SMSL M20

SMSL M20 USB DAC Headphone Amplifier

User Manual

Introduction

The SMSL M20 is a high-performance USB Digital-to-Analog Converter (DAC) and Headphone Amplifier designed to enhance your audio experience. Featuring advanced decoding chips and versatile connectivity, it delivers clear and detailed sound for both music listening and gaming. This manual provides essential information for setting up, operating, and maintaining your M20 device.

Safety Information

- Do not expose the device to water or excessive moisture.
- Avoid placing the device near heat sources or in direct sunlight.
- Use only the specified power adapter (DC 5V/1A) to prevent damage.
- Do not attempt to disassemble or repair the unit yourself. Contact qualified service personnel.
- Ensure proper ventilation around the device during operation.

Package Contents

Please check that all items are present in the box:

- 1 × SMSL M20 Unit
- 1 × USB to Type-C Cable
- 1 × Type-C to Type-C Cable
- 1 × User Manual
- 1 × Service Card

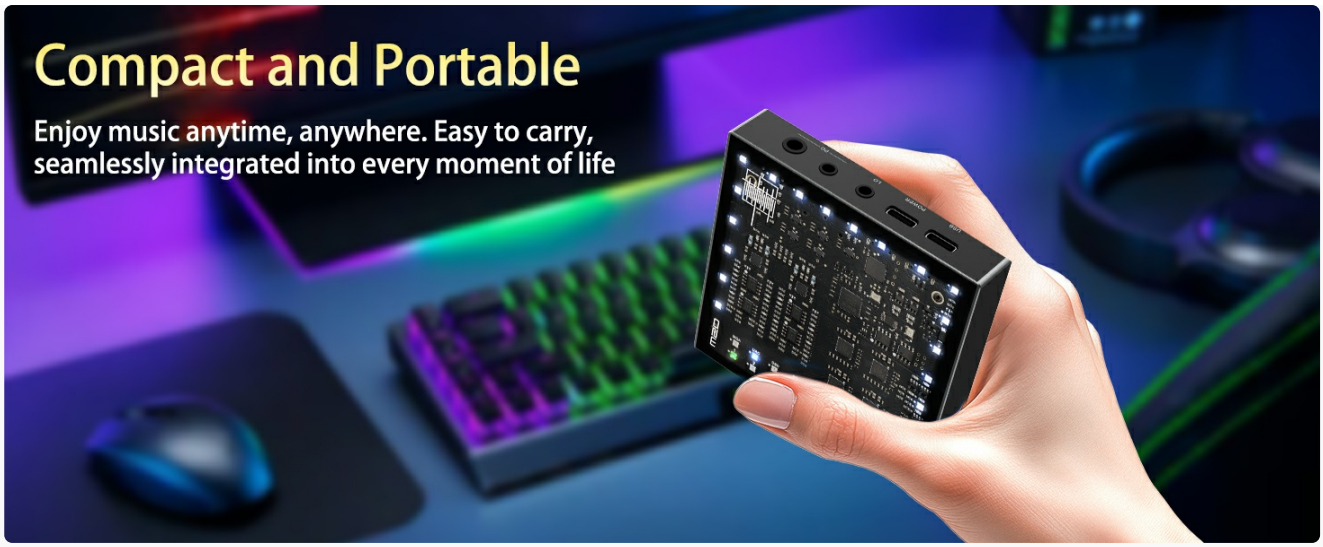

Image: The SMSL M20 unit, USB cables, user manual, and service card are shown as included accessories.

Product Overview

The SMSL M20 features a compact design with a transparent top cover, showcasing its internal components. The front panel includes control buttons, while the rear panel provides various input and output ports.

Image: A diagram illustrating the various components and ports of the SMSL M20. Labels include Volume down, Volume up, Menu button, USB input, Power (DC 5V / 1A), LINE output, Headphone output, and Ambient light switch.

Controls and Ports:

- **Volume Down:** Decreases the audio output level.
- **Volume Up:** Increases the audio output level.
- **Menu Button:** Used to navigate settings and options.
- **USB Input:** Connects to your audio source (PC, game console, tablet).
- **Power (DC 5V / 1A):** Power input for the device.
- **LINE Output (3.5mm):** Analog audio output for external speakers or amplifiers.
- **Headphone Output (3.5mm/4.4mm):** Connects to headphones.
- **Ambient Light Switch:** Controls the device's internal lighting (press Volume Down and Volume Up simultaneously).

Features

- **Dual USB Mode Switching:** Supports both USB 1.1 and USB 2.0 modes. USB 1.1 is ideal for game consoles, providing clear sound effects. USB 2.0 offers stable audio performance for PCs, requiring a driver installation for Windows systems.
- **High-Performance Decoding:** Equipped with four Cirrus Logic CS43131 audio decoding chips and a third-generation XMOS XU-316 processor. Supports PCM up to 32bit/768kHz and DSD up to DSD256 for exceptional sound quality.
- **MQA and MQA-CD Decoding:** Fully compatible with MQA (Master Quality Authenticated) technology and MQA-CD, allowing for the playback of high-resolution audio files with original studio quality.
- **Powerful Headphone Output:** Features 3.5mm and 4.4mm headphone jacks, powered by two TPA6120A2

dedicated headphone amplifier chips, delivering up to 700mW of power. This ensures compatibility with a wide range of headphones, from high-impedance gaming headsets to demanding music headphones.

- **5 PCM Filters:** Includes built-in PCM filters: Fast, Low latency filter; Fast, Phase compensated filter; Slow, Low latency filter; Slow, Phase compensated filter; and Non-oversampling. These filters allow for fine-tuning the audio output to your preference.
- **Low Clock Jitter Design:** An integrated audio clock processing circuit precisely controls the audio signal transmission time, significantly reducing clock jitter for a stable and smooth audio experience.

Image: Close-up view of the four Cirrus Logic CS43131 decoding chips on the M20's circuit board.

Image: Detailed view of the new third-generation XMOS XU-316 chip, highlighting its role in high-resolution audio processing.

Image: Illustrates the power output capabilities for various headphone impedances (16Ω, 32Ω, 64Ω, 150Ω, 300Ω, 600Ω) through the 3.5mm and 4.4mm headphone outputs.

Image: Graphic demonstrating the MQA CD decoding capability, showing the unfolding process of MQA audio files.

Image: Displays the five available PCM filter modes: Fast, Low latency; Fast, Phase compensated; Slow, Low latency; Slow, Phase compensated; and Non-oversampling.

Setup

1. **Power Connection:** Connect the provided USB to Type-C cable or Type-C to Type-C cable to the 'POWER' port on the M20 and to a suitable 5V/1A USB power source (e.g., a wall adapter or a powered USB hub).
2. **Audio Source Connection:** Connect your audio source (PC, game console, tablet, smartphone) to the 'USB' input port on the M20 using the appropriate USB cable.
3. **Output Connection:**
    - For headphones, plug your 3.5mm or 4.4mm headphones into the corresponding 'PO' (Headphone Output) jack.
    - For external speakers or an amplifier, connect a 3.5mm audio cable from the 'LO' (LINE Output) jack to your audio system's input.
4. **Driver Installation (for Windows USB 2.0 mode):** If using a Windows PC in USB 2.0 mode, you may need to install a specific driver. Refer to the SMSL official website or the included service card for driver download instructions. USB 1.1 mode typically does not require drivers.

Image: The SMSL M20 connected to various gaming consoles, tablets, and PCs, demonstrating its broad compatibility.

Operating Instructions

Power On/Off:

The device powers on automatically when connected to a power source. To power off, disconnect the power cable.

Volume Adjustment:

Use the 'Volume Up' and 'Volume Down' buttons on the front panel to adjust the audio output level for headphones or line out.

USB Mode Switching:

The M20 supports USB 1.1 and USB 2.0 modes. The specific method for switching between these modes may vary. Refer to the on-screen display or the detailed instructions on the service card for precise steps. USB 1.1 is recommended for game consoles, while USB 2.0 offers higher sampling rates for PC audio.

PCM Filter Selection:

Press the 'Menu' button to access the settings. Navigate through the options to find the PCM filter settings. Use the volume buttons to cycle through the five available filters (Fast, Low latency; Fast, Phase compensated; Slow, Low latency; Slow, Phase compensated; Non-oversampling) and select your preferred option.

Ambient Light Control:

To toggle the ambient lights on or off, press the 'Volume Down' and 'Volume Up' buttons simultaneously. This feature allows you to customize the visual aesthetic of the device.

Image: The SMSL M20 with its transparent top cover and illuminated internal components, showcasing the cool color lights feature.

Maintenance

- Clean the device with a soft, dry cloth. Do not use liquid cleaners or aerosols.
- Keep the device free from dust and debris to ensure optimal performance and longevity.
- Store the device in a cool, dry place when not in use.

Troubleshooting

Problem	Possible Cause	Solution
No sound output	Incorrect input/output selection; cables not properly connected; low volume; device not powered on.	Check all cable connections. Ensure the M20 is powered. Verify correct input source is selected on your device and output is selected on M20. Increase volume.
Device stopped working after a few days / Overheating	Potential internal component issue; insufficient ventilation.	Ensure the device has adequate ventilation. If the issue persists, discontinue use and contact customer support for assistance.
Ambient lights are always on/glowing	Default setting or specific firmware behavior.	Press the 'Volume Down' and 'Volume Up' buttons simultaneously to toggle the ambient lights. Check the manufacturer's website for the latest firmware updates, which may include options to disable or adjust light brightness.

Problem	Possible Cause	Solution
Distorted or poor sound quality	Incorrect PCM filter selected; low-quality audio source; cable interference.	Try different PCM filter settings. Ensure your audio source is of high quality. Use shielded cables if interference is suspected.

Specifications

The following table outlines the technical specifications of the SMSL M20 USB DAC Headphone Amplifier:

Image: A detailed table showing the product specifications including input/output interfaces, output levels, impedance, THD+N, dynamic range, signal-to-noise ratio, USB compatibility, sampling rate, bit depth, power consumption, volume, and weight.

Feature	Specification
Brand	SMSL (Auinshifiman)
Model	M20
Decoding Chips	4 × Cirrus Logic CS43131
USB Processor	XMOS XU-316 (3rd Generation)
Headphone Amp Chips	2 × TPA6120A2
PCM Support	Up to 32bit/768kHz
DSD Support	Up to DSD256
MQA Support	MQA, MQA-CD
Headphone Output Power	700mW (at 16Ω)
Headphone Outputs	3.5mm, 4.4mm
Line Output	3.5mm
USB Interface Type	USB Type-C (Input & Power)
USB Transmission Method	Asynchronous
PCM Filters	5 modes (Fast/Slow, Low latency/Phase compensated, Non-oversampling)
Minimum Supply Voltage	2.5 Volts (AC)
Maximum Supply Voltage	2.5 Volts (AC)
Power Consumption	<15W (Operating), <0.5W (Standby)
Dimensions (WxHxD)	85x22.4x83mm
Weight	165g

Official Product Video

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Video: An official product video titled "SMSL LIN.LIN.LIN M20 Function Introduction" by FINE MUSIC, demonstrating the features and functions of the SMSL M20 USB DAC Headphone Amplifier.

Warranty and Support

The SMSL M20 comes with a Service Card. For warranty claims, technical support, or any operational questions not covered in this manual, please refer to the contact information provided on the Service Card or visit the official SMSL/Auinshifiman website. Keep your purchase receipt for warranty validation.