BOX•DESIGN

INSTRUCTIONS FOR USE
Pro-Ject DAC Box RS2

Dear music lover,

thank you for purchasing a Pro-Ject Audio Systems D/A converter.

In order to achieve maximum performance and reliability you should study these instructions for use carefully.

 Warning of a hazard for the user, the unit or possible misuse

 *Important notice*

Safety instructions

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 letting liquids 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 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.

Connectors
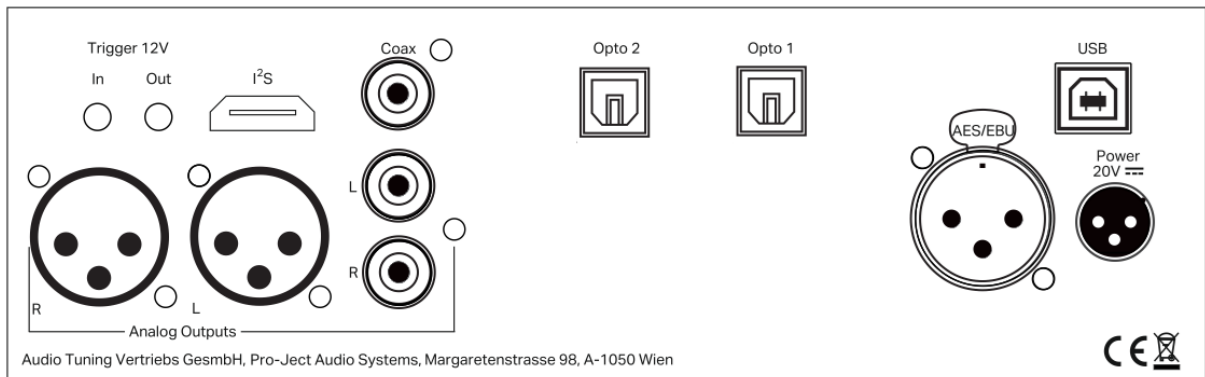
*Make all connections whilst the preamplifier is **disconnected from the power supply**.*

Take care to connect the left and right channels correctly. The right channel is usually marked red, the left channel black or white.

Never use any other power supply than the one supplied with the unit except of Pro-Ject Power Boxes which can replace original power supplies.

Analogue outputs

The unit offers following analogue output sockets:
1 pair of XLR connectors for balanced output
1 pair of RCA connectors for unbalanced output

Inputs

USB

is dedicated to connection to a Computer. Connect the USB-input of the unit (unit must be switched on) to a free USB-socket on your computer and turn it on/make sure it is powered on.

Driver installation (Windows® operating systems only)

☞ *Windows 10 operating system supports 24/192 playback (wasapi), installation of a supplied driver (ASIO) is not necessary. Driver is however required for playing DSD files.*

For Windows® operating systems a USB driver (supplied on CD) has to be installed. Insert the included CD into the drive of you PC and follow the instructions.
Complete the installation by restarting the computer.
After installing the driver, some settings have to be checked/done.
For example - Windows 7® and newer operating system:

→ Control Panel → Hardware and Sound → Sound → Playback:
select **Speaker/Project DAC Box RS2 USB 2.0 Audio Out**
→ Properties → Supported formats: **make sure nothing is assigned**
→ Level → Sound: setting must be **100**
→ Enhancements: **disable all enhancements** → Advanced → Default Format: set to **studio quality 24/192**

☞ *Please note: Connection should be made to an USB-socket of your computer directly. Connecting to USB-hubs or switches can cause problems.*

S/PDIF inputs:
DAC Box RS2 offers 4 digital S/PDIF inputs: **Opto1** and **Opto2** are optical inputs, **Coax** is coaxial input and **AES/EBU** is balanced input.

I2S
This input is dedicated for connection with Pro-Ject CD Box RS2 using HDMI cable. This connection also provides Masterclock for CD player

Mains power connection and methods to switch the unit on and off
Connect the low voltage plug from the power supply to the **Power 20V DC** socket of the preamplifier **before** connecting the power supply to the mains. The unit can be switched on and off by using 2 different methods which are equal in priorities.

⚠ *We recommend to set the volume control to minimum, prior to switch on.*

1. Using front pushbutton to switch on or into standby
The pushbutton on the front panel of the unit alternately turns the power on or returns it to standby mode. The blue LED on the front panel shows that the unit is powered on. If a trigger signal is present the unit can't be switched off by the pushbutton.

2. Remote power on - triggers
The unit can be switched on via other Box Design components when a 12V trigger voltage is present at the 2.5mm socket marked **Trigger Input.** Special power-on cables (polarity ⁻–◉–⁺) in diverse lengths are available as accessories. The remote power-on signal can be relayed to further units via the **Trigger Output** socket. When the 12V trigger signal is switched off, the unit will also switch off.

⚠ *Trigger cables may only be plugged into the sockets when the unit is disconnected from the power supply and from the mains. Failure to do so may result in damage of the unit.*

Remote control
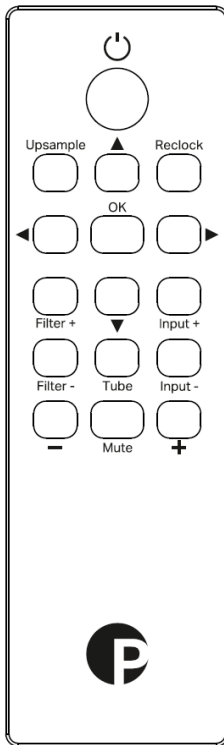
POWER turns the unit on or back into standby

Mute activates and deactivates mute. If mute is engaged, the blue LED above the ON/OFF switch flashes.

Upsample see Upsample article

Reclock see Reclocking article

Left arrow step back in menu

Right arrow enters into a menu or a subpage of menu

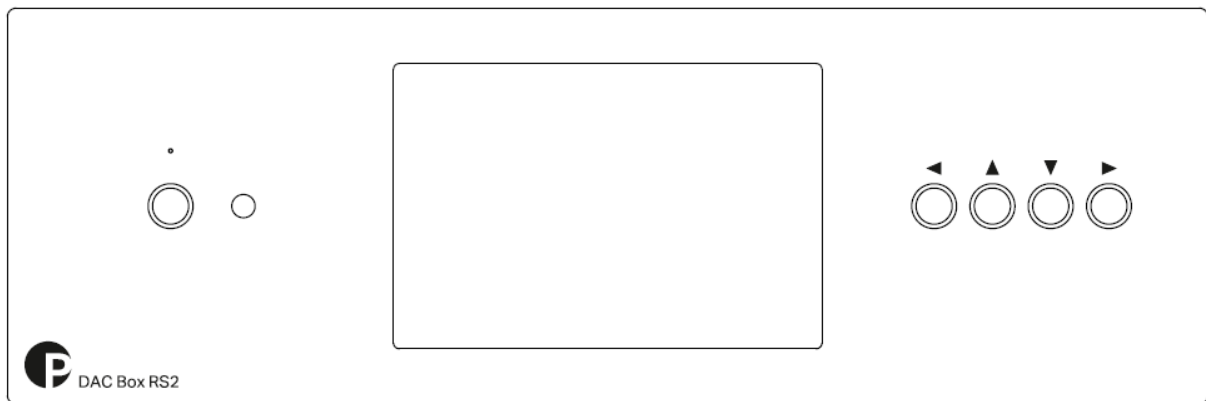**Up and Down arrow** browse in menu up and down

OK confirms settings

Filter +/- selects digital filters

Input +/- selects inputs

Tube engage/disengage tube stage

+/- not used

Front panel

Menu

Use any button on the right side of the unit to enter Menu, then use buttons **Up** and **Down** to browse in Menu, button **Right** enters subpage or activate selected item, button **Left** returns to previous page or steps out of Menu.

☞ Display returns back to main page after 10s of inactivity.

INPUT : Direct access to inputs. See separate chapter about inputs.

UPSAMPLE :
    OFF: upsampling inactive
☞ Recommended for playing native sample rates. In such case is also recommended to disable cross fade and start/stop fade if available in player. Setting is overridden to ALL When playing MQA files.

    ALL :all data from digital inputs are upsampled to 384/352kHz

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RECLOCKING : is a technology which changes internal clock synchronization in the unit. Overall effect on jitter is insignificant, however in spectrum analysis of signal are visible changes mainly at higher frequency sampling rates (384/352 and above) which could affect listener experience.

TUBE STAGE: OFF, ON (after start of the unit - tube symbol is blinking). If the unit is turned on for the first time, Tube stage is OFF, change of setting to ON needs 30s heat up period. If the tube stage is set again to OFF, it remains heated so set again to ON will result in immediate switch to tube stage. If the unit is turned off with Tube stage setting ON- new start of the unit will automatically activate also Tube stage (in this case 30s heat up period is needed). If the unit is turned off with Tube stage setting OFF, then after start of the unit Tube stage remains OFF.

DIGITAL FILTER

☞ *When playing MQA files, user´s filter setting is not active, MQA filter is always used. MQA filter is custom made for our DAC to ensure best possible MQA experience*

Filter	Filter name	Remarks
1	Linear phase fast	Pre and post echo
2	Linear phase slow	Minimal echo, original sound
3	Minimum phase fast	No pre echo, more post echo than linear phase filters
4	Minimum phase slow	No pre echo, more Post echo,
5	Apodizing fast filter	Pre and post echo
6	Corrected phase fast	Low pre echo, more post echo than filters 1,2 and 5
7	Brick wall filter	Pre and post echo, no phase shift
8	Oversampling bypass	The oversampling FIR filter is bypassed and source data directly into the IIR filter. The audio input is automatically oversampled at 8 x fs rate to have the same IIR filter bandwidth as PCM audio sampled at fs rate. UPSAMPLE setting is overrided to ON

ANALOG FILTER

LPF 25kHz : 25kHz low pass filter active

LPF 50kHz/90kHz: 90kHz low pass filter active (50kHz when Tube stage is ON)

LPF Auto : 50/90kHz filter is always active except of playing DSD64 files when 25kHz filter is activated.
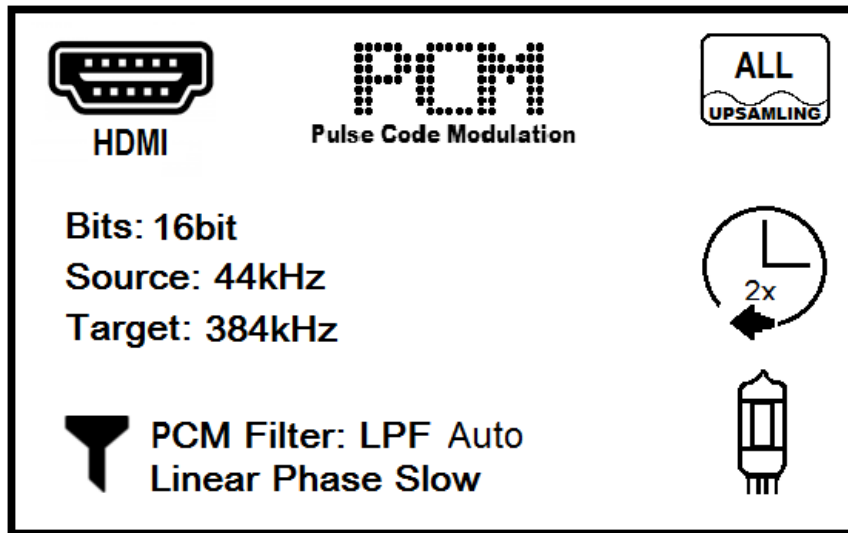
MAINTENANCE

FACTORY RESET - deletes all paired devices, set all to default (except of selected input)

BRIGHTNESS - adjust display brightness in 10 steps

THEME - invert colours: black background + white font and vice versa

INFO - license and hw+sw versions informations

an example of main page of display with explanation:

HDMI (icon) / **PCM** Pulse Code Modulation / **ALL UPSÄMLING**	HDMI input (CD Box RS2T)
	PCM data on input
	Upsampling active
Bits: 16bit	Bit depth of incoming signal: 16bit
Source: 44kHz	Sampling frequency of incoming signal 44kHz
Target: 384kHz	sampling frequency of converted signal 384kHz
PCM Filter: LPF Auto Linear Phase Slow	Filters set to LPF Auto and Linear Phase Slov
(clock 2x icon)	Reclocking set to 2x
(tube icon)	Tube stage active

Replacing batteries

Proceed as follows:

- Unscrew 4 screws on the back side of remote using supplied Torx key and remove whole back side
- Replace the battery - Make sure the battery is the right way round !
- Put the back side on its place and screw all screws back

Battery type: 1 x CR2032 / 3V or 1 x CR2025 / 3V

👉 *Do not dispose the batteries as ordinary domestic refuse. Please dispose your exhausted batteries at the appropriate collection sites - usually located at supermarkets and drugstores.*

Roon Tested   roon tested

Roon's fundamental goal is to provide a consistently stellar user experience. This goal doesn't stop at the software, the experience extends all the way down to the audio playback hardware, regardless of manufacturer.

As a *Roon Tested* partner, *Pro-Ject Audio Systems* has provided equipment to Roon for testing with a variety of different operating systems and computers, and shared information about its design and capabilities.

We have a direct relationship with Roon and in many cases, the Roon support team has our devices on hand, so you can confidently choose to use Pro-Ject Audio Systems hardware with Roon.

MQA (Master Quality Authenticated)

MQA is an award-winning British technology that delivers the sound of the original master recording. The master MQA file is fully authenticated and is small enough to stream or download.
Visit mqa.co.uk for more information.

Pro-Ject DAC Box RS2 includes MQA technology, which enables you to play back MQA audio files and streams, delivering the sound of the original master recording.

The light indicator next to MQA logo is green or blue to indicate that the unit is decoding and playing an MQA stream or file, and denotes provenance to ensure that the sound is identical to that of the source material. It glows blue to indicate it is playing an MQA Studio file, which has either been approved in the studio by the artist/producer or has been verified by the copyright owner.

Technical data

Frequency response:	20Hz - 20kHz (-0,1dB, -0,2dB)
Output voltage:	2,0V RMS - 0dBFS on digital inputs /RCA output
	4,0V RMS - 0dBFS on digital inputs /XLR output
Sampling rates:	32/44,1/48/88,2/96/176,4/192/352,8/384/705,6/768 kHz
DSD support:	DSD64, DSD128, DSD256 and DSD512 (DoP, DSD512 native)
MQA support:	full MQA decoding by hardware from all digital inputs
Dynamic Range:	124dBA
Channel separation:	> -117dB at 10kHz@0dB
SNR (20Hz - 20kHz):	> 113dB at 0dB
THD	0.0005% solid state output/ 0.03% tube output, @ 2V RMS, 1 kHz
THD (20Hz - 20kHz):	< 0.0008% @ 0 dB, 2V RMS THD+N (20Hz - 20kHz): < 0,001%
USB data transfer:	Asynchronous, DSD DoP, DSD Native DSD512 support and PCM up to 32b/768kHz
S/PDIF optical input:	2 x (24bit / 192kHz)
S/PDIF coaxial input:	1 x (24bit / 192kHz)
AES/EBU	1 x (24bit / 192kHz balanced)
I²S:	for connection with CD Box RS2 T using supplied HDMI cable
Master clock output	16.9344 MHz for CD Box RS2 T
Digital to Analogue converter:	2 x ESS9038Q2M 32-bit (dual mono)
Filter settings:	8x digital filter
Output buffer	discrete and balanced, tube and solid state
Tubes	4 x 6922EH
Display	3,5" TFT module, 480x320, 360 cd/m2, contrast ratio 700, IPS technology
Analog outputs:	
Variable balanced output	1 x XLR connectors
Variable unbalanced output	1 x RCA
Trigger sockets:	2 x 2,5mm 2-pole (1 x Trigger In, 1x Trigger Out)
Outboard power supply:	20V/3A DC, suitable for your country's mains supply
Power consumption:	max. 1A DC, <0,5W in standby
Dimensions W x H x D (with sockets):	206 x 72 x 222 mm
Weight:	1520 g without power supply

Service

Should you encounter a problem which you are not able to alleviate or identify, please contact your dealer for further advice. Only if the problem cannot be resolved there, the unit should be sent to the responsible distributor in your country.

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.*

Copyright, trademarks

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The information 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.

Waste from Electrical and Electronic Equipment (WEEE): This directive mandates the collection and recycling of electronics and component materials in order to reduce the amount going to landfills. Outside North America, when the user decides to discard this product, it must be sent to a separate collection facility for recycling. Please contact your point of purchase for more details.

Declaration of Conformity

We, declare under our responsibility that the product is in conformity with the provisions of Directives:
2014/35/EU including amendments
2014/30/EU including amendments
2014/53/EU including amendments

The following harmonised standards were applied:
Health: EN62479:2010
Safety: EN60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013, EN62368-1:2014/A11:2017, EN61558-1:2005/A1:2009, EN61558-2-16:2009/A1:2013
EMC: EN301489-1 V2.2.0: 2017-03, EN301489-17 V3.2.0:2017-03, EN55032:2015, EN55035:2017, EN61000-3-2:2014, EN61000-3-3:2013
Radio Spectrum: EN300328 V2.1.1 (2016-11)

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