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## LEAUDIO RAW-HA1

# S.M.S.L RAW-HA1 Power Amplifier User Manual

Model: RAW-HA1

## 1. INTRODUCTION

The S.M.S.L RAW-HA1 is a versatile power amplifier designed for high-fidelity audio reproduction. It integrates a digital-to-analog converter (DAC) and supports various audio formats, including MQA and MQA-CD. This manual provides instructions for the proper setup, operation, and maintenance of your RAW-HA1 amplifier.



Image 1.1: Front and rear view of the S.M.S.L RAW-HA1 Power Amplifier, showcasing its compact design and various input/output ports.

## 2. SAFETY INFORMATION

- **Power Supply:** Use only the specified power adapter. Ensure the voltage matches the requirements of your region.
- **Ventilation:** Do not block ventilation openings. Ensure adequate airflow around the unit to prevent overheating.
- **Moisture:** Keep the device away from water, humidity, and liquids. Do not operate with wet hands.
- **Placement:** Place the unit on a stable, flat surface. Avoid placing it near heat sources or in direct sunlight.

- **Servicing:** Do not attempt to disassemble or repair the unit yourself. Refer all servicing to qualified personnel.
- **Cleaning:** Disconnect power before cleaning. Use a soft, dry cloth. Do not use liquid or aerosol cleaners.

### 3. PACKAGE CONTENTS

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Please check that all items are present in the package:

- S.M.S.L RAW-HA1 Power Amplifier
- Remote Controller
- Power Cable
- USB Cable
- Bluetooth Antenna
- User Manual (this document)

### 4. PRODUCT OVERVIEW

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#### 4.1 Front Panel

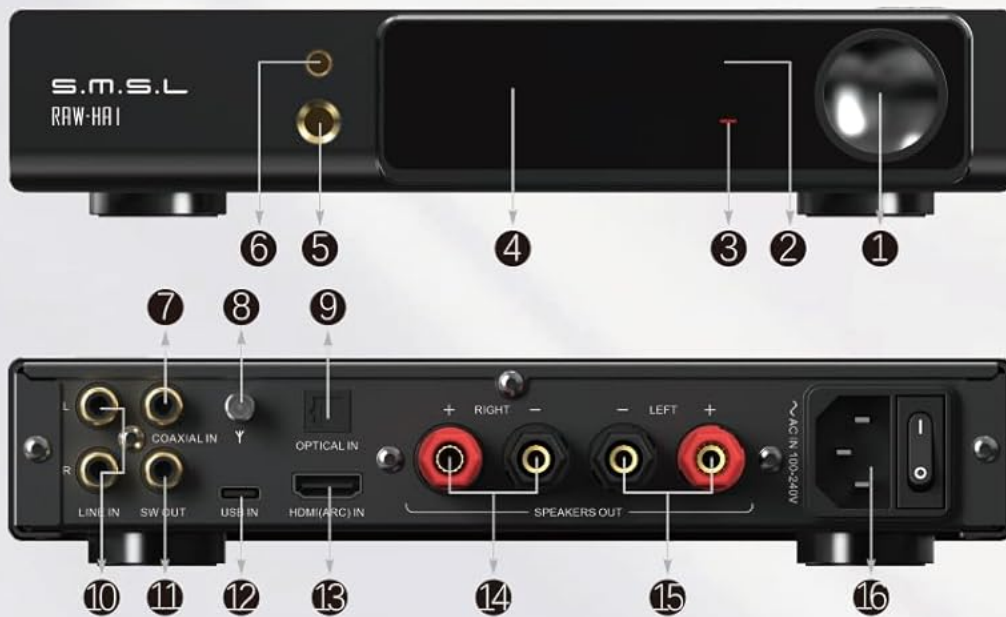


Image 4.1: Front panel of the RAW-HA1, showing the display, volume knob, and headphone outputs.

The front panel features a display screen, a multi-function knob for volume control and menu navigation, and two headphone output jacks (6.35mm and 4.4mm).

#### 4.2 Rear Panel

# Specification



- |                         |                                |                               |
|-------------------------|--------------------------------|-------------------------------|
| <b>1</b> Function knob  | <b>2</b> Remote window         | <b>3</b> Indicator light      |
| <b>4</b> Display screen | <b>5</b> 6.35mm headphone jack | <b>6</b> 4.4mm headphone jack |
| <b>7</b> Coaxial input  | <b>8</b> Bluetooth antenna     | <b>9</b> Optical input        |
| <b>10</b> Line input    | <b>11</b> Subwoofer output     | <b>12</b> USB input           |
| <b>13</b> HDMI input    | <b>14</b> Right output         | <b>15</b> Left output         |
| <b>16</b> AC IN         |                                |                               |

Image 4.2: Rear panel of the RAW-HA1, illustrating all input and output connections with numbered labels.

1. **Function knob:** Multi-function control for volume and menu.
2. **Remote window:** Infrared receiver for the remote control.
3. **Indicator light:** Status indicator.
4. **6.35mm headphone jack:** Standard headphone output.
5. **4.4mm headphone jack:** Balanced headphone output.
6. **Coaxial input:** Digital audio input.
7. **Bluetooth antenna:** Connection point for the Bluetooth antenna.
8. **Optical input:** Digital audio input.
9. **Line input (RCA):** Analog audio input.
10. **Subwoofer output:** Dedicated output for a subwoofer.
11. **USB input:** USB-B port for connecting to a computer.
12. **HDMI (ARC) input:** Audio Return Channel input for TV connection.
13. **Right output (Speakers):** Positive and negative terminals for the right speaker.
14. **Left output (Speakers):** Positive and negative terminals for the left speaker.
15. **AC IN:** Power input connector.

### 4.3 Key Features

- **Volume Control:** Utilizes the NJW1194 chip for accurate volume control and low distortion.
- **MQA Support:** Supports MQA (Master Quality Authenticated) and MQA-CD decoding for high-resolution audio playback.
- **Advanced USB Interface:** Features a 3rd Generation XMOS XU-316 chip, supporting PCM up to 32bit/768kHz and DSD up to DSD256.
- **High-End DAC:** Incorporates the CS43131 DAC chip for digital-to-analog conversion.
- **Efficient Power Amplifier:** Equipped with a new digital high-power amplifier chip for high efficiency and low energy consumption.
- **Bluetooth Connectivity:** Bluetooth 5.1 with support for SBC, AAC, aptX, aptX HD, and LDAC codecs.

Germany Infineon

# New Digital High Power Amplifier Chip

Higher quality with high efficiency  
and low energy consumption



Image 4.3: Illustration of the Infineon digital high-power amplifier chip, highlighting its role in efficient audio amplification.

Japanese electronic volume control  
chip of JRC company



# NJW1194

Accurate volume control and low distortion



Image 4.4: Diagram illustrating the NJW1194 electronic volume control chip, emphasizing its precision and low distortion characteristics.

# Support MQA and MQA-CD

MQA (Master Quality Authenticated) is an award-winning British technology, and it is a high-resolution audio coding technology with extremely high sampling rate and small enough file size. RAW-HA1 adopts MQA technology, which can receive and decode MQA audio, and provide master sound.



Image 4.5: Visual representation of MQA and MQA-CD support, indicating the amplifier's capability to decode high-resolution audio formats.

# Brand-new 3rd Generation **XMOS XU-316**

PCM supports up to 32bit/768kHz

DSD supports to DSD256

## PCM

Pulse Code Modulation

32bit/768kHz

## DSD

Direct Stream Digital

DSD256



Image 4.6: Depiction of the XMOS XU-316 chip, highlighting its support for high-resolution PCM and DSD audio streams.

## 5. SETUP

Follow these steps to set up your S.M.S.L RAW-HA1 amplifier:

1. **Connect Speakers:** Connect your passive speakers to the "SPEAKERS OUT" terminals on the rear panel (13 for Right, 14 for Left). Ensure correct polarity (+ to + and - to -).
2. **Connect Audio Sources:**
  - **USB:** Connect a USB cable from your computer to the "USB IN" port (11).
  - **Optical/Coaxial:** Connect digital audio sources to the "OPTICAL IN" (8) or "COAXIAL IN" (6) ports.
  - **HDMI (ARC):** Connect an HDMI cable from your TV's HDMI ARC port to the "HDMI (ARC) IN" port (12).
  - **RCA (Line In):** Connect analog audio sources using RCA cables to the "LINE IN" ports (9).
  - **Bluetooth:** Screw the provided Bluetooth antenna onto the "Bluetooth antenna" connector (7).
3. **Connect Subwoofer (Optional):** If using a subwoofer, connect it to the "SW OUT" port (10).
4. **Connect Power:** Connect the power cable to the "AC IN" port (15) and then to a wall outlet.
5. **Power On:** Flip the power switch on the rear panel to the "ON" position. The unit will power on.

## 6. OPERATING INSTRUCTIONS

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### 6.1 Power On/Off

To power on the device, ensure the rear panel power switch is in the "ON" position. The unit will enter standby mode. Press the multi-function knob (1) or the power button on the remote control to turn the unit on. Press again to put it back into standby.

### 6.2 Input Selection

Rotate the multi-function knob (1) to navigate through the input options displayed on the screen. Press the knob to confirm your selection. Alternatively, use the input selection buttons on the remote control.

### 6.3 Volume Control

Rotate the multi-function knob (1) to adjust the volume level. The current volume will be displayed on the screen. Use the volume up/down buttons on the remote control for remote adjustment.

### 6.4 Bluetooth Pairing

Select "Bluetooth" as the input source. The device will enter pairing mode. On your mobile device, search for "S.M.S.L RAW-HA1" in the Bluetooth settings and select it to pair. Once paired, the display will indicate a successful connection.

### 6.5 MQA Playback

When playing MQA content via USB, Optical, or Coaxial inputs, the display will indicate "MQA" or "MQA Studio" to confirm MQA decoding is active.

## 7. MAINTENANCE

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- **Cleaning:** Disconnect the power cord before cleaning. Use a soft, dry, lint-free cloth to wipe the exterior of the unit. Avoid abrasive cleaners or solvents.
- **Storage:** If storing the unit for an extended period, disconnect it from the power supply and store it in a cool, dry place away from direct sunlight.

- **Ventilation:** Regularly check that the ventilation openings are clear of dust and debris to ensure proper heat dissipation.

## 8. TROUBLESHOOTING

Problem	Possible Cause	Solution
No sound output from speakers/headphones.	<ul style="list-style-type: none"> <li>◦ Incorrect input selected.</li> <li>◦ Volume too low or muted.</li> <li>◦ Speaker/headphone cables not connected properly.</li> <li>◦ Source device not playing or outputting audio.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Select the correct input source.</li> <li>◦ Increase volume or check for mute status.</li> <li>◦ Verify all audio connections are secure.</li> <li>◦ Check the audio output settings on your source device.</li> </ul>
Distorted or poor sound quality.	<ul style="list-style-type: none"> <li>◦ Poor cable connections.</li> <li>◦ Source audio quality is low.</li> <li>◦ Improper speaker impedance match.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Ensure all cables are securely connected.</li> <li>◦ Try a different audio source or higher quality file.</li> <li>◦ Verify your speakers' impedance is compatible with the amplifier.</li> </ul>
Bluetooth connection issues.	<ul style="list-style-type: none"> <li>◦ Device not in pairing mode.</li> <li>◦ Antenna not connected.</li> <li>◦ Interference or distance.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Ensure Bluetooth input is selected and the unit is in pairing mode.</li> <li>◦ Confirm the Bluetooth antenna is securely attached.</li> <li>◦ Move the source device closer to the amplifier and away from other wireless devices.</li> </ul>
USB connection is unstable or drops.	<ul style="list-style-type: none"> <li>◦ Faulty USB cable or port.</li> <li>◦ Driver issues on the computer.</li> <li>◦ Interference.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Try a different USB cable and/or a different USB port on your computer.</li> <li>◦ Ensure the latest USB drivers for the RAW-HA1 are installed on your computer.</li> <li>◦ Restart both the amplifier and the computer.</li> </ul>
Remote control not responding.	<ul style="list-style-type: none"> <li>◦ Dead batteries.</li> <li>◦ Obstruction between remote and unit.</li> <li>◦ Remote window blocked.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Replace batteries in the remote control.</li> <li>◦ Ensure a clear line of sight between the remote and the amplifier.</li> <li>◦ Check that the remote window (2) on the front panel is not obstructed.</li> </ul>

## 9. SPECIFICATIONS

<b>Input</b>	HDMI (ARC), RCA, Bluetooth, USB, Optical, Coaxial
<b>THD+N</b>	0.003%
<b>SNR</b>	108dB

<b>Channel Separation</b>	87dB
<b>Input Sensitivity / Impedance</b>	245mV / 22kΩ
<b>Output Power (Stereophonic)</b>	4Ω: 165W x 2 8Ω: 85W x 2
<b>USB Transmission</b>	USB2.0 (Asynchronous Transfer)
<b>USB Compatibility</b>	Windows 7/8/8.1/10/11, macOS, Linux
<b>MQA Decoder</b>	USB, Optical, Coaxial
<b>MQA-CD Decoder</b>	Optical, Coaxial
<b>Bit Depth (USB)</b>	1bit, 16~32bit
<b>Bit Depth (Optical/Coaxial)</b>	1bit, 16~24bit
<b>Sampling Rate (USB)</b>	PCM: 44.1~768kHz DSD: 2.8224~11.2896MHz
<b>Sampling Rate (Optical/Coaxial)</b>	PCM: 44.1~192kHz DSD: DSD64 (DoP)
<b>Bluetooth Specification</b>	5.1 (supports SBC, AAC, aptX, aptX HD, LDAC)
<b>Power Consumption</b>	40W (Normal Volume)
<b>Dimensions (WxHxD)</b>	219mm x 45mm x 190mm (8.62 x 1.77 x 7.48 inches)
<b>Weight</b>	1.55kg / 3.42lbs
<b>Manufacturer</b>	LEAUDIO
<b>Model Number</b>	RAW-HA1

## 10. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact the manufacturer directly. Keep your proof of purchase for warranty claims.