SOULNOTE

Z-3H   User Guide

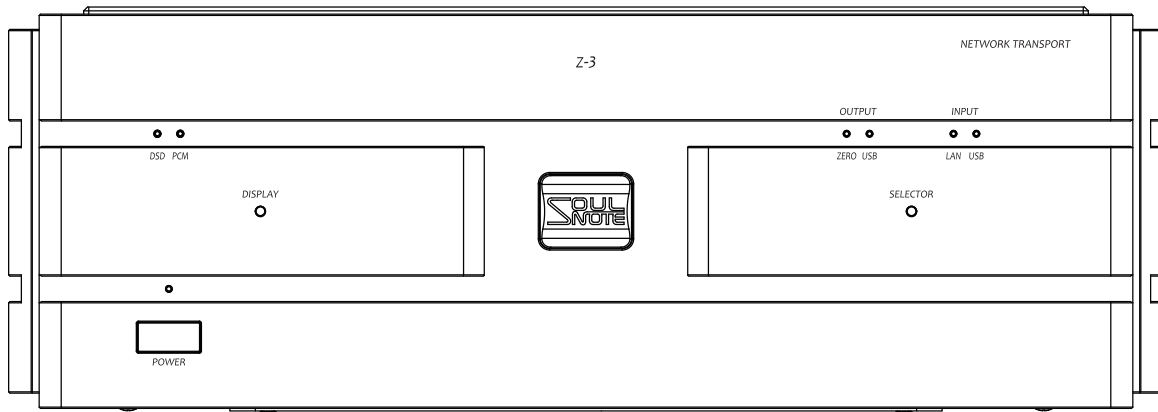# NETWORK TRANSPORT

Z-3

NETWORK TRANSPORT

OUTPUT   INPUT

DSD PCM

ZERO USB   LAN USB

DISPLAY

SELECTOR

POWER

Table of Contents

Supplied Accessories

• Power cable 2   • ZERO LINK designated cable 1

• Spike-receiving board 1   • User Guide (this manual) 1

• Spike pin 3

• Hex key for spike pins 1

Safety Precautions

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.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user 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 the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

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

A warning that an apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

IMPORTANT SAFETY INSTRUCTIONS

READ BEFORE OPERATING EQUIPMENT

This product was designed and manufactured to meet strict quality and safety standards.
There are, however, some installation and operation precautions which you should be particularly aware of.

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. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
10. Only use attachments/accessories specified by the manufacturer.
11. 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.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. 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.
14. Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

CAUTION:
- To completely disconnect this product from the mains, disconnect the plug from the wall socket outlet. The mains plug is used to completely interrupt the power supply to the unit and must be within easy access by the user.
- Never use the unit with any other cord except the supplied power cord.

NOTE ON USE

WARNINGS

- Avoid high temperatures.
  Allow for sufficient heat dispersion when installed in a rack.
- Handle the power cord carefully.
  Hold the plug when unplugging the cord.
- Keep the unit free from moisture, water, and dust.
- Unplug the power cord when not using the unit for long periods of time.
- Do not obstruct the ventilation holes.
- Do not let foreign objects into the unit.
- Do not let insecticides, benzene, and thinner come in contact with the unit.
- Never disassemble or modify the unit in any way.
- Ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, tablecloths or curtains.
- Naked flame sources such as lighted candles should not be placed on the unit.
- Observe and follow local regulations regarding battery disposal.
- Do not expose the unit to dripping or splashing fluids.
- Do not place objects filled with liquids, such as vases, on the unit.
- Do not handle the mains cord with wet hands.
- When the switch is in the OFF position, the equipment is not completely switched off from MAINS.
- The equipment shall be installed near the power supply so that the power supply is easily accessible.

CAUTIONS ON INSTALLATION

Wall
Wand
Paroi
Parete
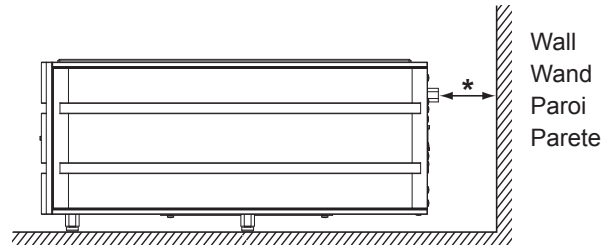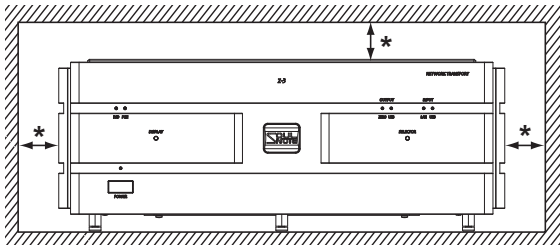
* For proper heat dispersal, do not install this unit in a confined space, such as a bookcase or similar enclosure.

• Leave sufficient clearance (at least 10 cm) from the wall, (at least 5 cm) from top surface of the unit.

• Do not place any other equipment on this unit.

Features of This Product

Feature 1: ZERO LINK

ZERO LINK is a standard formulated by SFORZATO and SOULNOTE. It is an ultimate link for achieving as high audio quality as possible. ZERO LINK dramatically reduces workload of the D/A converter and eliminates asynchronous circuity from the housing of the D/A converter. This product handles entire asynchronous circuit and ZERO LINK transmits only signals that are polished by the sophisticated clock transmitted from the D/A converter, to the D/A converter. As a result, unparalleled audio quality can be obtained. ZERO LINK is a solution that surpasses even the highest-level analog playback.

Note:

• A ZERO LINK designated cable is supplied with this product.

Feature 2: Ultra Powerful Non-feedback Discrete Power Supply

For this product, we employed the high regulation transformer for digital audio transmission from our product D-3H as is. With an extraordinary huge capacity transformer of 260 VA, we built 4-system non-feedback discrete power circuits where each circuit is independent from windings. A total of 16 ultra-high speed SiC rectifier diodes and a total of 70 low-magnification electrolytic capacitors are used. As a result, we could obtain great power of expression along with high audio clarity and wide audio dispersion .

Feature 3: SFP Port

Inserting a module for optical connections allows you to establish a connection with an optical cable. Also, inserting a RJ45 module allows you to use a general LAN cable.

Note:

• A module for optical connections, an RJ45 module, an optical cable, and a LAN cable are not supplied with this product.

## Feature 4: SC-cut Ultra-low Phase Noise OCXO

We daringly employed SC-cut OCXO for the SFP-circuit designated clock. It is an asynchronous circuit but we still increased the quality of the clock to the maximum for obtaining higher audio quality. For the I2S generation circuit during the ZERO LINK connection, the high-quality master clock of the D/A converter transmitted via ZERO LINK is used, and the system is fully synchronized with the master clock.

Feature 5: Thoroughly Unsecured Housing

The AC inlet, output and input terminals, circuit board, circuit board chassis as well as the top panel are all unsecured. Also, every ounce of SOULNOTE expertise was utilized for the titanium washers and spikes immediately provided beneath the transformer. Furthermore, air volume generated due to the relatively large housing dramatically broadens the sound field.

• For more detailed information, refer to our website or Facebook page.
  https://www.kcsr.co.jp/soulnote.html

Front Panel Names and Functions
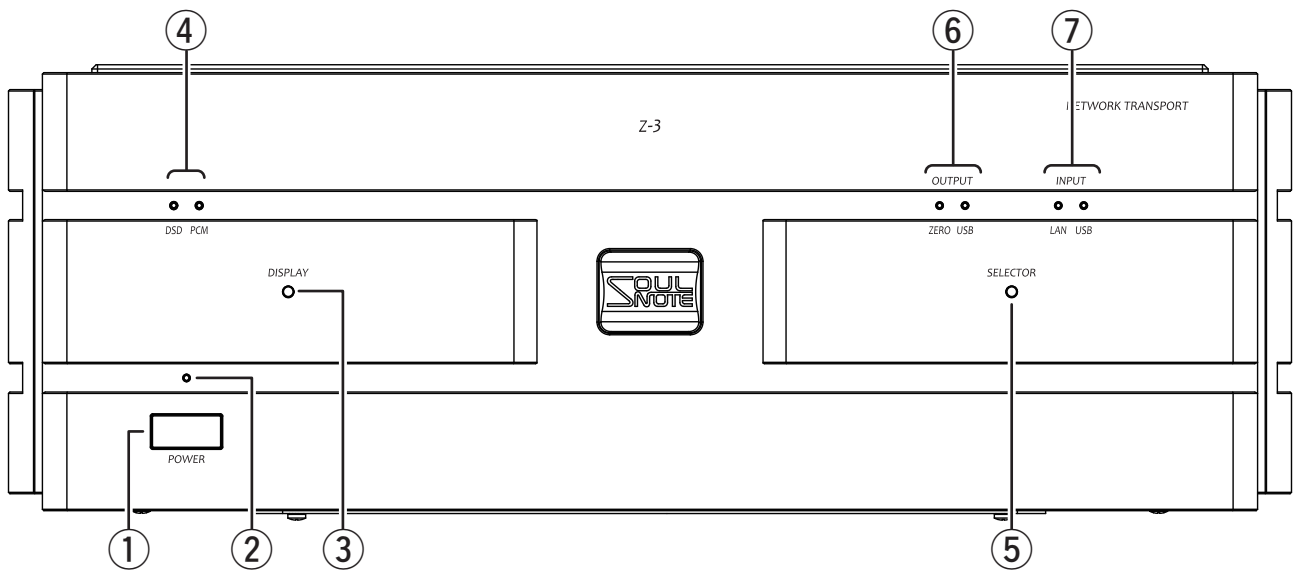
① Power Switch (POWER)

Press to turn on the power, and press again to turn off. It takes about 8 seconds for this product to activate after the power is turned on. After this product activates, the input and output indicators turn on.

② Power Indicator

When the power is on, the indicator is lit red.

Note:

• The indicator lights up blue when the clock is received from the D/A converter.

③ Display Off Switch (DISPLAY)

Pressing the switch turns off all indicators except for the power indicator. Pressing again reverts to the original state.

Notes:

• To obtain better audio quality, keeping the display off is recommended.
• Settings are retained even after the power is turned off.

④ Signal Input Indicators (DSD/PCM)

When DSD signals are input, the DSD indicator lights up blue. When PCM signals are input, the PCM indicator lights up green.

Note:

• When the update switch is set to "UPDATE" or the config switch is set to "CONFIG", the DSP and PCM indicators light up simultaneously.

⑤ Input and Output Selection Switch (SELECTOR)

An input/output pair can be selected.
Each time the switch is pressed, the setting changes:

   LAN input/ZERO LINK output ←
           ↓
   USB input/ZERO LINK output
           ↓
   LAN input/USB output
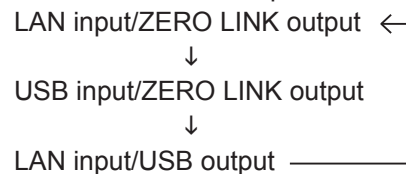
⑥ Output Indictors (OUTPUT)

The indicator of the selected output lights up. When the ZERO LINK output is selected, the ZERO LINK indicator lights up blue. When the USB output is selected, the USB indicator lights up red.

⑦ Input Indicators (INPUT)

The indicator of the selected input lights up. When the LAN input is selected, the LAN indicator lights up blue. When the USB input is selected, the USB indicator lights up red.

Notes:

• If a LAN connection is not established upon selecting the LAN input, the LAN input indicator flashes. The indicator will stop flashing after 2 minutes has elapsed even if a LAN connection has not yet been established. (AUTO IP connection is enabled.)
• During Diretta (LAN DAC mode) input, the LAN indicator is lit purple.
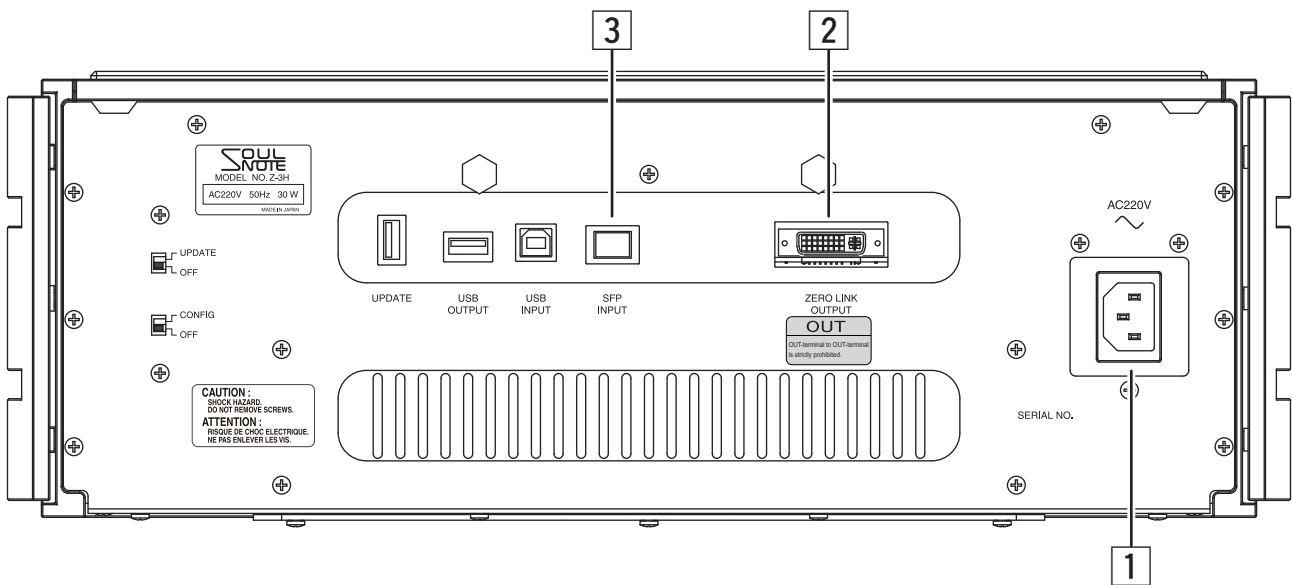
① AC Inlet (AC220V)

Connect to a 220 V AC wall outlet (mains) with the supplied power cable.

Notes:

- **Do not use any electrical contact cleaner or the like in the AC inlet area.**
- To maintain the audio quality, use the supplied power cable.
- Connect the power cable to the AC wall outlet (mains) by inserting the power plug prong with the engraved OO symbols into the ground side (the longer hole). If you reverse the orientation of the power plug, you cannot fully enjoy the performance of the unit.
- Firmly insert the power cable into the end of the AC inlet.
- The ground terminal and the housing are not connected.
- The AC inlet is not secured in order to obtain higher audio quality.

② ZERO LINK Output Terminal (ZERO LINK OUTPUT)

A D/A converter such as our product S-3H or D-3H can be connected to this terminal with a ZERO LINK designated cable. This output terminal provides the highest audio quality but special attention is required for when connecting.

Notes:

- When connecting a ZERO LINK designated cable to devices, turn off the power of the devices to be connected together. Connecting/Disconnecting the cable while the power of the devices is on can cause the devices to become faulty. Also, do not touch the connector (where signals are transmitted) of the ZERO LINK designated cable. Even when the power of the devices is off, the devices might become faulty due to static. Be sure to tighten the screws to secure the cable.
- Do not connect input terminals (blue stickers) on both sides, and do not connect output terminals (yellow stickers) on both sides of the cable. It will cause a malfunction.
- Do not connect a computer monitor or the like to the terminal. It will cause a malfunction.

③ SFP Input Terminal (SFP INPUT)

Insert an SFP transceiver module (sold separately) to connect to the local area network you use. If you use a general LAN cable (RJ45 cable), insert an RJ45 designated SFP transceiver module to connect the RJ45 cable.
If you use an optical fiber cable, insert an SFP optical transceiver module to connect the optical fiber cable.

Notes:

- When removing the transceiver module, be sure to release the lock lever, and then slowly pull out the module. If you forcibly pull it, it will get damaged.
- When using a switching hub, make sure to use a Gigabit (1000BASE-T) terminal. When using an optical cable, a device with an optical LAN output terminal or an optical media converter is required.
- For details, contact the dealer where you purchased the product.
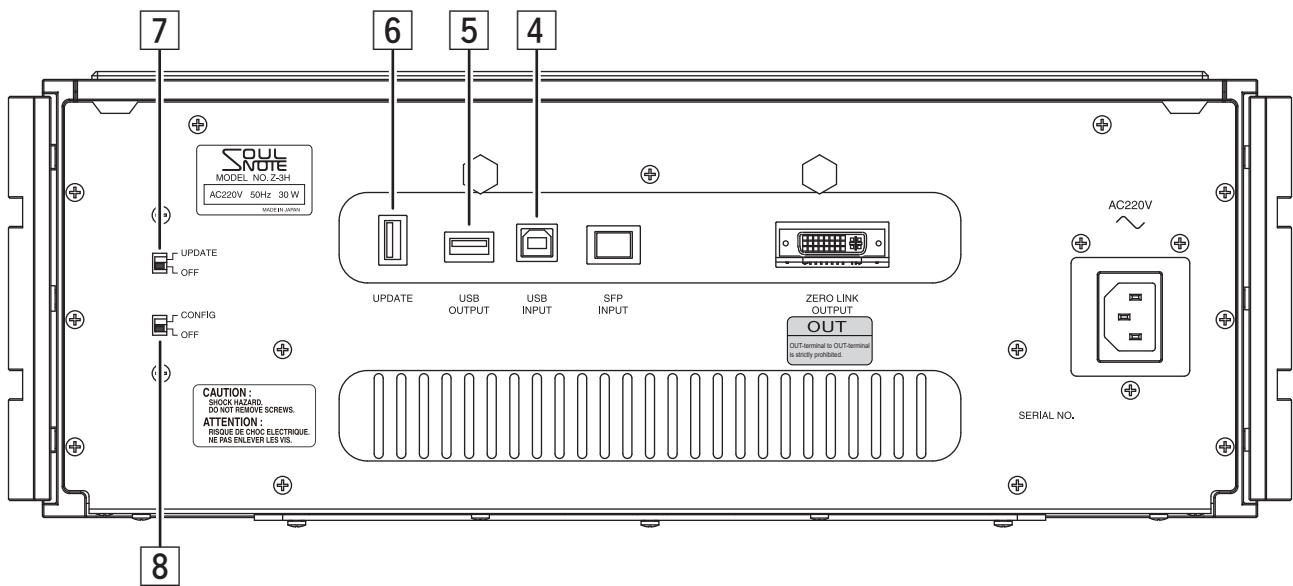
4 USB B Input Terminal (USB INPUT)

Connect to devices such as a music server, network transport, and computer with a USB cable. For details, see "USB Connection with a Computer" (page 13) or CSR, Inc. website.

Note:

• To connect to a Windows computer, a designated driver is required. The driver can be downloaded from CSR, Inc. website.

5 USB A Output Terminal (USB OUTPUT)

Connect to a D/A converter equipped with a USB input terminal by using a USB cable.

Notes:

• Depending on the D/A converter you use, DSD playback may not be possible using the USB output. In such a case, confirm the specifications of your D/A converter and register it to the playable list of this product. Contact the dealer where you purchased the product.

• When connecting a D/A converter such as our ZERO LINK-terminal-equipped D-3H or S-3H to this product, use ZERO LINK to obtain higher audio quality. When connecting the same devices to each other, use either ZERO LINK terminal or the USB terminal to prevent the audio quality from deteriorating due to a GND loop.

6 USB A Update Terminal (UPDATE)

This terminal is used to update the firmware of this product. Refer to "How to update".

7 Update Switch (UPDATE)

With this switch, the firmware update mode of this product is activated. For details, refer to "How to update" on page 12 .

8 Config Switch (CONFIG)

With this switch, you can change the name of this product that is displayed on the control app you use such as Kazoo. For details, refer to "How to change the name" on page 12 .

Note:

• When the update switch is set to "UPDATE" or the config switch is set to "CONFIG", the DSP and PCM indicators light up simultaneously.

How to Use This Product

1. Confirm that all the connections are completed, and then turn on the power of all devices.

2. Select the desired input/output pair of input and output with the selector switch on this product.

On this product, the following 3 input/output pair can be selected.

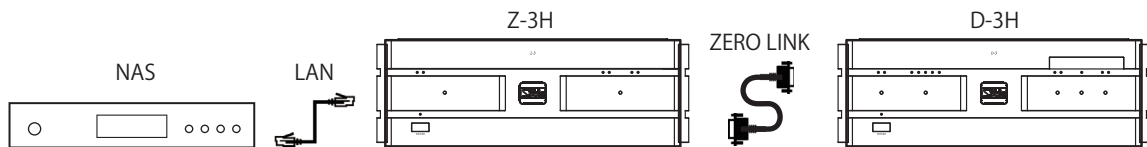• LAN input/ZERO LINK output   • USB input/ZERO LINK output   • LAN input/USB output

Notes:

• The USB input/USB output pair cannot be selected.

• For a LAN connection, confirm that the LAN indicator has stopped flashing. After the LAN connection is established, the indicator changes from flashing to solid. Normally, the connection is established after the indicator flashes 4 to 10 times and then the indicator will be solid. If the connection is not established, cycle the power of this product. The indicator will stop flashing after 2 minutes has elapsed even if a LAN connection has not been established. (AUTO IP connection is enabled.)

This product can be used in the following 3 ways.

① **As a ZERO LINK network player (LAN input – ZERO LINK output)**
The ultimate separate network player can be built by inserting a module for optical connections or an RJ45 module into the SFP port to use the LAN input and by connecting D-3H or S-3H ver.2 to this product via ZERO LINK. With this way of connection, the highest audio quality can be expected.

Note: The LAN input supports DLNA, UPnP (OpenHome), and Diretta (LAN DAC).

② **As a ZERO LINK bridge (USB input – ZERO LINK output)**
By using the USB input, you can connect your computer or a music server to this product via USB and output via ZERO LINK. Thus, this product can also be used as a "ZERO LINK bridge". In the same way as using general USB DACs, you can easily enjoy high audio quality of ZERO LINK.

Note: The USB input supports Bulk Pet and JPlay.
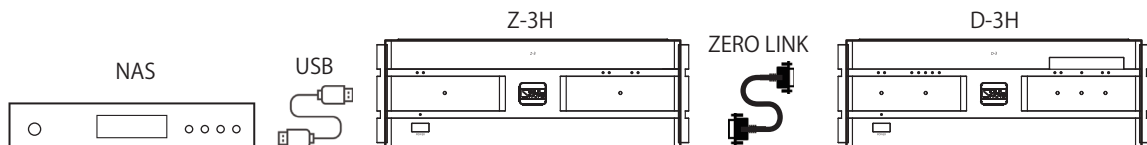
③ **As a network transport (LAN input – USB output)**
By connecting a USB DAC to this product, it can be used as a high-quality network player.
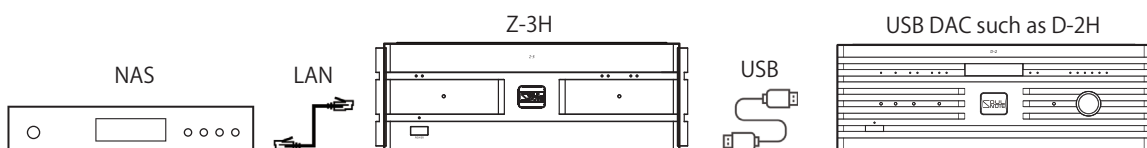
Note: The USB input/USB output pair cannot be selected.

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3. Select the input for the D/A converter.

4. From the control app, select both the NAS you use and this product.

> **Notes:**
> - If the input and output are not properly selected using the selectors on both the D/A converter and this product, this product will not be displayed on the control app.
> - If the NAS and this product are not displayed on the control app, restart the app and cycle the power of this product. If the problem persists, cycle the power of the NAS. If the problem still persists, turn off the power of all devices, confirm the connections, and then turn on the power of all devices. Confirm that the router and the switching hub are connected to a Gigabit (1000BASE-T) terminal.

5. Select the music track you want to listen to from the NAS using the control app, and then play it back.

   For details, refer to the manual of the control app.

■ To play in Diretta (LAN DAC mode)

Music can be played back via LAN by using a music playback app for Windows computers
From the homepage of the SOULNOTE website, click "DOWNLOAD" to download and install the driver software for Diretta. (The software is currently available only for Windows computers.)
Specify SOULNOTE Diretta as the output destination of the computer music playback software.
During playback, the LAN input indicator is lit purple.

■ About useful software

Software introduced below is useful when using this product.

● NAS utility software
For the NAS connected to this product, choose a DELA or fidata product.
Other kinds of NAS are out of guarantee because operations have not been confirmed. Download designated utility software from the manufacture's website and install it.
For how to install the software, refer to the manual of the NAS you use.

● CD ripping software
This software is required for converting CD software data to a file audio source and saving into the NAS.
For ripping software, dbpoweramp (paid software) is useful.
For how to install and use the software, refer to the manual of the software.

● Control app
With your iPhone or iPad, you can remotely start playback of files.
You can use Kazoo (free of charge) from Linn Products Ltd., fidata app (free of charge) from I-O DATA DEVICE, INC., or other control apps applicable with the OpenHome standard or DLNA standard.
For how to install the app, refer to the manual of the app.

Note: How to control from the Kazoo app

- Depending on the D/A converter you use, DSD playback may no
   1. First, select the button on the upper left of the screen. From My Music, select the NAS.
   2. From the room shown on the top of the screen, select "SOULNOTE Z-3H ".
   3. From music tracks in the NAS, select the track you want to listen to by the artist, album, or genre, and then play it back.
      The left side of the screen shows all music tracks in the NAS and the right side of the screen shows the playlist (list of music tracks to be played).
      For details, see the manual of the app.

■ How to update
The firmware of this product can be updated to the latest version.

1. Turn off the power of this product.
2. From the homepage of the SOULNOTE website, click "DOWNLOAD" to download the latest version of the firmware (.swu file) and copy it to the root directory of your USB flash drive.
3. Set the update switch on the rear panel to "UPDATE".
4. Connect the USB flash drive used in step 2 to the USB A update terminal (UPDATE).
5. Turn on the power of this product.
   Both signal input indicators (DSD/PCM) light up, and then the indicators light up alternately.
   After a while, both indicators light up simultaneously once the update is completed.
6. Turn off the power of this product, remove the USB flash drive, and then turn off the update switch.

Note:
- The release of firmware updates will be announced on our website or by your dealer.

■ How to change the name
You can change the name of this product that is displayed on the control app you use such as Kazoo.

1. Turn off the power of this product.
2. Copy a config file in which you have input your desired name, to the root directory of your USB flash drive.
3. Set the config switch on the rear panel to "CONFIG".
4. Connect the USB flash drive used in step 2 to the USB A update terminal (UPDATE).
5. Turn on the power of this product.
   Both signal input indicators (DSD/PCM) light up, and then the indicators light up alternately.
   After a while, both indicators light up simultaneously once the update is completed.
6. Turn off the power of this product, remove the USB flash drive, and then turn off the config switch.

USB Connection with a Computer

Windows

To play back DSD/PCM files, install the designated driver to your computer.

Recommended computer specifications
OS   : Windows 7 or later
CPU   : Intel Core 2 processor, 1.6 GHz or higher
Memory : 1.0 GB or higher

Mac OS

Operations can be performed with a Mac OS X standard driver.
When using Bulk Pet, install a driver to your computer.

Recommended computer specifications
OS   : Mac OS X 10.8 or later

When using for the first time (how to install the driver)

1. Access the following website to download the designated driver.

   http://www.kcsr.co.jp/sn_software.html

2. Without this equipment connected to your computer, start your computer.

3. Before connecting this equipment to the computer, install the designated driver to your computer following the instructions.

4. After the installation completes, restart the computer.

5. After the restart operation completes, connect this equipment to the computer and then turn on the power of this equipment.

6. Operate the input selector of this equipment to select USB.

7. This equipment will be recognized by the computer and driver installation will start automatically.

Notes:

• Depending on the computer specifications, installation may take some time. Do not turn off both this equipment and the computer until an installation completion message appears.

• Depending on the operating system, certain settings may be required for sound to be output. Configure the settings according to the operating system usage instructions.
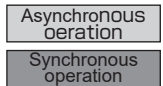
About ZERO LINK

ZERO LINK is a standard formulated by SFORZATO and SOULNOTE. It is an ultimate link that connects the transport to the D/A converter for achieving higher audio quality by eliminating asynchronous circuits from the D/A converter.
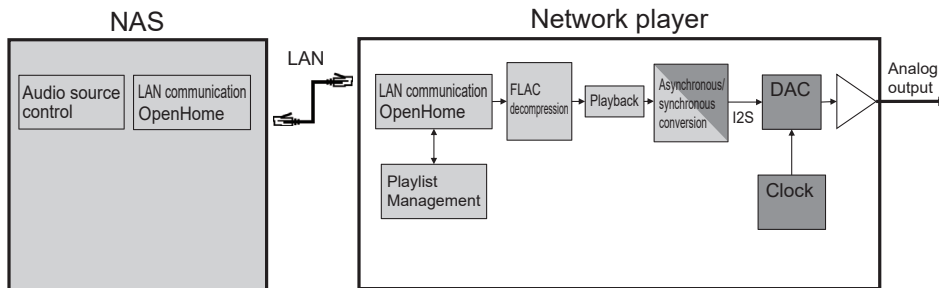Eliminating asynchronous circuits from the D/A converter dramatically improves the audio quality.
ZERO LINK enables the number of asynchronous circuits in the D/A converter to be "Zero".

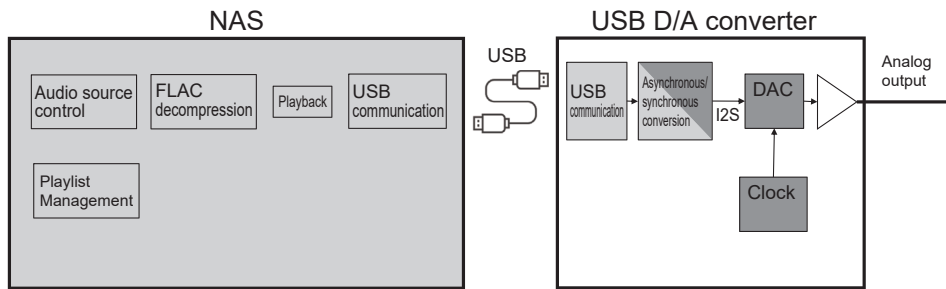● **Internal operation of common network connections**
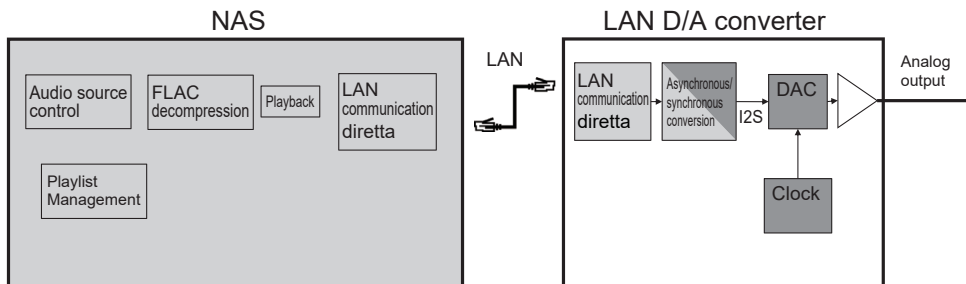In all types of connections, there are asynchronous circuits in the D/A converter.

Asynchronous oeration
Synchronous operation

Structure of a Network Player

NAS — Network player

| Audio source control | LAN communication OpenHome |

LAN

Network player: LAN communication OpenHome → FLAC decompression → Playback → Asynchronous/synchronous conversion → I2S → DAC → Analog output
Playlist Management
Clock

Structure of a USB D/A Converter

NAS

| Audio source control | FLAC decompression | Playback | USB communication |
Playlist Management

USB

USB D/A converter: USB communication → Asynchronous/synchronous conversion → I2S → DAC → Analog output
Clock

LAN D/A Converter (diretta) Operation

NAS

| Audio source control | FLAC decompression | Playback | LAN communication diretta |
Playlist Management

LAN

LAN D/A converter: LAN communication diretta → Asynchronous/synchronous conversion → I2S → DAC → Analog output
Clock

14

ZERO LINK not only transmits master clock or I2S signals but also performs communications. In other words, the transport informs the audio source format to the D/A converter before playback, and the DDS of the D/A converter generates a high-quality master clock that synchronizes with this audio format and then transmits it to the transport. The transport generates a pure I2S signal that synchronizes with the master clock and then transmits it to the D/A converter. As a result, the system from the DAC to transport can be fully synchronized with the DAC master clock, completely eliminating the need for asynchronous circuits which decrease the audio quality.

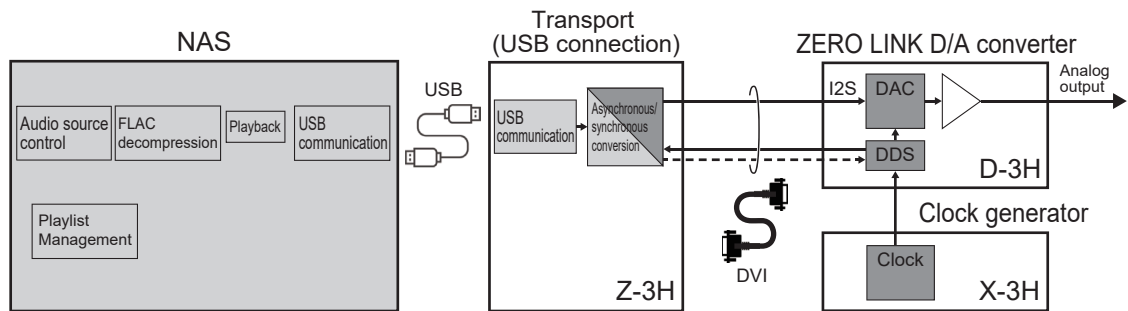● **Internal operation of ZERO LINK connections**
During the ZERO LINK operation, asynchronous circuit operations can be completely eliminated from the D/A converter.
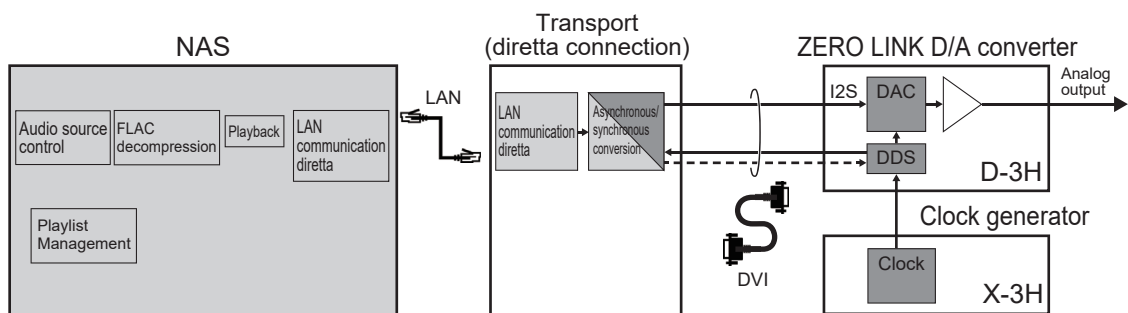
| Asynchronous oeration |
| Synchronous operation |
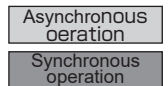
ZERO LINK Structure (When the Transport is Operated by OpenHome)
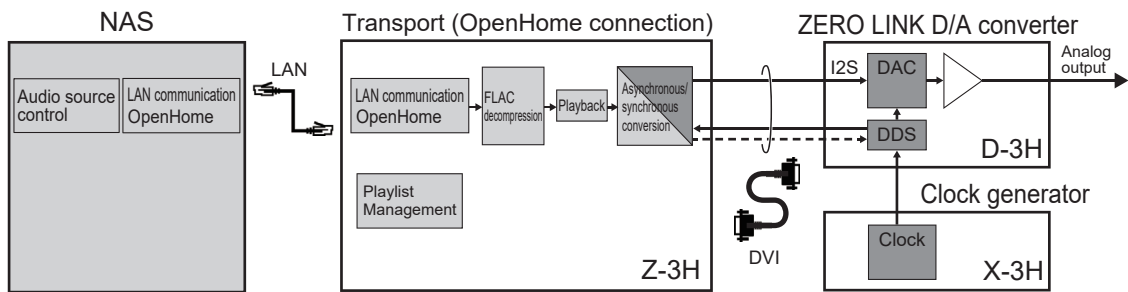
ZERO LINK Structure (When the Transport is Operated by a USB Connection)


ZERO LINK Structure (When the Transport is Operated by diretta)

Power Cable Connection

When you connect the power cable, be sure to insert the ground-mark side (the side with 2 engraved circles) of the plug into the ground side (the side with a longer insertion hole) of the AC wall outlet (mains). If the plug is connected with the polarity reversed, this product may not be able to deliver its utmost performance.

Long — Short — Ground side — Ground marks

Note: Before connecting, be sure to turn off the power switch.
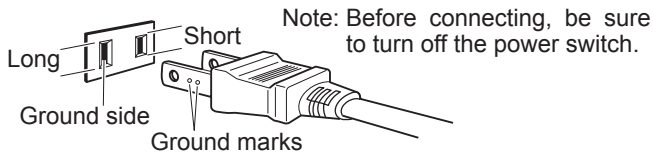
Protection Pads for Transport

Before use, be sure to remove the pads from the unit. With the pads left attached, you cannot fully enjoy the high audio quality of the unit.

• In order to maintain the audio quality, the top cover and terminals on the rear panel are intentionally not secured.
• If you shake the unit, you will hear a rattling sound. It is not an abnormality.
• When you transport the unit, reattach the pads to the original places.


Cushions

Cushions
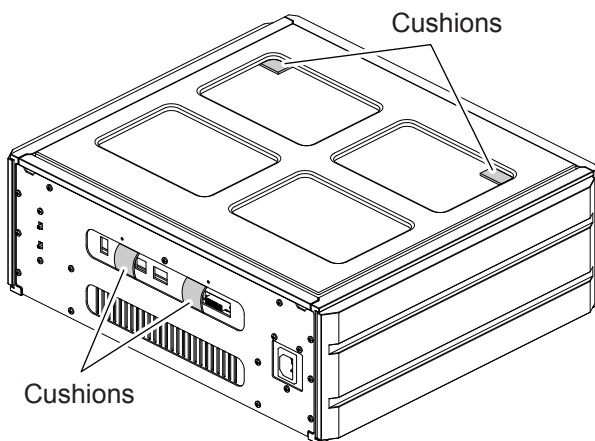
Attaching the Spike Pins

By replacing the feet with the supplied spike pins, you can tune the audio quality. Point grounding makes the sound focus and auditory lateralization sharper. Furthermore, the audio quality can be subtly tuned by changing the material of the surface on which this equipment is installed.

Notes:

• When replacing the feet with the spike pins, remove the carbon washers from the feet, and then reattach them to the spike pins.
• When the spike pins are attached, it may be difficult to keep weight balance stable. Take great care not to carelessly apply a force on the corners of the main unit.
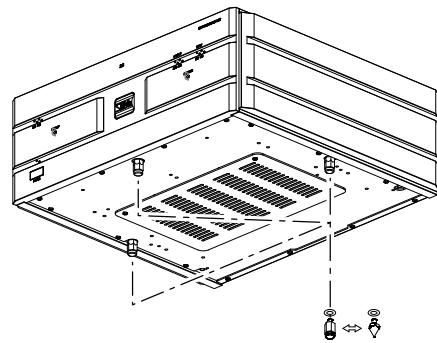
The feet can also be attached to the back-side holes. If the front side of the device is not stable, attach the feet to the back-side holes.
(To obtain better audio quality, using the front-side holes is recommended.)
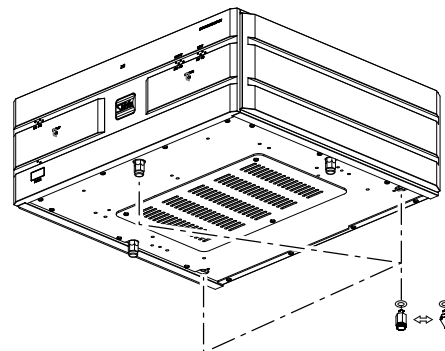
⚠ Cautions

• When using the spike pins, be extremely careful not to get injured, etc.
• When using the spike pins, be careful that the surface on which the main unit is installed such as the surface of a table, shelf, etc., may become damaged.Using the spike-receiving board is highly recommended in order to protect the installation surface.

Troubleshooting

No sound is output.
- Check that the power of this product is on.
- Check the setting of the input and output selection switch.
- Check that both the update switch and config switch are off.
- Check that the external devices are connected properly.
- Check that the power of external devices are on.
- Check the operations and settings on the external devices.

This product cannot be recognized with the control app.
- If the input and output are not properly selected using the selectors on both the D/A converter and this product, this product will not be displayed on the control app.
- If the NAS and this product are not displayed on the control app, restart the app and cycle the power of this product. If the problem persists, cycle the power of the NAS. If the problem still persists, turn off the power of all devices, confirm the connections, and then turn on the power of all devices. Confirm that the router and the switching hub are connected to a Gigabit (1000BASE-T) terminal.
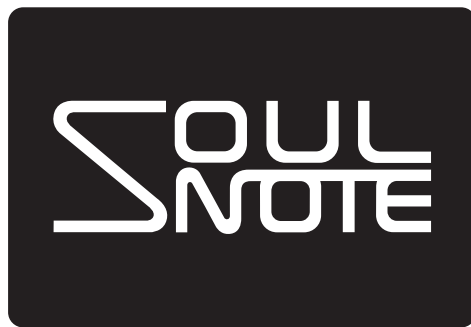
Maintenance

When the unit has become dirty, wipe it clean using a soft cloth. To remove stubborn stains, dilute some dish-washing liquid in 5 or 6 times as much water, soak a soft cloth in the solution, wring it out well, wipe away the stains, and then wipe the surfaces dry with a dry cloth.

Never use alcohol, paint thinners, benzine, insecticides or other volatile substances since they may mar or remove the surface gloss.

Bear in mind that rubbing surfaces with a chemical cleaning cloth or leaving such a cloth in contact with a surface for an extended time may result in deterioration.

Specifications

Input .... SPF, USB

Output...ZERO LINK, USB

Supported format (PCM) .... Maximum 768 kHz

  (AIFF, WAV, FLAC, Apple Lossless, mp3, ACC)

            16bit, 24bit, 32bit

Supported format (DSD)

 .... Maximum 22.6 MHz (dsf, diff)

Power voltage.................................220 V AC, 50 Hz

Power consumption ....30 W

Maximum external dimensions

 ....454 mm (W) x 174 mm (H) x 393 mm (D)

Weight .... 20 kg

SOUL NOTE

CSR International Ltd.