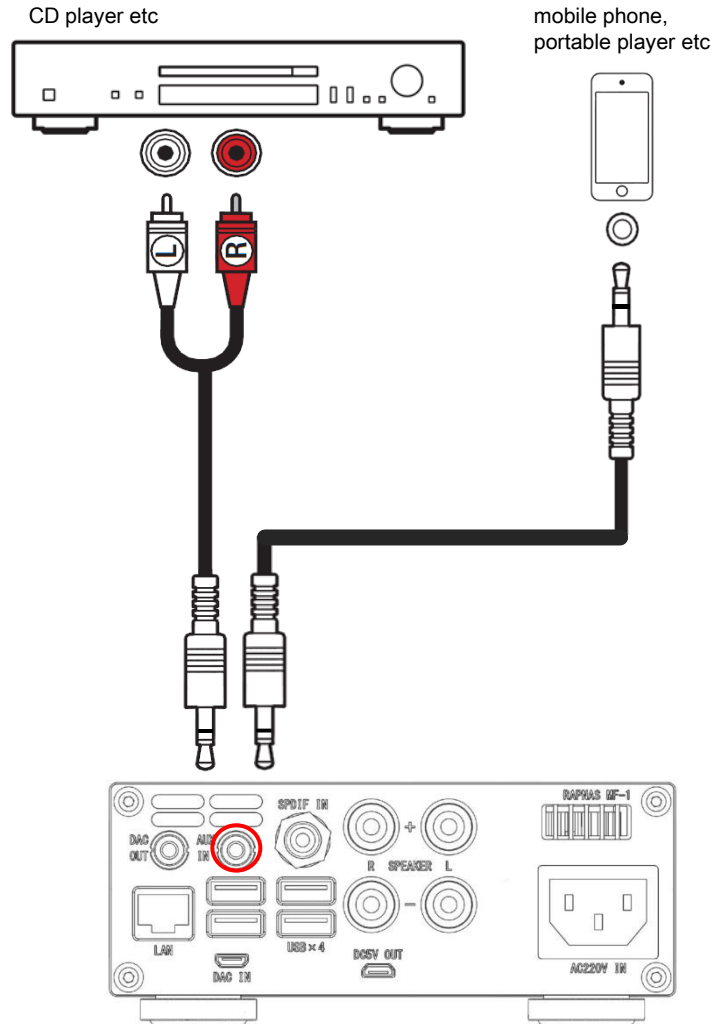

④ Click ▼ to open the menu for the device.

⑤ Click "USB: RAPNAS USB-DAC" and select it.

⑥ Click "Save" to save your settings.
When the "Configuration update" message is displayed at the upper right of the screen, saving is completed.

Playback from AUX-IN

CD player etc

mobile phone,
portable player etc

By connecting RCA-stereo mini plug cable (Sold separately) to the instrument with RAC analog output terminal, this unit can be used as an Integrated Amplifier.

Or you can connect with stereo mini plug cable (Sold separately) with headphone jack of mobile phone or portable player

When the stereo mini plug is inserted in the AUX - IN of this unit, the internal DAC and the amplifier are disconnected, in this case it becomes independent of the operation of volumio.

DAC output

Amplifier and speaker
Active speaker
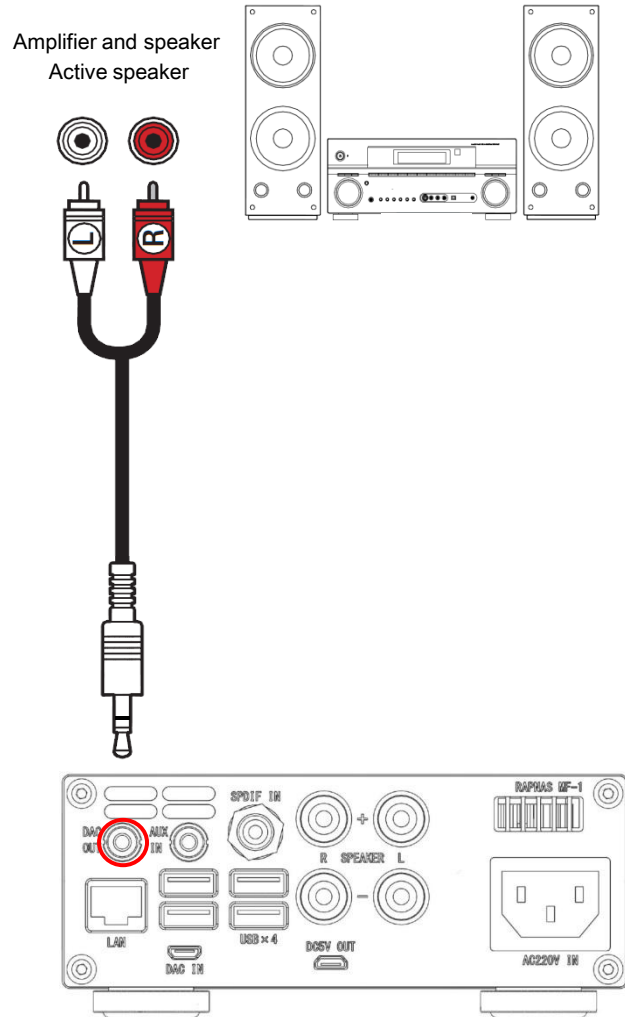
With the RCA-stereo mini plug cable (Sold separately) you can connect the DAC analog output of this unit with an external amplifier or active speaker.

When the stereo mini plug is inserted in the DAC - OUT of this unit, the DAC and the internal amplifier are disconnected.
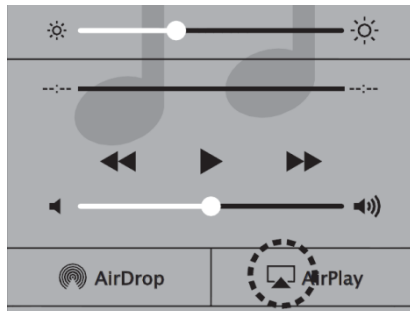
AirPlay Receive Playback

• Music files stored on your iPhone, iPod touch, iPad or iTunes can be played on this unit via the network.
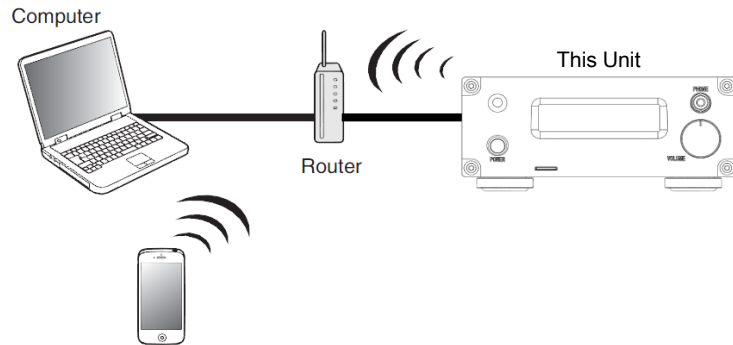
◆ Playing songs from iPhone, iPod touch or iPad

① **Connect your iPhone, iPod touch or iPad Wi-Fi to the same network as this unit.(For details, see your device's manual.)**

② **Play the song on your iPhone, iPod touch or iPad.**

③ **Tap the AirPlay icon.**

④ **Select "volumio" for the speaker (device) to use.**

◆ Playing iTunes music with this unit

① **Install iTunes 10, or later, on a Mac or Windows PC that is connected to the same network as this unit.**

② **Start iTunes and click the AirPlay icon to select the "volumio".**
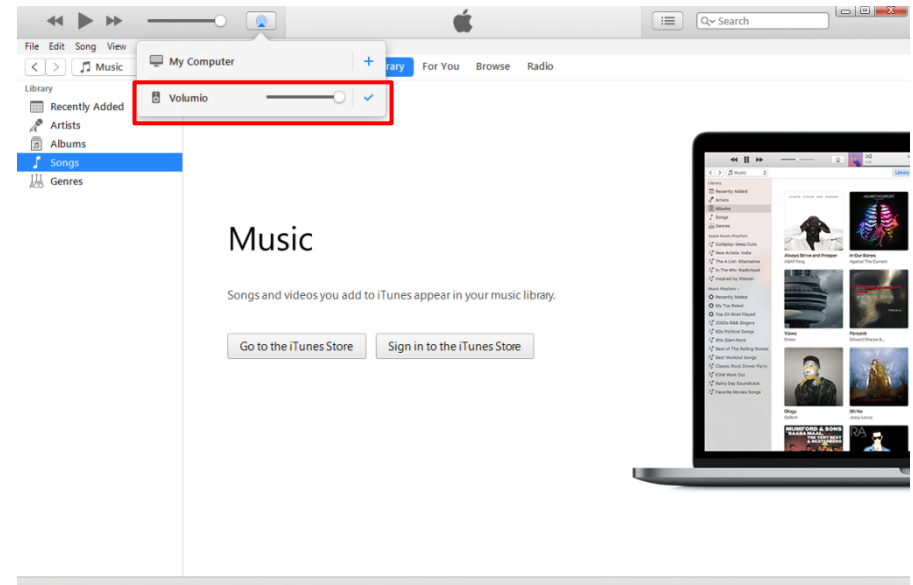
③ **Choose a song and click play in iTunes. The music will stream to this unit.**

Playback from SPDIF
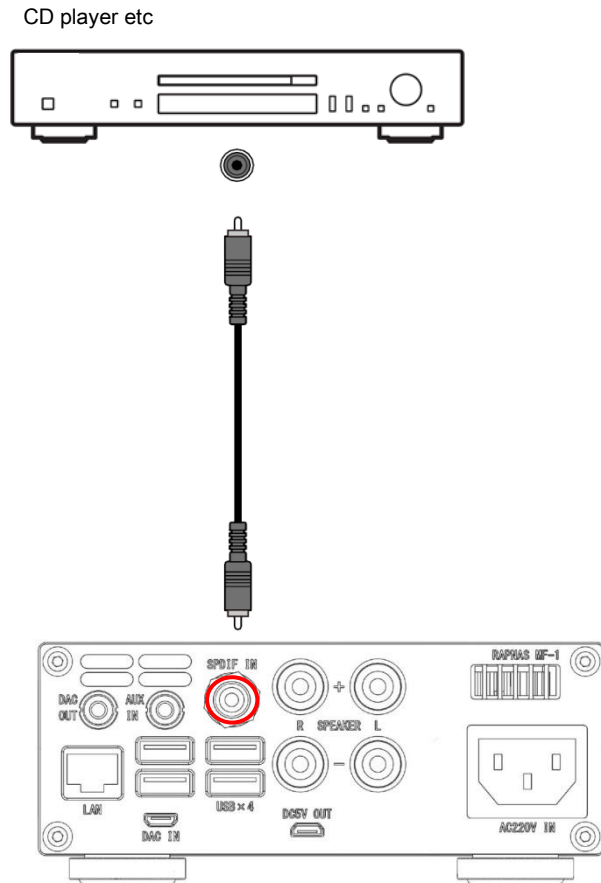
CD player etc

It can be connected to a device such as a CD player with a coaxial digital output terminal by coaxial cable(Sold separately), and this unit can be used as an Integrated Amplifier.
In this case, you need to select RAPNAS I2S-DAC in advance as the Output Device of the volumio playback option setting.

Used as external player's USB-DAC

• This unit can be used as a USB-DAC by connecting PC with a USB conversion cable B and C.

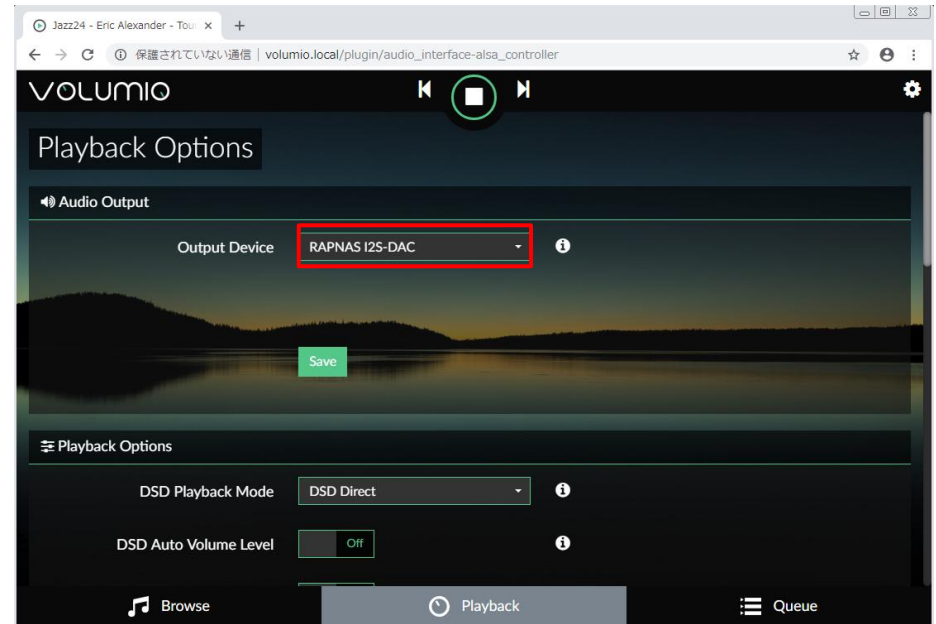・As shown in the figure on the left, when connected to a personal computer and this unit is used as an external USB-DAC, the OLED being played back will be displayed as shown below.

During PCM playback

```
[PCM-3]     96.0KHz
--  LINK  --    100%
```

During DSD playback

```
[DSD-3]     5.64MHz
--  LINK  --    100%
```

・In reproduction of the DSD of this connection, the output from the personal computer is the DoP format due to the nature of the driver, but the OLED display becomes DSD instead of DoP.
The DSD rate that can be supported as DoP input in this unit is maximum, and it is up to DSD 256.

◆ About the USB driver

You can use foobar2000 etc as playback software on the PC side, USB audio 2.0 driver is not installed on Windows 10 version 1703 or earlier OS. You will need to install the driver yourself as needed. For Mac OS, the driver is installed by default.

Additional Information

- This section describes about general ideas of DLNA (Digital Living Network Alliance) and NAS (Network Attached Storage).
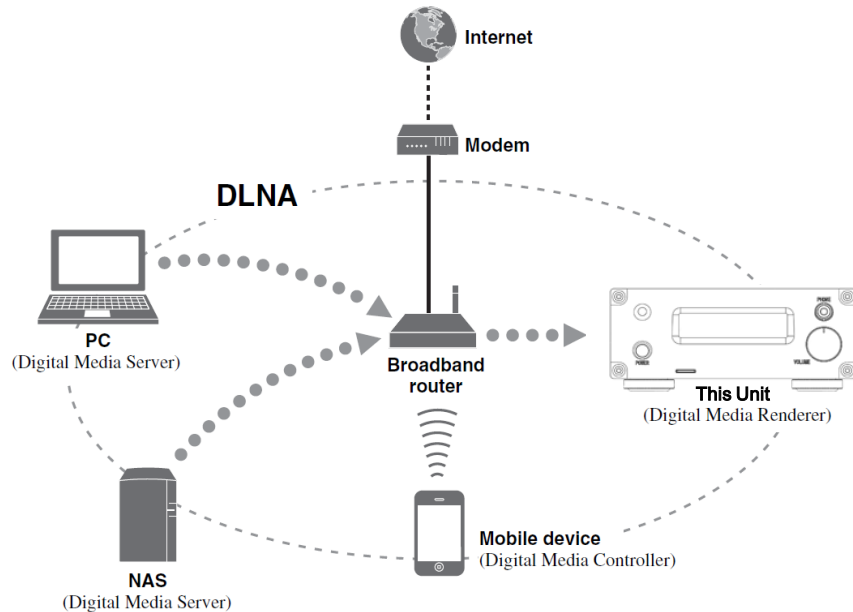
◆ **NAS**

"NAS" stands for Network Attached Storage. By connecting your NAS and home network with a network cable directly, NAS can be a storage device, such as a hard disc drive. If your NAS is compatible with DLNA, you can share your music, pictures, or movies on the same home network as a digital media server.

◆ **DLNA**

"DLNA" stands for Digital Living Network Alliance, and is a guideline to promote standardization of interconnection of home network devices such as digital consumer electronics. DLNA components are separated into four device classes: Digital Media Server (DMS), Digital Media Renderer (DMR), Digital Media Player (DMP) and Digital Media Controller (DMC).

"Digital Media Server (DMS)" is a device that is used to store or distribute digital contents such as music files. For the system using this unit, PCs and NAS are regarded as "Digital Media Server (DMS)".

"Digital Media Controller (DMC)" is a device to control digital contents. The dedicated mobile device application corresponds to "Digital Media Controller (DMC)" for the system using this unit.

"Digital Media Renderer (DMR)" is a device to receive instructions from "Digital Media Controller (DMC)" and play back digital contents such as this unit.
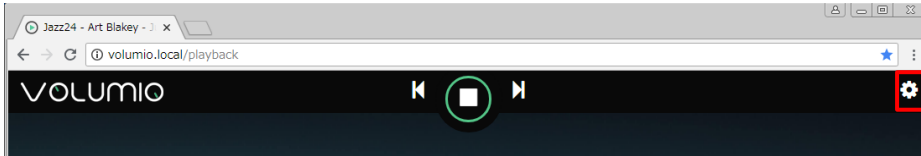
Similarly, "Digital Media Player (DMP)" is a device that can play back digital contents stored on "Digital Media Server (DMS)".
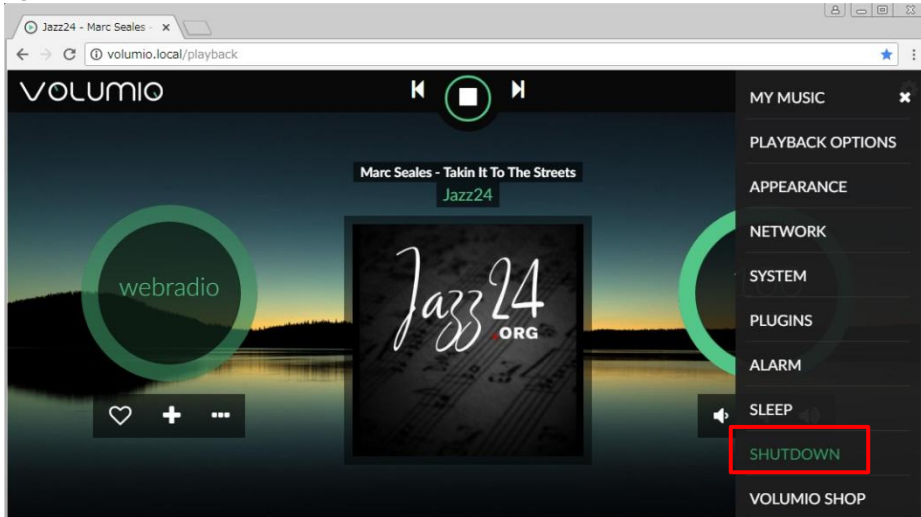
System Reboot

- Rebooting may be necessary for this unit as with a personal computer. There are two ways to reboot.
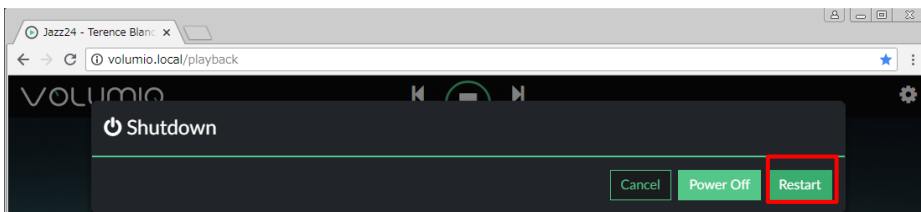
◆ Method 1 (Use Volumio Web UI)

① **Click the gear icon at the top right of the screen**

② **Click Shutdown from the side menu**

③ **Click Restart to system reboot.**
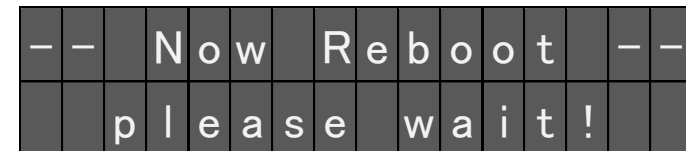

◆ Method 2 (Use remote control)

Press the button (I) on the remote control, then press (A) to reboot the system.

◆ Reboot display

When rebooting is started, Figure1 is displayed on the display It disappears. After about 1 minute the restartup is completed.
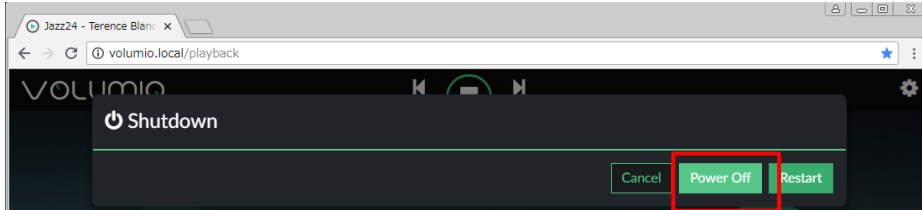
Figure 1

Normal Power Off

• As with the personal computer, power shutdown requires software shutdown. There are three ways to normal power off.
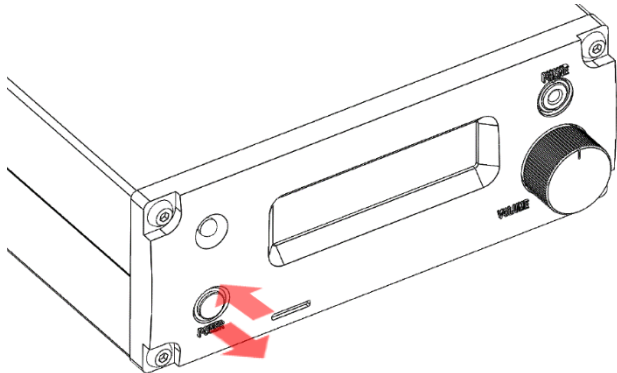
◆ Method 1 (Use Volumio Web UI)

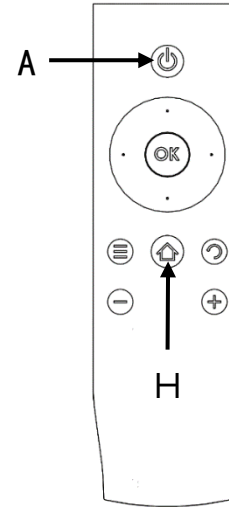**Do the same work as system reboot, and finally click Power off.**

◆ Method 2 (power button)

Press and hold the power button for about 3 seconds, and release the button immediately when figure figure1 is displayed on the display. If you hold down the button for more than 5 seconds, the forced power off described later will work, so be careful.
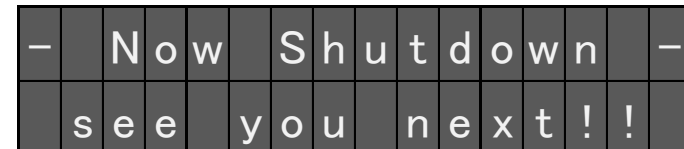

◆ Method 3 (Use remote control)

Press the button (H) on the remote control, then press (A) to power off.

◆ Power off display

When rebooting is started, Figure1 is displayed on the display It disappears. After about 10 seconds the backlight of the volume knob goes off and the power off is completed.
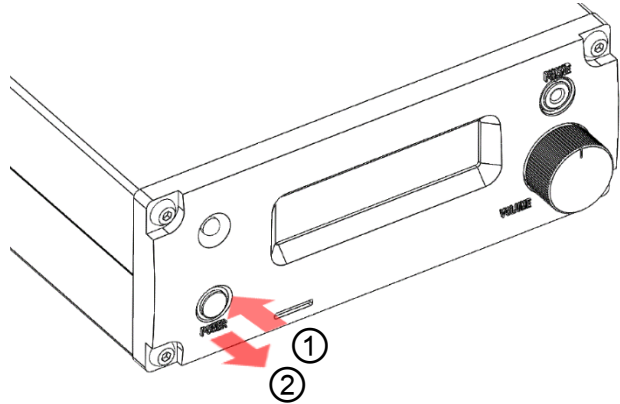
Figure 1

Forced Power Off

• When normal power off can not be done for some reason, forcibly Means for shutting down the system.

➢ Caution
  The forced power-off function has the risk of damaging the system file depending on its execution timing.

① **Press and hold the power button for at least 5 seconds.**

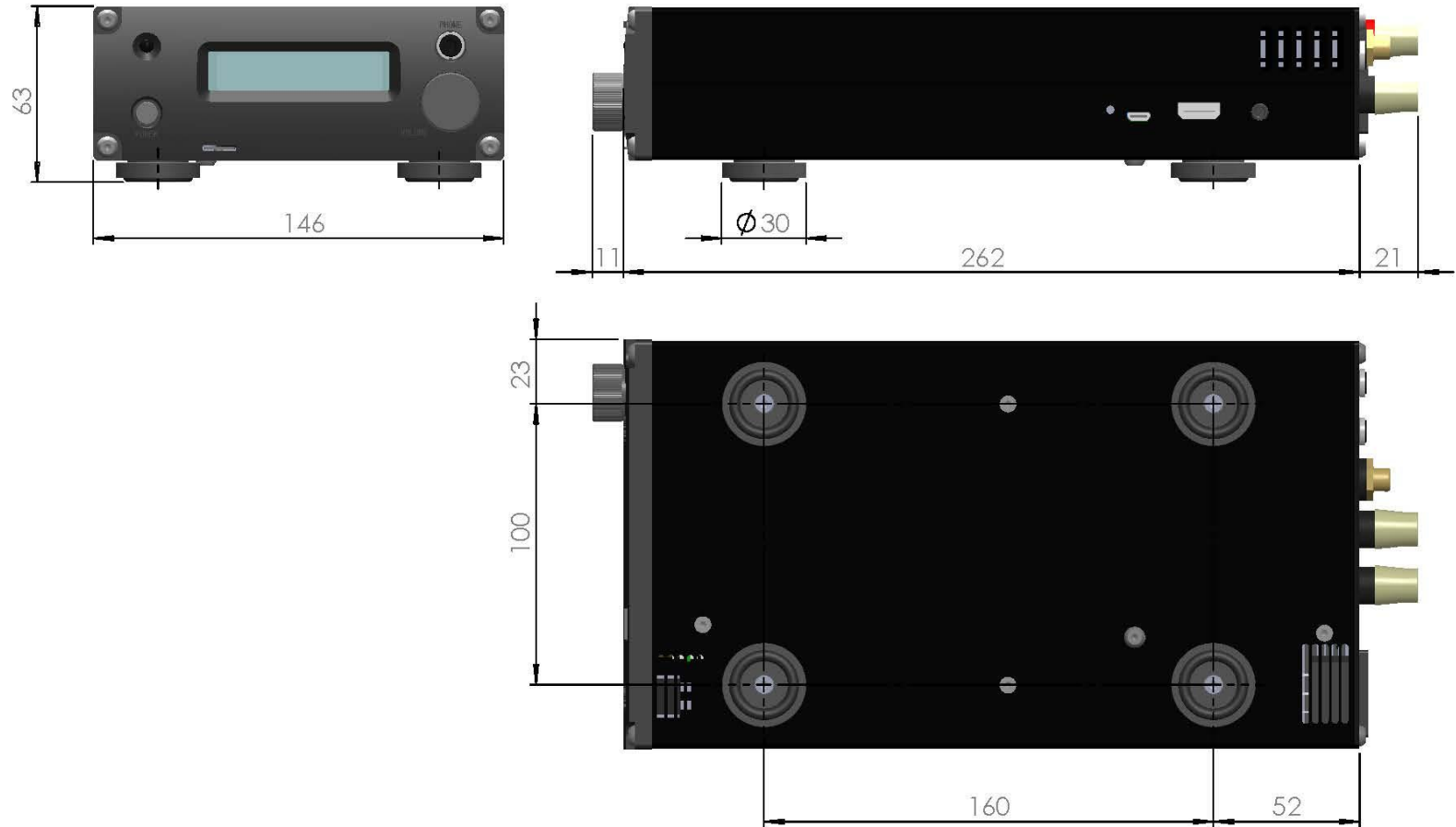② **Release the buttons at the timing when the action LED is off.**

  As soon as the button is released, the backlight of the volume

  knob goes out and the power turns off.
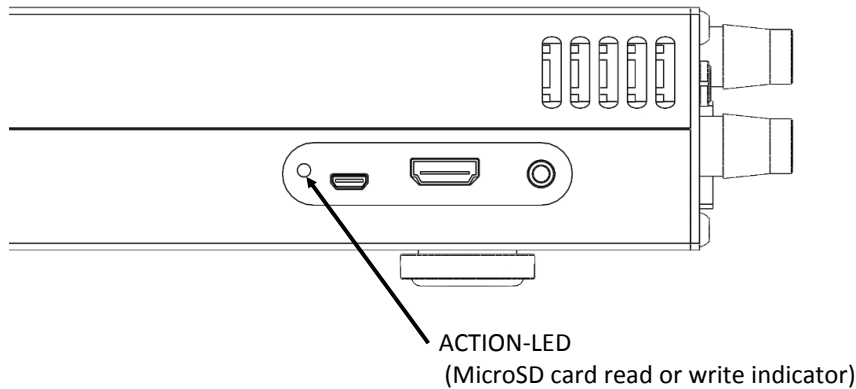
ACTION-LED
(MicroSD card read or write indicator)

Appearance dimension

Unit (mm)

Specification sheet1

Classification	Object	specification
Single Board Computer (Raspberry Pi 3 Model B+)	CPU	Broadcom BCM2837B0 1.4GHz 64-bit quad-core ARMv8 Cortex-A53
	memory	1GB LPDDR2 SDRAM
	USB	USB2.0 Standard A x4
	storage	microSDcard
	Video output	Composite RCA (PAL/NTSC) ,HDMI1.3/1.4
	Wired network	RJ-45 x1: Gigabit Ethernet over USB 2.0 (maximum throughput 300Mbps)
	Wireless network	2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN
	Bluetooth	Bluetooth 4.2, BLE
Main-Amplifier	Maximum output	47W＋47W (1%THD+N 4Ω) 23W＋23W (1%THD+N 8Ω)
	Allowable speaker impedance	4Ω-8Ω
	Frequency response	20Hz - 20kHz (−0.5dB) 10Hz - 80kHz (−3dB)
	Dynamic range	>110dB
	S/N ratio	>115dB
	THD+N	0.003% (1kHz, 8Ω,1W)
Pre(Headphone)-Amplifier	AUX-IN Input level	2.1Vrms (3.5mm 3-pole stereo mini jack)
	OPAMP	MUSES8920
	Output	3.5mm 3-pole stereo mini jack
	Compatible impedance range	16Ω-300Ω
	Practical maximum output	125mW＋125mW (1KHz,32Ω)

Specification sheet2

Classification	Object	specification
converter	DDC Processor	XMOS(XU208-128-QF48)
	DAC Processor	ES9038Q2M
	Maximum output level	2.1Vrms (3.5mm 3-pole stereo mini jack)
	Bit depth	16-32bit
	Sampling rate	I2S-DAC mode PCM: 44.1KHz - 384KHz DSD: DSD convert to PCM (up to DSD128) USB-DAC mode PCM: 44.1KHz - 768KHz DSD: DoP is up to DSD256, Native is up to DSD512 SPDIF PCM: 44.1KHz - 192KHz
volumio2 Distribution	Supported audio format	WMA, MP3, MP2, WAV, AAC, FLAC, ALAC, AIFF, DFF, DSF
	Media service	Support Airplay Support DLNA Ver.1.5
Power supply	Input power supply	Serial partition A : AC100-120V,50/60Hz Serial partition B : AC220-240V,50/60Hz
	Power consumption	130W
	DC output	USB Micro B 5V±5% Maximum allowable load 500mA
Other	External dimensions W×H×D	W146mm×H63mm×D262mm(Excluding protrusions)
	Weight	2.5kg

Machine Technology (SZ) Co.,Ltd.
Post code: 518101
Address: West-side,2F, Block-1,Yin jin-industry building,Liu xian 3rdroad,
              Bao an xin an 71-district, Shen zhen-city, Guang dong-province, China
Phone: +86-755-2784-7182

Model name: RAPNAS MF-1
Printed in China