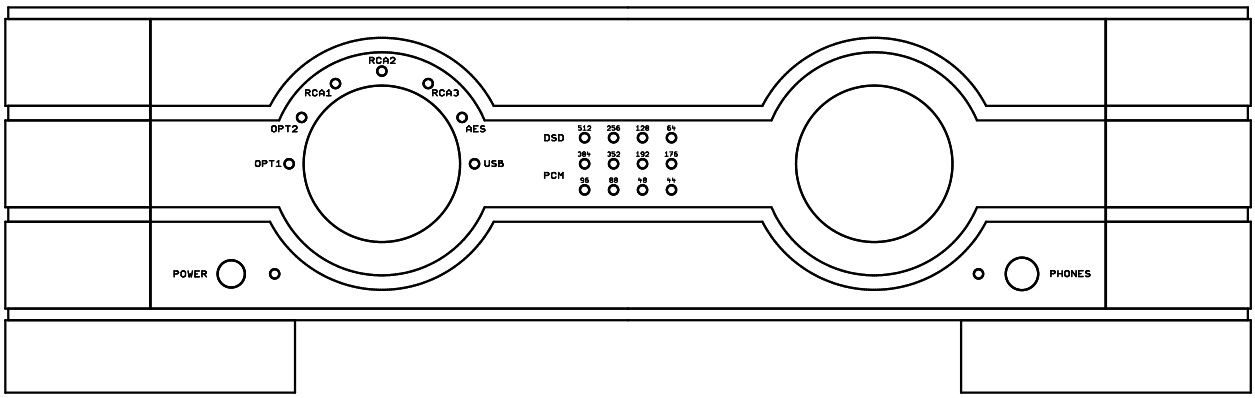
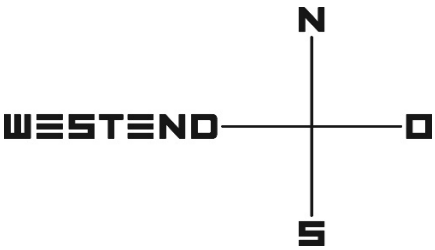
Operating instructions

Tube D/A converter

WESTEND AUDIO SERVUS





Dear Customer

Thank you for placing your trust in us with the purchase of the WESTEND AUDIO SERVUS. You have acquired an innovative, sonically outstanding, and versatile D/A converter.

We understand that you are eager to start listening to music right away. However, we kindly ask you to be patient for a few moments. You will see that it is worth it! Please read these operating instructions carefully before switching on the device for the first time to ensure that you can use it optimally and enjoy it for many years to come.

We have made every effort to include everything you need to know about using your new D/A converter in this manual. If you have any questions that are not answered here, please contact us in writing or by phone. We will do our best to help you.

We are here for you!
Your WESTEND AUDIO team

Declaration of conformity

We confirm that the device to which this operating manual belongs complies with the EC directives valid at the time of printing for obtaining the CE mark.

CE

The necessary tests have been carried out with positive results.

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SAFETY

With the WESTEND AUDIO SERVUS, you own a D/A converter that delivers outstanding sound quality and reliable performance. As long as the device is used as intended, you can enjoy your favorite music without interruption.

The housing and connections are connected to the protective earth conductor so that no dangerous electrical voltages can occur on the outside, even if there is a defect inside the device.

PLEASE NOTE

The WESTEND AUDIO SERVUS is a tube device. Parts carrying mains voltage are located inside the housing. These can cause life-threatening electric shocks if touched. Serious burns are also possible from touching the tubes, which become very hot during operation.

Therefore, in your own interest, please observe the following safety instructions.

- **Service and repair work may only be carried out by trained specialists who must take the appropriate precautions.**

- **We urge you not to open the device yourself for servicing or in the event of a defect, but to contact your specialist dealer or us directly.**

- **We accept no liability for any personal injury or damage to property resulting from unauthorized or improper work on the device.**

1. Unpacking, checking for completeness

The WESTEND AUDIO SERVUS is delivered in a sturdy flight case. This contains the device and accessories. Open the flight case, remove the device, and check that all accessories are included.

The packaging contains:

1 D/A converter WESTEND AUDIO SERVUS
2 One pair of gloves
3 SERVUS RC3D remote control
4 Power cord
5 2 mm Allen key for the cover screws
6 This operating manual

2. Important information about the technology of the WESTEND AUDIO SERVUS

First, a preliminary remark: Unlike semiconductors, tubes are highly "lively" components. Over the course of their service life, they develop in a similar way to good wines: A new tube already gives you a hint of its character when playing music. However, it only develops its full musicality after a certain running-in period. This can take over 100 hours. We therefore ask you to be patient with your SERVUS. We naturally allow all devices to run in for over 24 hours after the final inspection. However, your converter will continue to develop in your listening room and will then unfold its full musicality for a long time to come.

For us as developers, the technical details and considerations are important in order to build a musical and universally usable converter. But for listening to music, they are only a means to an end. If you are not interested in this section, you can safely skip it. Nevertheless, we ask you to read the rest of this manual carefully so that you can relax and enjoy music with the WESTEND AUDIO SERVUS and make the most of its capabilities.

The technology of tube amplifiers is fascinating in itself, and we hope you will be interested in learning more about how we work with tubes. This is especially true because, when designing our devices, we adopt many tried-and-tested features, but in the interest of optimal music reproduction, we also stray from well-trodden paths and introduce innovations that were not available to developers in previous decades.

Like semiconductors, tubes are components whose function follows certain physical laws. Only those who apply these laws correctly and are familiar with the limiting factors can develop a device that reproduces music optimally and presents the listener with a reproduction that is close to the live experience.

We make no secret of our technology and do not try to conceal certain things (which, on closer inspection, are often shortcomings) with voodoo. So before you listen to music, follow us on a journey into the technology of your WESTEND AUDIO SERVUS!

2.1 Mechanics

The housing of the WESTEND AUDIO SERVUS consists of intricately milled solid aluminum parts. Its high mass makes it immune to external vibrations. This ensures that the tubes, which are naturally sensitive to microphony, are decoupled as effectively as possible from air vibrations and structure-borne noise from the surface on which they are installed.

The pure aluminum construction allows for many surface variations, such as anodizing or powder coating in various colors, chrome plating, gold plating, and much more. All of these surfaces are resistant to dirt, scratches, and sunlight. This allows you to customize your desired device from a wide range of options.

2.2 Connections, features

The high-quality RCA and XLR sockets with gold-plated surfaces ensure long-term stable connections to the connected devices.

The elaborately constructed headphone amplifier operates in Class A. The volume is controlled by a high-quality ALPS potentiometer. The output level and output impedance are suitable for almost all headphones available on the market.

The standard infrared remote control allows you to operate all important functions:

- Switching between operation and standby
- Selecting the input
- MUTE/UNMUTE function
- Adjusting the brightness of all display LEDs

2.3 Inputs, D/A conversion, output amplifier

The WESTEND SERVUS has optical, coaxial, and a balanced (AES/EBU) digital input for SPDIF signals up to 192 kHz, as well as a USB input for PCM up to 768 kHz and DSD up to 512 kHz.

The various digital signals are converted to analog by a high-precision converter. The converter (2 x ESS9038) is constructed from 2 stereo A/D converters per channel, which operate in mono mode. PCM signals can be converted up to 768 kHz / 32 bits, DSD is converted natively (without conversion to PCM) up to 512 kHz.

The converted signals pass through a tube stage consisting of two double triodes. The tubes are not operated in anode mode as usual, but as cathode followers. This type of circuit allows for a very low-impedance design and enables an analog bandwidth of over 500 kHz. This ensures that there is absolutely no phase shift in the audible range and that the amplitude remains stable. The low impedance also preserves the high channel separation provided by the converters.

A special circuit design allows the tubes to be operated with a regulated 24-volt anode voltage. This ensures a long service life and extreme long-term stability. In addition, there are no dangerous voltages in the device (except for the mains voltage).

The operating points are set individually for each double triode system via four constant current sources. This makes replacing the tubes completely hassle-free and allows the owner to adapt the sound of the WESTEND SERVUS to their personal listening preferences by selecting suitable tubes.

The tube circuit is followed by highly linear buffer stages with discrete power transistors operating in class A. These transmit the signals to the output sockets with low impedance. Naturally, the balanced and unbalanced outputs are decoupled from each other.

2.4 Headphone amplifier

The WESTEND AUDIO SERVUS has a headphone amplifier that is decoupled from the other outputs. Its volume is adjusted by a low-impedance, precise ALPS potentiometer.

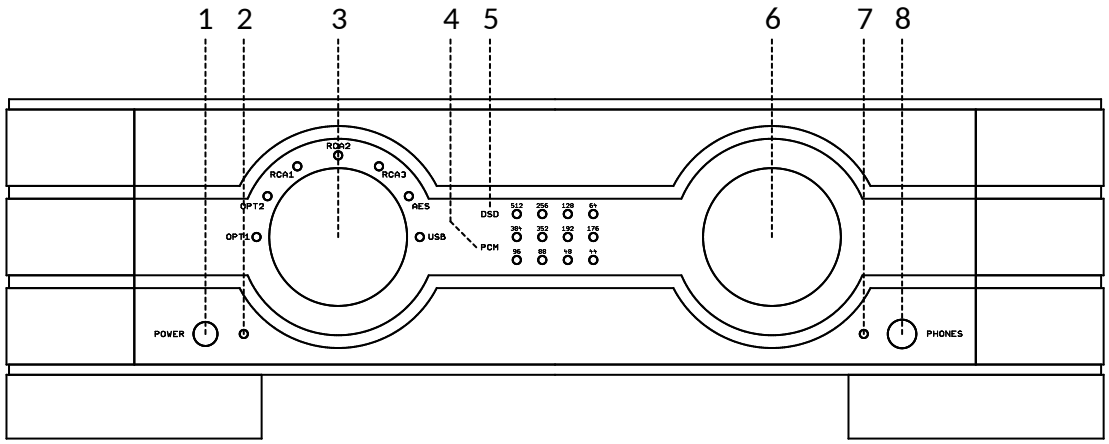
Like the other outputs, the output stages are built with discrete power transistors in Class A technology.

The output level and output impedance are designed so that the SERVUS headphone connection is suitable for almost all headphones available on the market.

3. Controls and connections

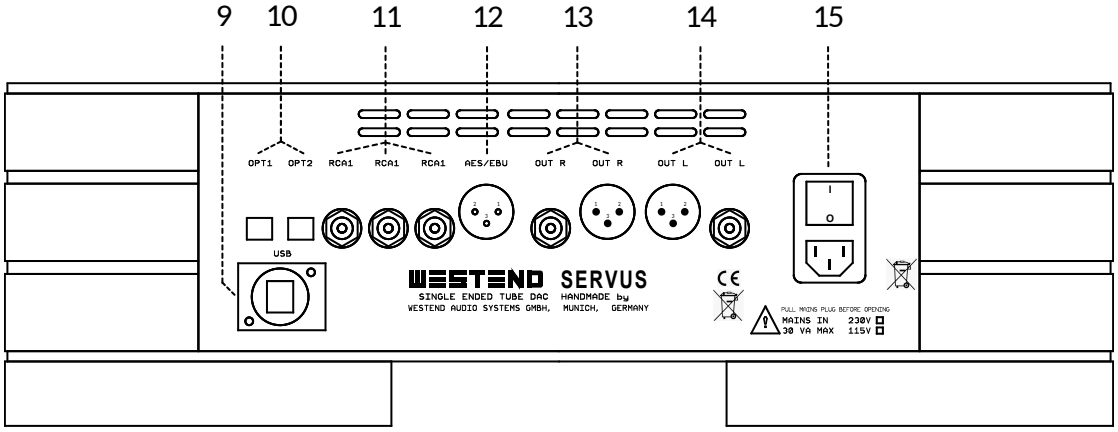
In this manual, the names of the individual controls and connections are followed by numbers that refer to the drawings below.

3.1 Front



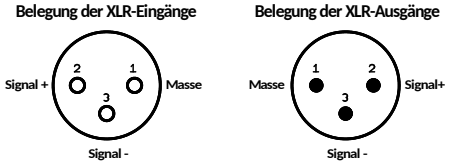
1 On/off button
2 Power indicator LED
3 Input selector switch with indicator LEDs
4 Display LEDs for PCM sampling frequency
5 LED indicators for DSD sampling frequency
6 Volume control for headphone output
7 Infrared sensor (remote control)
8 Headphone jack

3.2 Rear panel

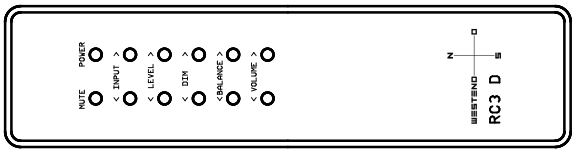


9 USB port
10 Optical inputs
11 COAX inputs
12 Balanced digital input (AES/EBU)
13 Analog high-level outputs RIGHT
14 Analog high-level outputs LEFT
15 Power connection with switch

3.3 Pin assignment



3.4 Infrared remote control



4. Installing the WESTEND AUDIO SERVUS in your system

4.1 Installation and cooling

The WESTEND AUDIO SERVUS does not generate much heat during operation. The cooling openings in the base and rear panel ensure adequate heat dissipation when the device is installed in a free-standing position. Rack installation is possible without any problems, provided that the shelf above the device is at least 5 cm away from the device cover.

The converter should not be placed in direct proximity to a heating source or in a particularly humid environment.

4.2 Power connection

⚠ **CAUTION! Before connecting to the mains, make sure that your mains voltage matches the value marked on the rear panel below the device's mains connection (15).**

⚠ **CAUTION! If other power cables are used, they must be equipped with a protective earth connection for operational safety reasons.**

Set the power switch (15) on the rear of the device to "0" (off) and connect the device to a power outlet using the supplied power cord.

Leave the SERVUS switched off for the time being until all cable connections to the rest of the system have been made.

4.3 Connecting digital sources

4.3.1 Connecting SPDIF digital sources

Sources with SPDIF signals (CD players, TVs) can be connected to the optical (10), coaxial (11) or balanced AES/EBU (12) input.

NOTE: If you want to convert the TV sound via the SERVUS, make sure that the output format of the digital output is set to "linear PCM". The SERVUS cannot convert other signals, especially surround-encoded signals.

4.3.2 USB connection

The WESTEND AUDIO SERVUS has a USB port (9) that can be used to convert high-resolution formats (PCM up to 768 kHz, DSD up to 512 kHz). This connection is suitable for connecting streamers with a USB output or for connecting to a PC.

Streamers and MAC computers usually recognize the SERVUS connected via USB automatically. For WINDOWS-based PCs, it may be necessary to install a special driver.

Connect the USB input of the SERVUS to your streamer or computer using a suitable USB cable that is not too long (the input of the SERVUS requires a USB B plug).

NOTE: Always connect the SERVUS directly to the source device. Using a USB hub or USB switch may cause malfunctions.

If your PC does not recognize the connected converter, a special driver must be installed. In this case, please contact WESTEND AUDIO directly. We will be happy to assist you.

4.4 Connection to the preamplifier/integrated amplifier, channel assignment

Connect the analog outputs (13 / 14) of the SERVUS to a high-level input on your preamplifier or integrated amplifier. When connecting your components, make sure that the channels are assigned correctly according to the labels on the rear panel.

RCA and XLR outputs can be used independently of each other, allowing parallel connection to two amplifiers or one amplifier and one recording device.

The assignment of the XLR sockets is explained in chapter 3.3 "Pin assignment."

4.5 Headphone output

Headphones with a 6.3 mm jack plug can be connected to the designated output socket (8). The volume control (6) only affects the headphone output; the other outputs cannot be adjusted.

NOTE: When headphones are plugged in, the rear analog outputs (13, 14) are switched off.

5. Operation

5.1 Switching on and off

Once all connections have been made, set the rear power switch (15) to "I." The power LED (2) will now light up to indicate that the device is in standby mode.

Press the "POWER" button (1) on the device or on the remote control. The operating indicator LED goes out, the device switches on and initially heats up the tubes. The LEDs around the input selector switch (3) and the frequency indicator LEDs (4, 5) light up one after the other. After a warm-up time of about 15 seconds, the anode voltage is switched on and the operating indicator LED (2) lights up.

The tube operating points are now stabilized and the DAC is parameterized. After another 30 seconds, the SERVUS is ready for operation. The input last selected before switching off is active, and the corresponding LED (3) lights up. When a signal is present, the LED indicating the current sampling frequency of the input signal (4, 5) also lights up.

To switch off, press the "POWER" button (1) on the device or on the remote control again. The WESTEND AUDIO SERVUS is now in power-saving standby mode. During standby, the power indicator LED (2) lights up.

⚠ **ATTENTION! The device is not completely disconnected from the mains in standby mode. To avoid damage, we therefore recommend that you disconnect your amplifier from the mains by pulling out the mains plug during thunderstorms or if you are away for a longer period of time.**

5.2 Selecting the program source

You can set the program source by turning the selector switch (3). The corresponding LED in the circle around the source selector switch lights up.

To select the source using the remote control, use the "<INPUT>" buttons.

5.3 Display of the sampling frequency

Depending on the signal, one of the LEDs "PCM" (4) or "DSD" (5) lights up and indicates the sampling rate of the input signal.

NOTE: For technical reasons, the sampling frequency is always displayed for USB, even if no signal is present. This is because the USB receiver retains the last current frequency even if the signal connection is interrupted. The frequency display is updated as soon as a valid signal is present.

5.4 MUTE function

If you want to mute the SERVUS briefly (e.g., to answer a phone call), press the MUTE button on the remote control. The device is now muted and the operating indicator LED (2) also lights up. Pressing the MUTE button again reactivates the outputs.

5.5 Headphone operation

The SERVUS D/A converter is equipped with a high-quality, discrete headphone stage. It is designed to work optimally with almost all headphones available on the market.

Connect the headphones to the 6.3 mm jack socket. This will mute the rear analog outputs. The volume is adjusted using the potentiometer (6).

To connect headphones with 3.5 mm plugs, you will need an adapter available from retailers.

5.6 Adjusting the display brightness

The brightness of the source and frequency display LEDs (3, 4, 5) and the operating display LED (2) can be adjusted separately. The WESTEND AUDIO SERVUS permanently stores the set values, even if it is later disconnected from the mains.

5.6.1 Brightness of the source and frequency LEDs

Press and hold the "<DIM>" buttons on the remote control simultaneously. All LEDs on the front panel will light up except for the operating indicator LED, and you can set the desired brightness.
NOTE: The WESTEND AUDIO SERVUS must be in operation (not in standby) for this setting.

5.6.2 Brightness of the operating indicator LED

As described above, the brightness can be adjusted using the "<DIM>" buttons on the remote control: Hold down one of the buttons and adjust the brightness of the LED to the desired level. You can also press the button several times in quick succession.
NOTE: The brightness of the operating display LED (2) can only be adjusted when the WESTEND AUDIO SERVUS is in standby mode.

5.7 Remote control

The remote control has the following functions:

- POWER button: On/off, chapter 5.1
- <INPUT> buttons: Input selection, chapter 5.2
- MUTE button: Mute (MUTE button) Chapter 5.4
- <DIM> buttons: Brightness setting for the display LEDs Chapter 5.6

The remaining buttons are intended for future devices and have no function on the SERVUS.

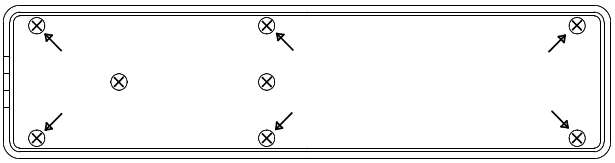
5.8 Auto standby function

The SERVUS switches itself to standby mode if no music has been played for more than 30 minutes. This function is designed to save energy.

You can deactivate or activate the auto standby function yourself as follows:
Switch off the power, press and hold the POWER button and switch on the power (15).
The operating LED indicates the status of the auto standby circuit (as long as the button is pressed):
Steady flashing 0.5 sec on / 0.5 sec off: The auto standby function is active
Flashing 0.1 sec on / 0.9 sec off: The function is deactivated.
The selected setting remains permanently stored until the next change.

6. Maintenance and care

6.1 Replacing the remote control batteries



Bottom view

If the range of the remote control decreases significantly, new batteries must be inserted. Remove the 6 screws marked with arrows on the bottom (CAUTION: do not open the two middle screws without arrow markings!). Now turn the remote control over and remove the base with the circuit board. Remove the used batteries and replace them with two new ones of the same type (3V lithium button cell, type CR2032). When inserting the batteries, make sure that the polarity is correct (mark "+" facing up), otherwise the electronics may be damaged.

6.2 Care of the housing

The surface and printing of the housing are largely scratch-resistant. The bare, nickel-plated or powder-coated aluminum parts of the housing and the chrome-plated knobs are best cleaned with a microfiber cloth sprayed with a little window cleaner.

Please do not apply pressure and use clean cloths to avoid scratches.

⚠ ATTENTION!

- **Be sure to switch off the WESTEND AUDIO SERVUS and disconnect it from the power supply before cleaning.**
- **Do not use cloths that are too damp. Under no circumstances should liquid get inside the device.**

7. In case of an emergency – troubleshooting and fault elimination

Your WESTEND AUDIO SERVUS has been carefully assembled and tested by us. The devices only leave our premises after a 24-hour test run followed by a final inspection. Nevertheless, it is possible that something may not work. However, alleged defects can often be traced back to incorrect operation, incorrect cabling, or a connected third-party device and can be remedied without repair. Before contacting us, please check the following list to see if you can fix the malfunction yourself. If you cannot find the answer, please contact us by phone or email before sending in the device. We will be happy to help you.

7.1 No music playback

- The MUTE function is active. Press the MUTE button on the remote control.
- Accidental switch to standby. Press the POWER button (1).
- After about 30 minutes without a music signal, the device switches to standby automatically to save energy. (see section 5.9)
- Headphones are plugged in, then the rear outputs are switched off.
- If none of the LEDs on the front panel light up after switching on, the mains fuse may be defective. As this is usually caused by a defect in the mains transformer or the amplifier electronics (e.g. as a result of a lightning strike), please contact your dealer.

7.2 Humming during music playback

- General: Ground loop caused by antenna amplifier or postal wiring. Check whether the humming stops when you disconnect the antenna cable from the tuner (if connected, also from the TV, video recorder, and SAT receiver at the same time!). If this helps, a shield current filter must be inserted into the antenna cables of the connected receivers. (Available from your dealer).
- Incorrectly soldered XLR cable. For correct assignment, see section 3.3.

7.3 Undefined sound

Poor stereo imaging or a lack of spatial depth are usually caused by incorrectly soldered XLR cables. This effect can also be caused by speakers with reversed polarity.

- Check your XLR cables for correct assignment (see section 3.3).
- Check the correct polarity of the speakers.

7.4 Remote control not working

- The batteries in the remote control transmitter are empty. See section 6.1
- There is no direct line of sight between the remote control transmitter and the device (signals are transmitted via infrared light).

8. Warranty

We have taken the utmost care in manufacturing your device and have subjected it to extensive testing. In the unlikely event that a fault occurs that you or your dealer cannot remedy, we will repair your device free of charge within the statutory warranty period of 24 months. Please understand that we would like to draw your attention to the following warranty conditions to ensure smooth processing. Thank you very much!

The warranty covers materials and labor; transport costs incurred after six months from the date of purchase shall be borne by the owner.

Regardless of the country in which you purchased the device, German law applies to the warranty and guarantee. Should any of the following provisions be legally invalid, it shall be replaced by a provision that complies with the law.

Prerequisites for your warranty/guarantee claim are:

1. The device must have been purchased from a specialized dealer authorized by WESTEND AUDIO SYSTEMS GmbH. Devices from other sources will not be repaired, even for a fee.

2. The dealer's purchase receipt serves as proof of purchase.

3. The defect must not have been caused by improper handling or tampering with the device.

4. The device must be returned to us in its original packaging. If this is not the case, we are entitled to refuse acceptance. In any case, we accept no responsibility for transport damage.

If you no longer have the original packaging, please contact your specialized dealer. On request, we can also provide you with packaging directly. However, we will have to charge a fee for this.

5. The returned device must be accompanied by a brief description of the fault and a telephone number or email address where we can contact you if we have any questions.

6. In cases of doubt, we reserve the right to request a copy of the purchase invoice. In the event of an unauthorized return or if there is no damage to the device, we reserve the right to charge a processing fee to cover our costs.

NOTE: If you are not shipping your device from Germany, please ensure that you have the proper export documents. We cannot accept any costs incurred due to improper export, failure to declare, or customs clearance. If the documents are not in order, we reserve the right to return the shipment at your expense.

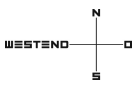
If you purchased your device from a dealer outside Germany, please contact them or the responsible importer for warranty processing.

9. Technical data and dimensions

Digital inputs	
2 x SPDIF optical	TOSLINK
3 x SPDIF COAX	75 ohms
1 x AES/EBU (XLR)	110 ohms
1 x USB	USB-B
Digital formats	
SPDIF OPTO (TOSLINK)	32 kHz – 96 kHz / 24 bit
SPDIF COAX	32 kHz – 192 kHz / 24 bits
USB PCM	32 kHz – 768 kHz / 32 bits
USB DSD	64 – 512 kHz
Converter	2 x ESS9038 (dual mono)
High-level outputs	
Output RCA (0 dB)	2.6 V
Output impedance RCA	50 ohms
Signal-to-noise ratio RCA (0 dB)	104 dB / 107 dB(A)
Output voltage XLR (0 dB)	2.6 V
Output impedance XLR	110 ohms balanced
Signal-to-noise ratio XLR (0 dB)	105 dB / 108 dB(A)
Frequency response (depending on sample rate)	<10 Hz - > 100 kHz
THD & N (0 dB, depending on tube configuration)	0.05 – 0.3
Headphone output (adjustable)	
Connection	6.3 mm stereo jack
Output	15 V max
Output	47 ohms
Frequency response (depending on sample rate)	<10 Hz - > 100 kHz
Tube configuration	
Standard	2 x ECC 81
Optional	2 x ECC 82, 2 x ECC83
Operating point setting	Automatic via power sources
General	
IR remote control	All functions except volume
Display	LEDs, dimmable via remote control
Operating Voltage	115V / 230V, 50 / 60 Hz (adjustable)
Power	Operation: 20W, standby < 0.5W
Dimensions (WxHxD)	430 x 400 x 135 mm
Weight	10 kg, (chrome / gold more)

Issue date: 01.07.2022

Errors, changes to data and equipment reserved.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