SMSL M20

SMSL M20 MQA USB DAC Headphone Amplifier Instruction Manual

1. Introduction

This manual provides comprehensive instructions for the safe and efficient use of your SMSL M20 MQA USB DAC Headphone Amplifier. Please read this manual thoroughly before operating the device and retain it for future reference. Proper understanding of these instructions will ensure optimal performance and longevity of your product.

2. Product Overview

The SMSL M20 is a high-performance MQA USB DAC and headphone amplifier designed for superior audio quality across various platforms, including PCs, gaming consoles, and mobile devices. It features advanced decoding chips and multiple output options.

Key Features:

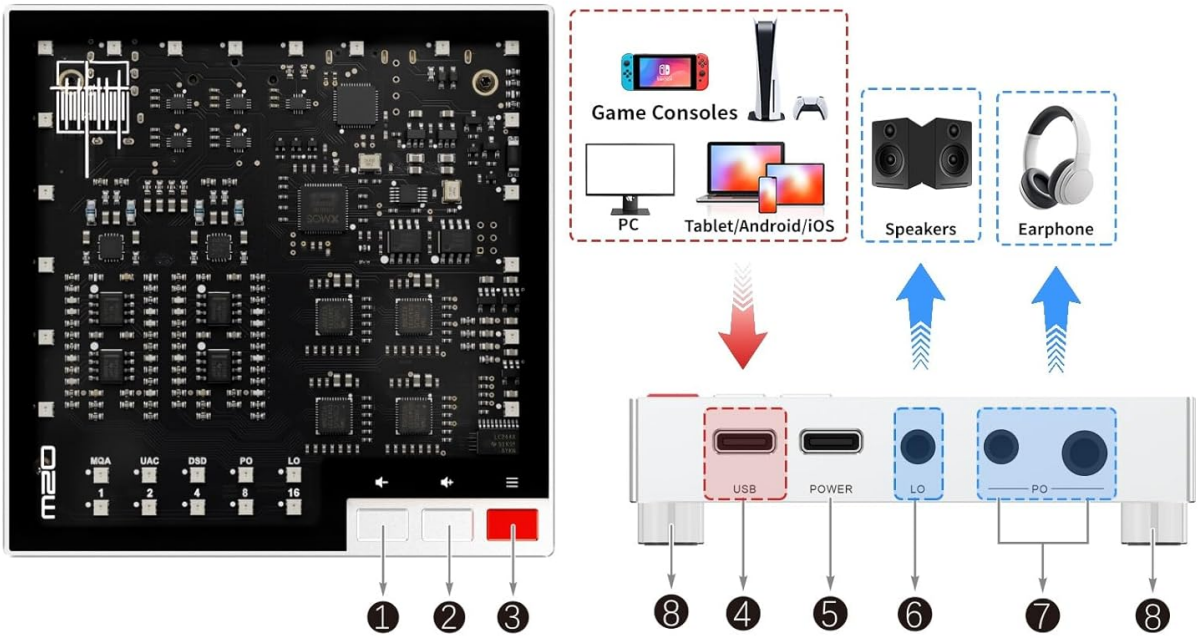
- Equipped with 4 CS43131 decoding chips, offering a dynamic range of 119 dB and distortion as low as -115 dB for clear audio reproduction.
- Features dual USB interfaces (USB 2.0/1.1). USB 1.1 is optimized for gaming consoles (Switch/PS5). The XMOS XU-316 chip supports PCM 32-bit/768kHz and DSD256 decoding.
- MQA-CD full decoding technology restores master-level audio details.
- Equipped with 3.5mm and 4.4mm headphone outputs, each channel features a TPA6120A2 headphone amplifier chip for powerful and clear audio output.
- Includes 5 built-in PCM filters: Fast Low Latency, Fast Phase Compensated, Slow Low Latency, Slow Phase Compensated, and Non-oversampling mode.

Component Introduction:

The M20 requires a dedicated USB power supply for stable and efficient performance.

Component introduction

The M20 requires a dedicated USB power supply when in operation to ensure its stable and efficient performance.



1 Volume down

2 Volume up

3 Menu button

4 USB input

5 Power(DC 5V /1A)

6 LINE output

7 Headphone output

8 Ambient light switch
(press keys 1 and 2 at the same time)

Image: Component Introduction Diagram. This diagram illustrates the various inputs, outputs, and controls of the SMSL M20. Key components include: 1. Volume Down, 2. Volume Up, 3. Menu Button, 4. USB Input, 5. Power (DC 5V/1A), 6. LINE Output, 7. Headphone Output, 8. Ambient Light Switch (press keys 1 and 2 simultaneously).

Image: SMSL M20 MQA USB DAC & Headphone Amplifier. This image displays the M20 unit with its transparent top cover revealing the internal circuitry, highlighting its compact design and premium build.

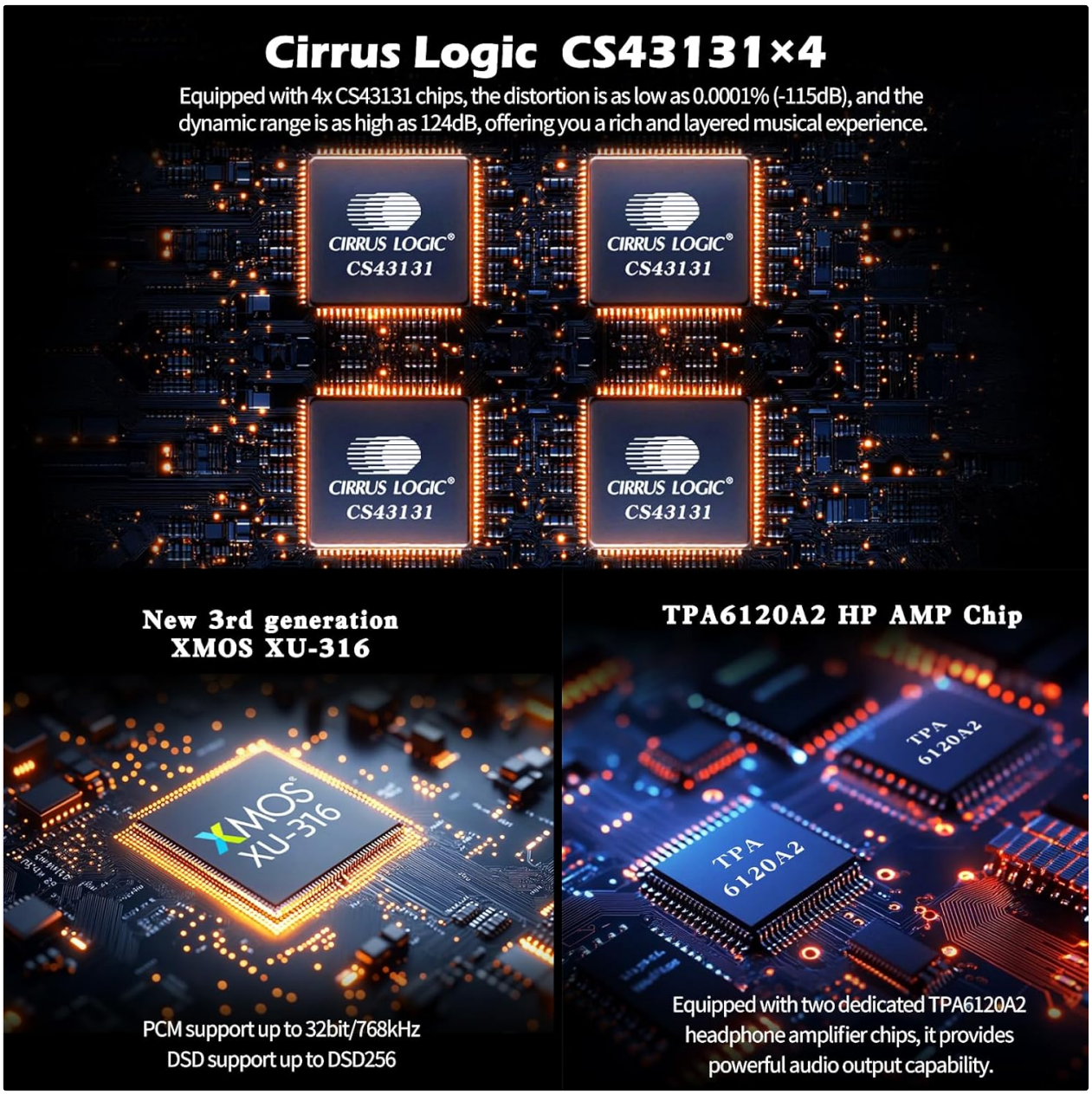


Image: Cirrus Logic CS43131 and XMOS XU-316 Chips. This image details the internal architecture, showcasing the four CS43131 DAC chips and the XMOS XU-316 USB processor, which are central to the device's high-resolution audio capabilities.

Image: SMSL M20 Headphone Outputs. This image illustrates the 3.5mm and 4.4mm headphone outputs, emphasizing their capability to drive various headphone impedances with powerful output.

Image: SMSL M20 Gaming Compatibility. This image highlights the M20's compatibility with various gaming consoles (PS4, PS5, Switch) and PCs, showcasing its versatility for different entertainment setups.

Image: SMSL M20 MQA CD Support. This image explains the M20's MQA CD decoding capability, which allows for the restoration of master-quality audio from MQA-encoded content.

Image: SMSL M20 5 Filter Adjustment Modes. This image details the five selectable PCM filter modes, each designed to optimize the audio experience for different listening preferences and content types.

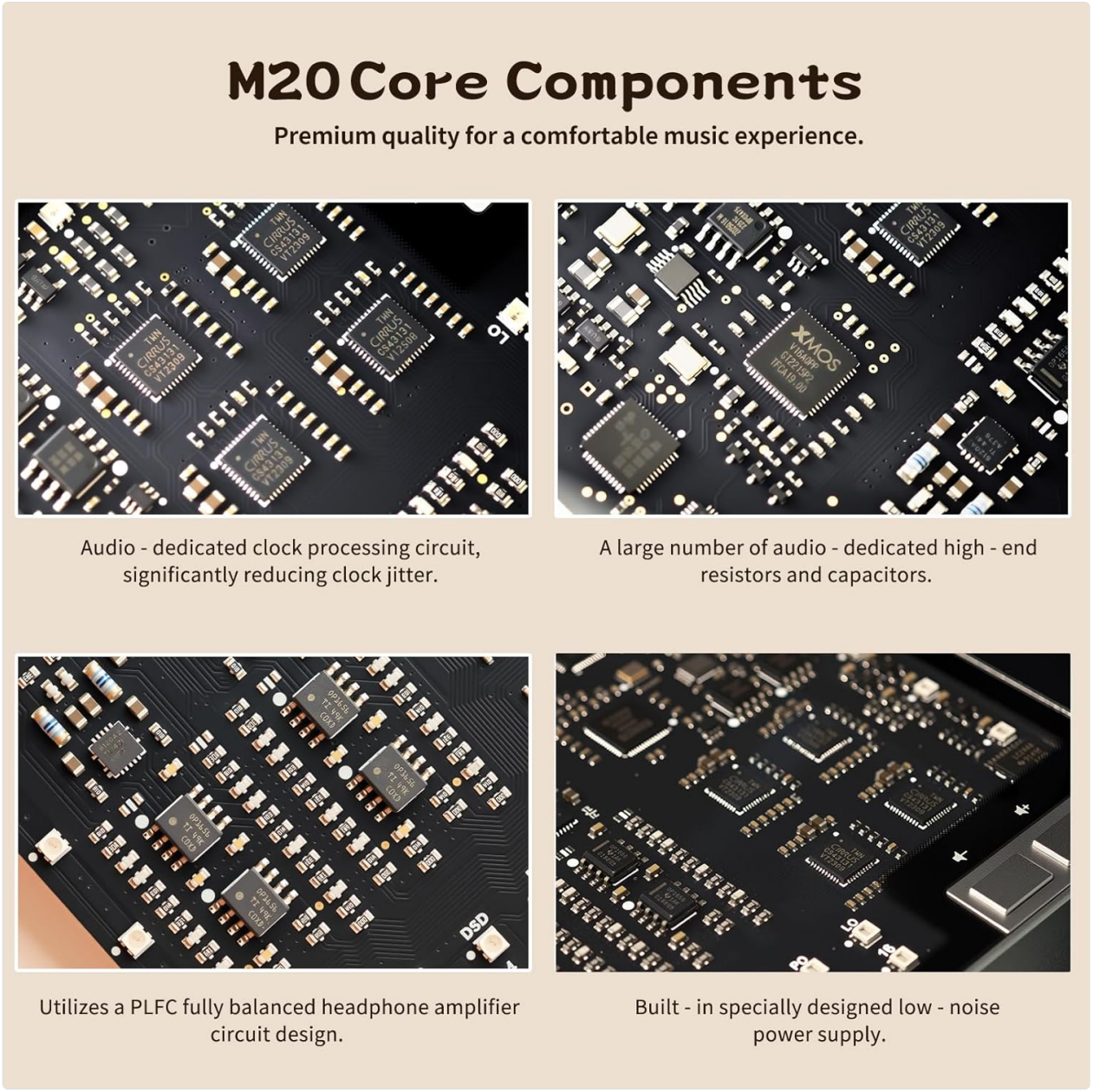


Image: SMSL M20 Core Components. This image provides a close-up view of the internal components, including the audio-dedicated clock processing circuit, high-end resistors and capacitors, PLFC balanced headphone amplifier circuit, and low-noise power supply.

3. Setup

Connecting the Device:

1. **Power Connection:** Connect the M20 to a dedicated DC 5V/1A power source using the USB power input (labeled '5' in the component diagram).
2. **USB Input:** Connect the M20 to your source device (PC, gaming console, tablet, Android, iOS) via the USB input (labeled '4'). The M20 supports both USB 1.1 and USB 2.0 modes.
3. **Audio Output:**
    - For line-level output to speakers or an amplifier, use the 3.5mm LINE OUT port (labeled '6').
    - For headphones, connect to either the 3.5mm or 4.4mm Headphone Output ports (labeled '7').

Driver Installation:

For Windows 7 / 8 / 8.1 / 10 / 11, a dedicated driver may be required for USB 2.0 mode to achieve high-specification sampling rates. This driver can typically be downloaded from the official SMSL website. For Mac OS X10.6 or newer, Linux, Android, and iOS, the device is generally plug-and-play and does not require additional drivers.

4. Operating Instructions

Basic Operation:

- **Power On/Off:** The device powers on automatically when connected to a power source and a USB input.
- **Volume Control:** Use the 'Volume Down' button (labeled '1') and 'Volume Up' button (labeled '2') to adjust the output volume.
- **Menu Navigation:** Press the 'Menu button' (labeled '3') to cycle through available settings or modes.
- **Ambient Light Switch:** Press buttons '1' and '2' simultaneously to toggle or adjust the ambient lighting.

PCM Filter Selection:

The M20 offers 5 PCM filter modes to tailor the sound to your preference. Access these modes via the menu button and select the desired filter:

1. **F1 Fast, Low Latency filter:** Suitable for fast-paced audio, such as gaming.
2. **F2 Fast, Phase Compensated filter:** Provides accurate soundstage localization.
3. **F3 Slow, Low Latency filter:** Ideal for relaxed music listening.
4. **F4 Slow, Phase Compensated filter:** Enhances sound layering and detail.
5. **F5 Non-oversampling mode:** Restores the original recording characteristics.

MQA Playback:

When playing MQA-encoded audio, the M20 will automatically detect and decode the MQA stream, indicated by a specific light or display on the unit. Ensure your playback software is configured for MQA passthrough if applicable.

5. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the device. Avoid using abrasive cleaners or solvents.
- **Storage:** Store the device in a cool, dry place away from direct sunlight and extreme temperatures.
- **Handling:** Handle the device with care to prevent physical damage. Avoid dropping or subjecting it to strong impacts.
- **Ventilation:** Ensure adequate ventilation around the device to prevent overheating. Do not block any ventilation openings.

6. Troubleshooting

Common Issues and Solutions:

- **No Sound Output:**
    - Check all cable connections (USB input, power, audio output).

- Ensure the M20 is powered on.
- Verify the correct audio output device is selected in your computer's or source device's sound settings.
- Adjust the volume on both the M20 and your source device.
- Test with different headphones or speakers.

- **Unstable USB Connection / Device Not Recognized:**
  - Try a different USB port on your computer.
  - Use a different USB cable.
  - Ensure the correct drivers are installed for Windows systems (if using USB 2.0 mode).
  - Restart your computer and the M20.
  - Ensure the M20 has a stable power supply.
- **Distorted Audio:**
  - Check if the volume is too high on either the M20 or the source device, causing clipping.
  - Ensure the audio source file is not corrupted.
  - Verify that the correct sampling rate and bit depth are being used by your source device and are compatible with the M20.
- **Firmware Update Issues:**
  - Refer to the official SMSL website for specific firmware update instructions. Some updates may require specific button presses during the process.
  - Ensure a stable power supply during firmware updates to prevent device damage.

7. Specifications

Feature	Specification
Input	USB
Output	3.5mm Line Out, 3.5mm Headphone, 4.4mm Headphone
LINE OUT Output Level	2.5 Vrms
3.5mm HP OUT Output Level	2.5 Vrms
4.4mm HP OUT Output Level	5 Vrms
LINE OUT Output Impedance	22Ω
Headphone Output Power	16Ω 700 mW / 32Ω 700 mW / 64Ω 350 mW / 150Ω 160 mW / 300Ω 80 mW / 600Ω 40 mW
THD+N (unloaded)	0.0001% (-115 dB)
HP Output Impedance	Near 0Ω
Dynamic Range (LINE OUT)	119 dB

Dynamic Range (3.5mm HP OUT)	119 dB
Dynamic Range (4.4mm HP OUT)	124 dB
SNR (LINE OUT)	119 dB
SNR (3.5mm HP OUT)	119 dB
SNR (4.4mm HP OUT)	124 dB
Bit Depth	1 bit, 16 ~ 32 bit
Sampling Rate (PCM)	44.1 ~ 768 kHz
Sampling Rate (DSD)	2.8224 ~ 11.2896 MHz
USB Transmission	Asynchronous
USB Compatibility	Windows 7 / 8 / 8.1 / 10 / 11, Android, iOS, Mac OS X10.6 or later, Linux, PS4, PS5, Switch
Power Consumption	<15 W
Standby Power	<0.5 W
Weight	165 g
Dimensions (W x H x D)	85 x 22.4 x 85 mm

8. Warranty and Support

The SMSL M20 MQA USB DAC Headphone Amplifier comes with a 1-year warranty from the date of purchase. This warranty covers manufacturing defects and malfunctions under normal use. Please retain your proof of purchase for warranty claims.
For technical support, troubleshooting assistance, or warranty inquiries, please contact your retailer or visit the official SMSL website for contact information and resources.