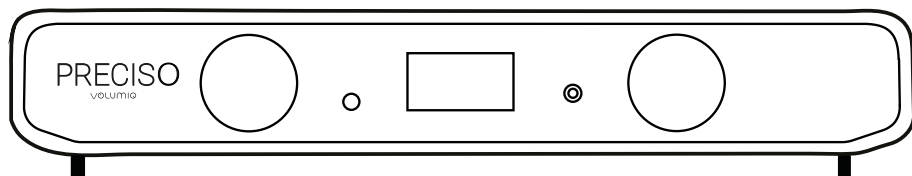


volumio®

THE MUSIC PLAYER

volumio® **PRECISO**



High Precision Dual Mono DAC

USER MANUAL

ENGLISH



**FOR MUSIC LOVERS,
BY MUSIC LOVERS**

INTRODUCTION

Congratulations on your purchase!

Volumio **Preciso** is an **High Precision Dual Mono DAC** (digital-to-analog converter) designed with three key principles in mind: exceptional sound quality, seamless integration with a variety of audio sources, and ease of use.

To take full advantage of the Preciso's capabilities, please read this manual carefully.

Our support team is available to assist you with any questions regarding Preciso and all of our products at **support@volumio.org**

USER MANUAL TRANSLATED IN OTHER LANGUAGES

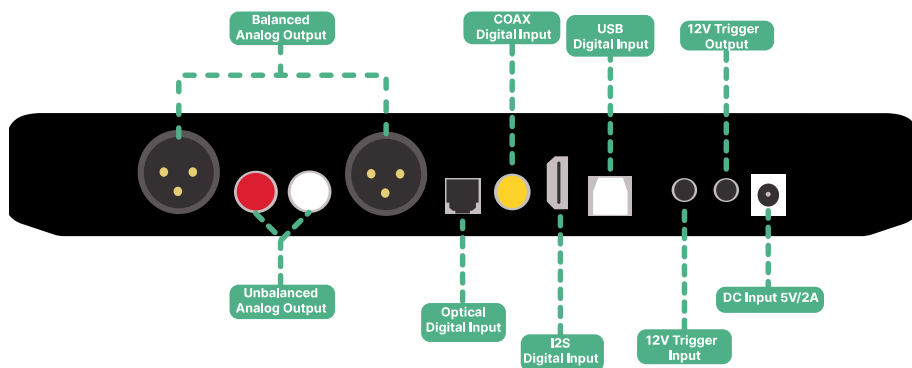
For the translation of this manual in other languages please click on the link below:

WHAT'S IN THE BOX?

- Volumio Preciso High Precision Dual Mono DAC
- 5V 3A Switching Power Supply*
- USB Cable
- NFC Information Card

(*) Power Adapter is optional, depending on the region and local seller's policy.

I/O OVERVIEW



OUTPUT CONNECTIONS

BALANCED ANALOG OUTPUT (XLR): Provides high-fidelity audio output with improved noise rejection and superior sound quality.

UNBALANCED ANALOG OUTPUT (RCA - RED & WHITE): Standard analog output for easy integration with traditional audio systems.

INPUT CONNECTIONS

COAX DIGITAL INPUT (RCA - YELLOW): Accepts digital audio signals from sources like CD players and digital transports.

OPTICAL DIGITAL INPUT (TOSLINK): Enables digital audio connection with minimal interference from compatible devices such as TV or Blu-ray player

USB DIGITAL INPUT: Allows direct connection to computers or music streamers for high-resolution digital audio playback.
(For further details on USB input playback, see page 13)

I2S DIGITAL INPUT: Offers high-quality digital transmission, typically used for direct DAC integration with transport sources.

(For further details on HDMI Pin Configuration, see page 12)

DC INPUT (5V/2A): Power supply connection for the device.

12V TRIGGER OUTPUT & INPUT: Enables seamless power synchronization with other audio equipment.

FRONT PANEL OVERVIEW

DISPLAY: Provides real-time information such as gain level, input selection, and audio format.

IR SENSOR: Allows remote control operation for easy accessibility.

kind reminder: the DAC device does not come with a remote control, which needs to be purchased separately

RIGHT KNOB:

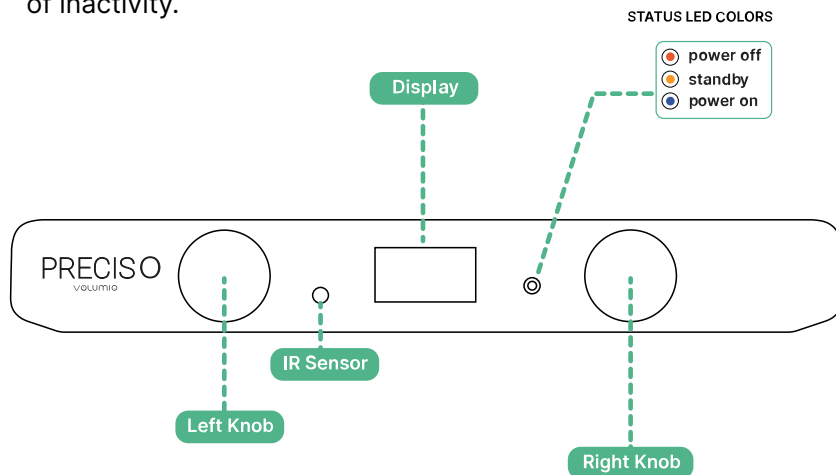
- Short press from Power-Off state: Turn the device on
- Short press from Power-On State: Enter standby mode
- Short press from Stand-by State: Enter power-on mode
- Long press for 5 seconds: Turn the device off
- The colored led will show the status of the device
- Turn for Gain Up/Down adjustments

LEFT KNOB:

Turn the knob to cycle through the input sources

To access and navigate Settings:

- Press the knob once to enter the Settings menu.
- Then, press the knob again to cycle through the different setting options.
- Turn the knob to change the value of the currently selected option.
- Repeat this process to adjust all available settings.
- Once finished, the menu will exit automatically after a few seconds of inactivity.



PRECISO SETTINGS

DAC filter mapping of the Preciso:

DAC FILTER #1: Linear phase fast roll-off

DAC FILTER #2: Linear phase slow roll-off

DAC FILTER #3: Minimum phase fast roll-off

DAC FILTER #4: Minimum phase slow roll-off

DAC FILTER #5: Minimum phase (default)

DAC FILTER #6: Linear phase fast roll-off apodizing

DAC FILTER #7: Linear phase fast roll-off low ripple

DAC FILTER #8: Minimum phase slow roll-off low dispersion

Please see the DAC Filter Specification and Graphics on page 14

DAC NOS MODE: If DAC NOS MODE is active the digital audio data will be converted into an analog signal without applying oversampling and bypassing the FIR and IIR filters. This approach aims to preserve the natural character and integrity of the original signal by minimizing processing.


AUTOBOOT: If Auto-Boot is ON, the device will automatically enter power-on mode (Blue LED)

If Auto-Boot is OFF, the device will enter power-off mode (Red LED) when the PSU is plugged in, and you will need to press the right knob to start it.

LED DIMMING: Adjusts the brightness of the device's LED indicators. Helps reduce glare in dark environments.

DISPLAY DIMMING: Adjust the brightness of the device's display

HOW TO UPDATE PRECISO FIRMWARE

1. Unplug the power supply.
2. Press and hold the right knob
3. Plug the power supply back in.
4. As soon as the “MCU UPDATE MODE” page appears on the display, release the knob.
5. Connect the device to a PC/Mac via USB; it will be detected as a mass storage device.
6. Download the Firmware: 
7. The file needs to be copied into the “mass memory”
8. After a few seconds, the device will automatically restart once the update is complete.

HOW TO FACTORY RESET PRECISO

1. Unplug the power supply.
2. Press and hold the **left knob** (function)
3. Plug the power supply back in.
4. The LED will flash **white** and then turn **solid red**. The procedure has been successfully completed.

TECHNICAL SPECIFICATIONS

FEATURES OVERVIEW

High Precision Dual-Mono DAC

2x Sabre ES9039Q2M, playback up to PCM 768kHz/32bit and DSD512

Ultra-low phase-noise MEMS clock

I/V Output stage based on Texas Instruments OPA1612A

Ultra-low distortion and noise: THD -128dB, THD+n -122.5dB, SNR 128dB

8x digital filters, for customizing the sound-signature

Pre-amp mode with HW gain control, 0dB to -99dB

Input Power Filtering with LC filters cascade, total capacitance 5000+ uF

Linear Regulator for Analog sub-system

Linear Regulator for Digital sub-system

Dedicated low-noise regulator for every analog and digital block

Stereo Analog Unbalanced output, 2 Vrms

Stereo Analog Balanced output, 4 Vrms

Digital USB input, up to PCM 768kHz/32bit and DSD512

Digital S/PDIF Coaxial input, up to PCM 192kHz/24bit

Digital S/PDIF Optical input, up to PCM 192kHz/24bit

Digital I2S over HDMI input, up to PCM 768kHz/32bit and DSD512

12V Trigger Input port, for being turned ON and OFF from an external device

12V Trigger Output port, for turning ON and OFF external devices

IR Remote Receiver

1.3" OLED Display

2x Rotary Encoder Knob with push-button

AUDIO RESOLUTION

DIGITAL USB INPUT: up to PCM 768kHz/32bit and DSD512

DIGITAL S/PDIF COAXIAL INPUT: up to PCM 192kHz/24bit

DIGITAL S/PDIF OPTICAL INPUT: up to PCM 192kHz/24bit

DIGITAL I2S OVER HDMI INPUT: up to PCM 768kHz/32bit and DSD512

STEREO ANALOG UNBALANCED OUTPUT: up to PCM 768kHz/32bit and DSD512

STEREO ANALOG BALANCED OUTPUT: up to PCM 768kHz/32bit and DSD512

HARDWARE SPECIFICATIONS

INPUT POWER: 5V DC / 2A

INPUT POWER CONNECTOR: Barrel Jack 5.5mm (outer diameter)/ 2.1mm (inner diameter)

INPUT POWER POLARITY: Positive

TRIGGER-IN PORT: 3.5mm jack, positive on tip

TRIGGER-OUT PART: 3.5mm jack, positive on tip

USB INPUT: USB 2.0 Type-B connector

S/PDIF COAXIAL INPUT: RCA connector

S/PDIF OPTICAL INPUT: TOSLINK connector

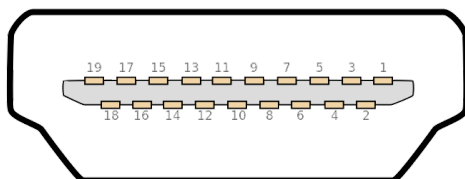
STEREO UNBALANCED OUTPUT: RCA connectors

STEREO BALANCED OUTPUT: XLR connectors

* Specifications subject to change without notice.

I2S/DSD over HDMI specs

On the Preciso, the HDMI port functions as a digital input for I2S/DSD signals. Details on the pin assignment can be found in the table below:



PIN NUMBER	DESCRIPTION
1	I2S DATA+ / DSD DATA-R+
2	GND
3	I2S DATA- / DSD DATA-R-
4	I2S BCK+ / DSD BCK+
5	GND
6	I2S BCK- / DSD BCK-
7	I2S FS+ / DSD DATA-L+
8	GND
9	I2S FS- / DSD DATA-L-
10	I2S MCLK+ / DSD MCLK+
11	GND
12	I2S MCLK- / DSD MCLK-
13	Not Connected
14	DSD/PCM status; 1=DSD, 0=PCM
15	Not Connected
16	Not Connected
17	GND
18	Not Connected
19	GND

USB PLAYBACK:

PCM SUPPORT: The USB input supports bit-perfect PCM playback up to 768kHz / 32-bit. No drivers are required for most Windows, macOS, and some mobile devices.

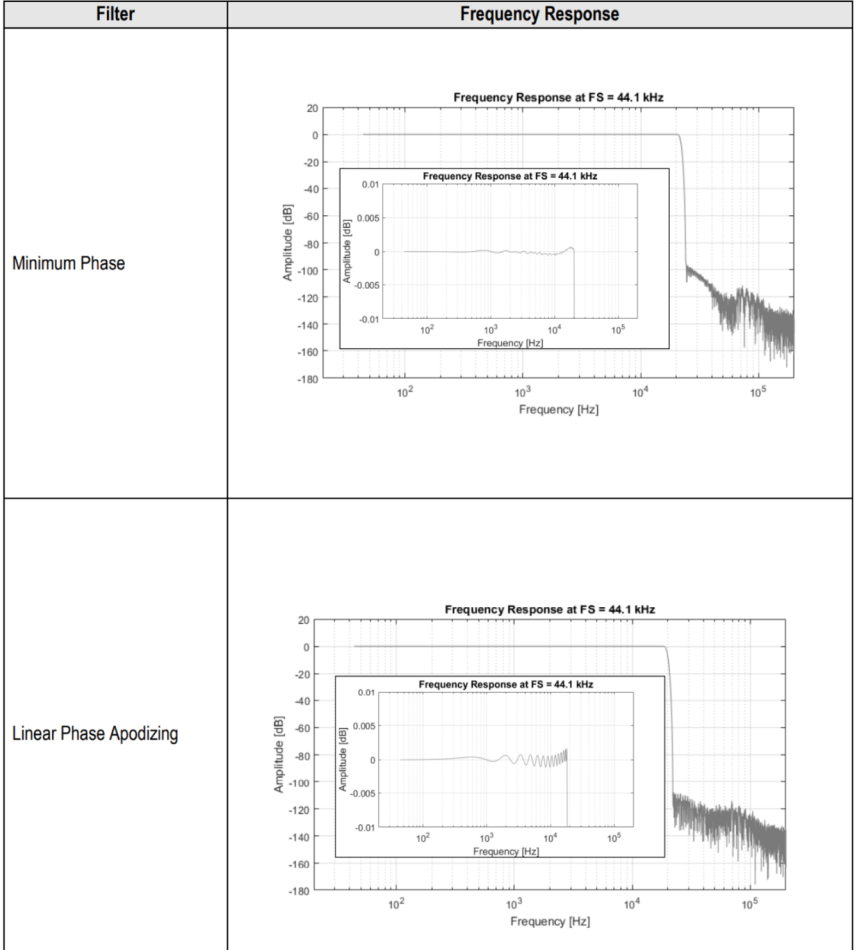
DSD SUPPORT: Preciso supports both DoP and Native DSD formats. DoP (DSD over PCM) is supported up to DoP256. Native DSD is supported up to DSD512 but may require custom setup, such as installing ASIO drivers for Windows or using proxy components like the SACD plugin for Foobar2000. macOS may support DoP natively or through compatible Hi-Res playback applications.

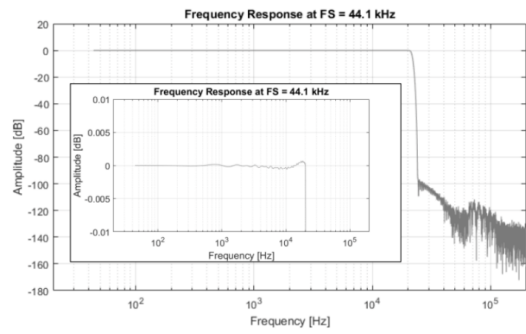
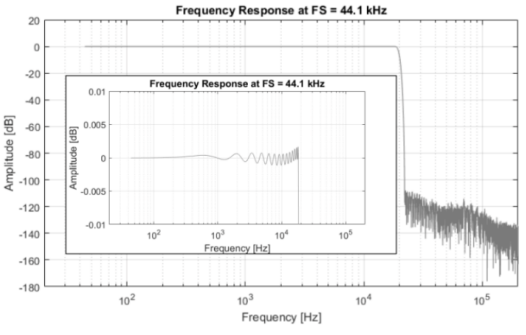
CONNECTION REQUIREMENTS: The USB input must be connected to an active audio source, such as a computer or streamer. USB flash drives are not supported for direct playback.

MQA SUPPORT: Preciso does not decode or render MQA. However, it is fully compatible with software players, such as the TIDAL desktop application, that perform the first MQA unfold, ensuring high-quality playback

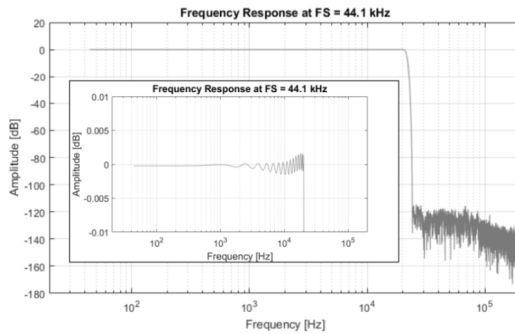
DAC FILTERS SPECIFICATIONS & GRAPHICS

The following frequency responses were obtained from software simulation of these filters. Simulation sample rate 44.1 kHz

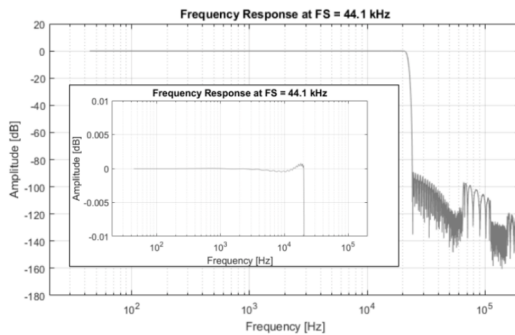


Filter	Frequency Response
Minimum Phase	
Linear Phase Apodizing	

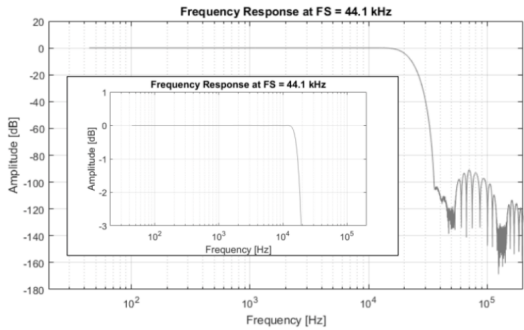
Linear Phase Fast Roll-Off



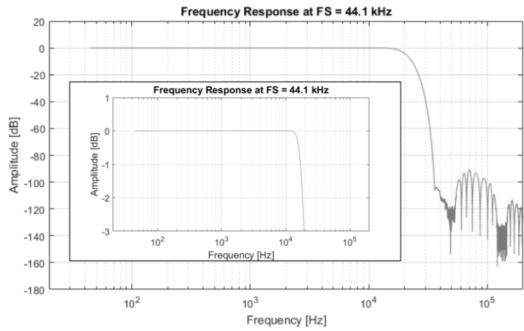
Linear Phase Fast Roll-Off
Low Ripple



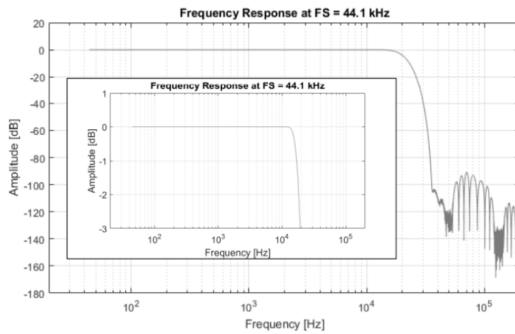
Minimum Phase Slow Roll-Off



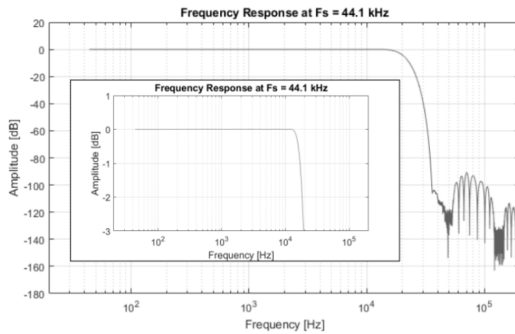
Minimum Phase Slow Roll-Off Low Dispersion



Minimum Phase Slow Roll-Off

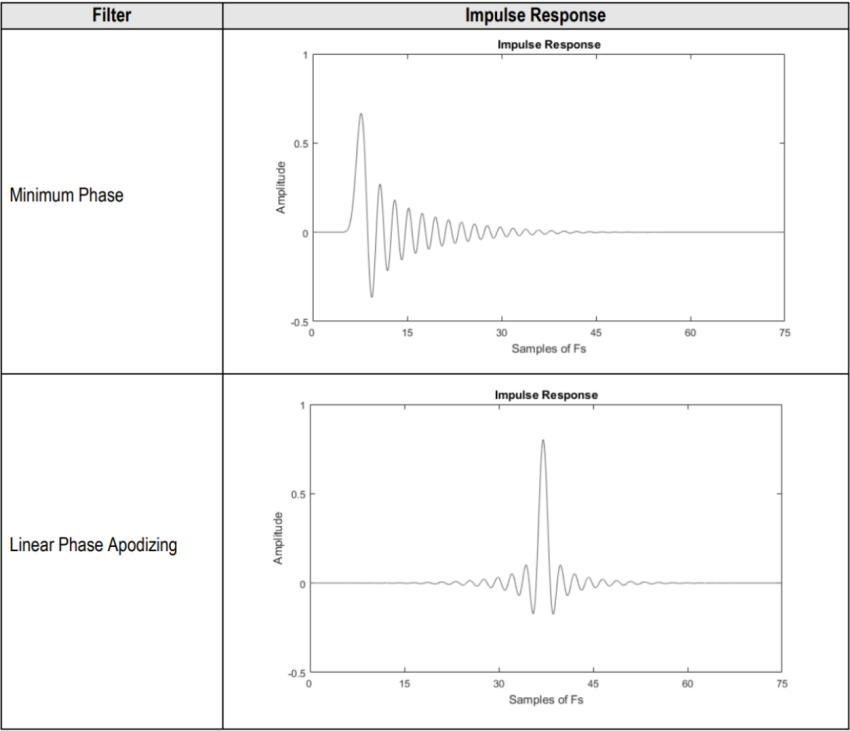


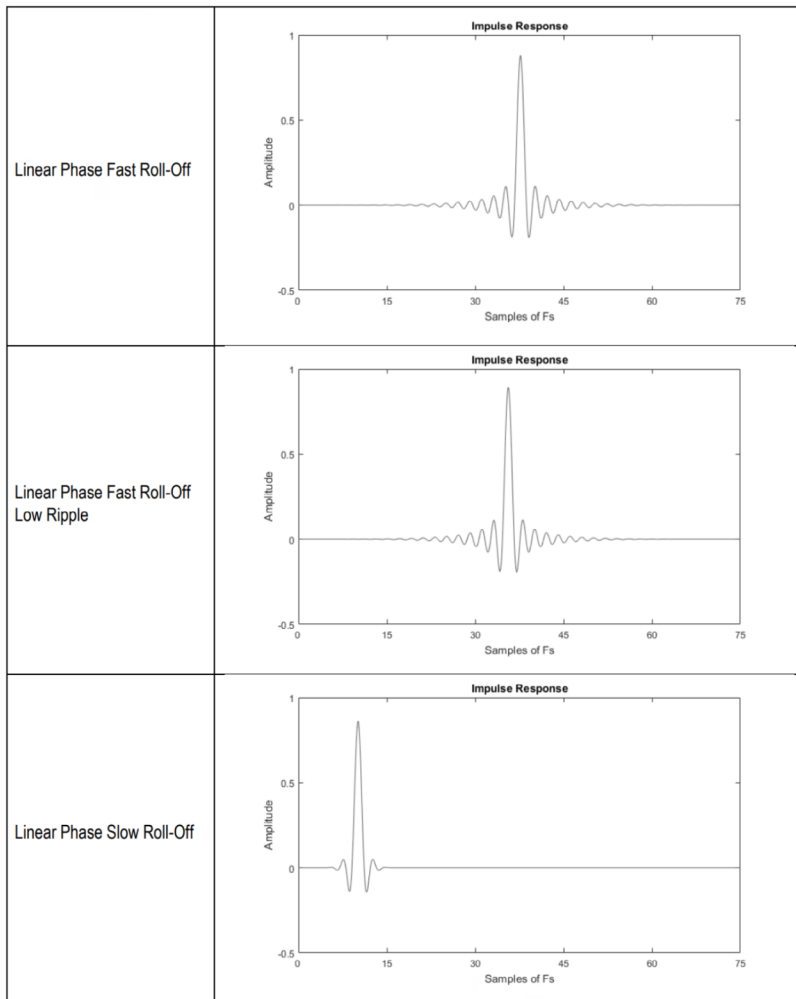
Minimum Phase Slow Roll-Off Low Dispersion

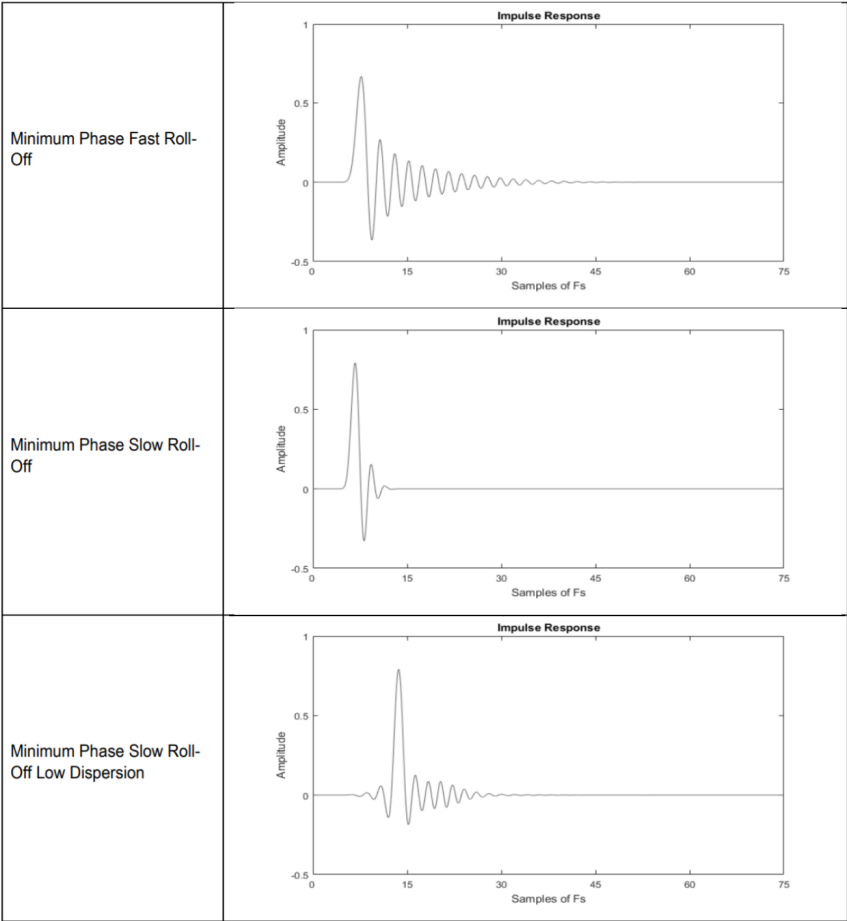


PCM Filter Frequency Response

PCM FILTER IMPULSE RESPONSE: The following impulse responses were obtained from software simulations of these filters. They were measured from external impulse response. The extra sample delay to get the data encoded accounts for the external processing time to serialize the data stream.







PCM Filter Impulse Response

LATENCY CHARACTERISTICS FOR EACH FILTER

Digital Filter	Delay (us) @ FS = 44.1kHz
Minimum Phase (default)	174us
Linear Phase Apodizing Fast Roll-Off	840us
Linear Phase Fast Roll-Off	854us
Linear Phase Fast Roll-Off Low-Ripple	808us
Linear Phase Slow Roll-Off	229us
Minimum Phase Fast Roll-Off	174us
Minimum Phase Slow Roll-Off	152us
Minimum Phase Fast Roll-Off Low Dispersion	310us

PCM FILTER PROPERTIES

Minimum phase

Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band				0.45FS	Hz
Stop band	-96dB	0.55FS			Hz
Group delay		2.91/FS		9.01/FS	s
Flatness (ripple)	0.0012				dB

Linear Phase Apodizing

Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band				0.41FS	Hz
Stop band	-107dB	0.50FS			Hz
Group delay			32.81/FS		s
Flatness (ripple)	0.0027				dB

Linear Phase Fast Roll-off					
Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band				0.45FS	Hz
Stop band	-115dB	0.55FS			Hz
Group delay			33.43/FS		s
Flatness (ripple)	0.0031				dB

Linear Phase Fast Roll-off Low Ripple					
Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band				0.46FS	Hz
Stop band	-97dB	0.55FS			Hz
Group delay			31.37/FS		s
Flatness (ripple)	0.0012				dB

Linear Phase Slow Roll-off					
Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band	-3dB			0.44FS	Hz
Stop band	-90dB	0.75FS			Hz
Group delay			5.87/FS		s
Flatness (ripple)					dB

Minimum Phase Fast Roll-off					
Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band				0.46FS	Hz
Stop band	-99dB	0.55FS			Hz
Group delay		2.91/FS		9.14/FS	s
Flatness (ripple)	0.0023				dB

Minimum Phase Slow Roll-off					
Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band	-3dB			0.43FS	Hz
Stop band	-91dB	0.80FS			Hz
Group delay		2.08/FS		3.56/FS	s
Flatness (ripple)					dB

Minimum Phase Slow Roll-off Low Dispersion					
Parameter	Conditions	MIN	TYP	MAX	UNIT
Pass band	-3dB			0.43FS	Hz
Stop band	-90dB	0.80FS			Hz
Group delay		9.23/FS		9.75/FS	s
Flatness (ripple)					dB

IMPORTANT SAFETY INFORMATION

- Review this user manual carefully.
- Keep this user manual for future reference.
- Heed all warnings.
- Follow all instructions.
- Do not use the Preciso near water or liquids of any sort.
- Clean only with dry soft cloth. Household cleaners or solvents can damage the finish of the Preciso. Please clean and handle the product only after disconnecting from mains power for at least five minutes.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
- Protect the power cable from being walked on or pinched, particularly at the plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use original attachments/accessories.
- Unplug the Preciso during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cable 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.
- The mains plug should be readily available to disconnect the equipment.
- Warning: To reduce the risk of fire or electric shock, do not expose

this apparatus to rain or moisture.

- Do not expose apparatus to dripping or splashing and do not place objects filled with liquids, such as vases, on or near the apparatus.
- AC outlet voltages vary from country to country. Before connecting to the mains, make sure that the voltage in your area meets the voltage requirements printed on the power supply.
- The power supply is used to disconnect the unit from the mains. Make sure that the power supply is easily accessible at all times. Never handle the device or the power supply while your hands are wet or damp.
- Avoid allowing liquids to enter the device or the power supply. Never place any item containing liquid, such as a flower vase on or near the device. Never spill any liquid on or near the device or the power supply.
- Never place any naked flame sources, such as lighted candles on or near the device. The product shall not be used in damp or wet locations, next to a bathtub, sink, swimming pool or any other similar conditions.
- For optimal performance please place the unit on a well vented spot.

WARRANTY

The manufacturer accepts no responsibility for damage caused by not adhering to these instructions for use. Modification or changes to any part of the product by unauthorized persons release the manufacturer from any liability over and above the lawful rights of the customer.

The Volumio Warranty is valid for all new products purchased from an officially authorized Volumio retailer or from our online store (volumio.com). This warranty is non-transferrable and does not apply to third-party or private sales of Volumio products.

All parts defective in material and workmanship are covered under warranty for two (2) years from the date of original purchase by the original owner. Software defects are not covered by Warranty.

The product must be returned in the condition you received it and with the original box and/or packaging, including manufacturer tags where applicable.

We will not accept the return of products damaged due to negligence or abuse. Please include all packaging and accessories prior to shipping.

Please take the time to carefully package your returns. It is the responsibility of the customer to pay costs related to the repair of returned items damaged in shipping due to improper packaging. The customer is responsible for all return shipping costs for new or used products.

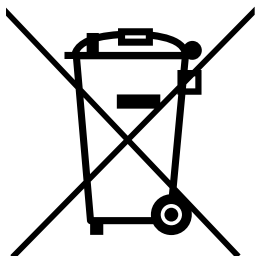
If you feel that your product is eligible for a warranty evaluation due to defect in its materials, operation or workmanship on arrival, please contact our team at: **support@volumio.org** to receive an RMA and return shipping label.

Detailed info on warranty and return policies here:

<https://volumio.com/en/terms-of-service/>

DISPOSAL INFORMATION

For private households:



Information on Disposal for Users of WEEE This symbol on the product(s) and / or accompanying documents means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge. Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product. Disposing of this product correctly will help save valuable

resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point. Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For professional users in the European Union:

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.

For disposal in countries outside of the European Union:

This symbol is only valid in the European Union (EU). If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

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The information contained in this manual is believed to be accurate and reliable. Volumio assumes no responsibility for any error contained in this manual. Volumio assumes no responsibility for any differences between the product mentioned in this manual and the product you may have. The information in this user manual was correct at the time of going to press. The manufacturer reserves the right to make changes to the technical specification without prior notice as deemed necessary to uphold the ongoing process of technical development.

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Volumio Srl
Borgo Albizi 15
50121 Firenze
ITALIA

Volumio.com

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DSD is a registered trademark of Sony Corporation.

All other products and services mentioned may be trademarks or service marks of their respective owners.

Revision 1.0



FCC Warning

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. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note 1:

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.

Note 2:

1. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. The minimum separation generally used is at least 20 cm.

EU DECLARATION OF CONFORMITY

Model Name: Volumio Preciso

EU DIRECTIVES

2014/53/EU, Radio Equipment

2011/65/EU, RoHS

EU DECLARATION OF CONFORMITY

1. Model No. :

Volumio Preciso

2. This declaration of conformity is issued under the sole responsibility of the manufacturer:

Volumio Srl
Borgo Albizi 15
50122 Firenze
ITALY

3. Object of the declaration:

High Precision Dual Mono DAC

4. The object of the declaration described above is in conformity with:

2014/53/UE and 2011/65/EU

5. Where applicable, references to the relevant harmonised standards used or references to the technical specifications in relation to which conformity is declared:

EN Emissions: Radiated
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55032:2015 +/A11:2021
Emissions: Conducted
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55032:2015 +/A11:2021
Emissions: Radio Requirements
ETSI EN 301893 V.2.1.1
Emissions: Radio Requirements
ETSI EN 300328 V.2.2.2
Emissions:
Harmonic current
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN IEC 61000-3-2:2019 + /A1:2021
EN Emissions: Radiated
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55032:2015 +/A11:2021
Emissions: Conducted
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55032:2015 +/A11:2021

Emissions: Radio Requirements
ETSI EN 301893 V.2.1.1
Emissions: Radio Requirements
ETSI EN 300328 V.2.2.2
Emissions:
Harmonic current
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN IEC 61000-3-2:2019 + /A1:2021
Emissions: Voltage fluctuations and Flicker
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 61000-3-3:2014 + /EC:2016 + /A1:2021
Immunity: Electrostatic discharges (ESD)
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55035:2021 + /A1:2021
Immunity: Radio Frequency Electromagnetic Fields
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55035:2021 + /A1:2021
Immunity: Fast transients (EFT-Bursts)
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55035:2021 + /A1:2021
Immunity: Surge
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55035:2021 + /A1:2021
Immunity: Radio Frequency common mode
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55035:2021 + /A1:2021
Immunity: Voltage dips and short interruptions
ETSI EN 301489-1 V. 2.2.3
ETSI EN 301489-17 V. 3.2.4
CEI EN 55035:2021 + /A1:2021
EMF
CEI EN IEC 62311:2020
Electrical Safety
EN IEC 62368-1:2020

6. Where applicable, the notified body (name and number), description of intervention and certificate

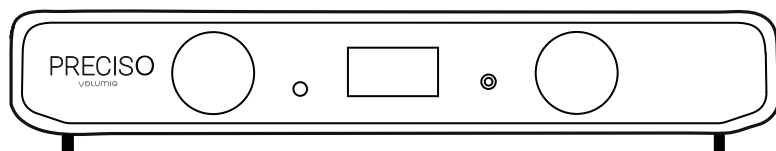
Not applicable, the declaration of conformity is compliant with annex II of the European Directive 2014/53/EU, so the notified body it's not necessary.

Signed for and on behalf of Volumio Srl



Firenze, April, 18, 2025

Michelangelo Gudrise



volumio
THE MUSIC PLAYER

Volumio SRL

Borgo Albizi 15, 50121 Firenze, ITALY

volumio.com