WEISS

DAC204/DAC204-MK2
OPERATING MANUAL



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INTRODUCTION

Congratulations on purchasing the Weiss DAC204/DAC204-MK2 D/A Converter!

The DAC204 is a stereo 24 bit / 192kHz D/A converter which supports the following conversions:

- AES/EBU or S/PDIF on RCA to analog
- AES/EBU or S/PDIF on Toslink to analog
- USB to analog
- USB to AES/EBU on XLR, RCA, BNC

The MK2 version features a newly upgraded DAC board with an ES9028PRO chip and a near-zero-ohm output stage, further enhancing performance with difficult cables or low-impedance headphones. In terms of connectivity and all other features, it is identical to the initial version.

There also is the DAC205/205-MK2 model available which does not have the USB related features.

Features

- **Inputs:** There are two AES/EBU (S/PDIF) inputs on RCA and Toslink (optical) connectors. The sampling frequencies supported are 44.1, 48, 88.2, 96, 176.4 or 192 kHz.
  In addition there is a USB input which supports sampling frequencies of 44.1, 48, 88.2, 96, 176.4, 192, 352.8, 384 kHz plus DSD64 and DSD128.

- **Outputs:** The outputs are balanced on XLR connectors and unbalanced on RCA connectors. The XLR outputs have a 6dB higher level than the RCA outputs. The XLR outputs (XLR pin 2 or pin 3) must not be shorted to ground, i.e. there is no servo circuitry implemented.
  In addition there are three digital outputs with AES/EBU format on XLR, RCA and BNC connectors.

- **Output Level:** Two switches allow to set 4 different output levels at 10dB steps.

- **Sampling Rates, Word-length:** 44.1, 48, 88.2, 96, 176.4, 192, 352.8, 384 kHz at up to 24 Bits are supported. Plus DSD64 and DSD128.

- **Jitter suppression:** Several signal reclocking schemes are combined for a high jitter attenuation.

- **Converters:** Oversampling sigma delta D/A converters are used. Four D/A Converters per audio channel are operated in parallel for enhanced signal to noise performance.

- **Power Supply:** An external power supply is used. The required voltage is between 6V and 9V.

- **Front-panel elements:**

  - A power on/off switch.

  - An input selection switch.

  - 8 LEDs for sampling frequency indication for the USB input.

  - Two switches for DSD to PCM conversion settings selecting the sampling frequency and the word-length at the output of the converter.

- **Back-panel elements:**

  - Analog outputs on XLR and RCA connectors.

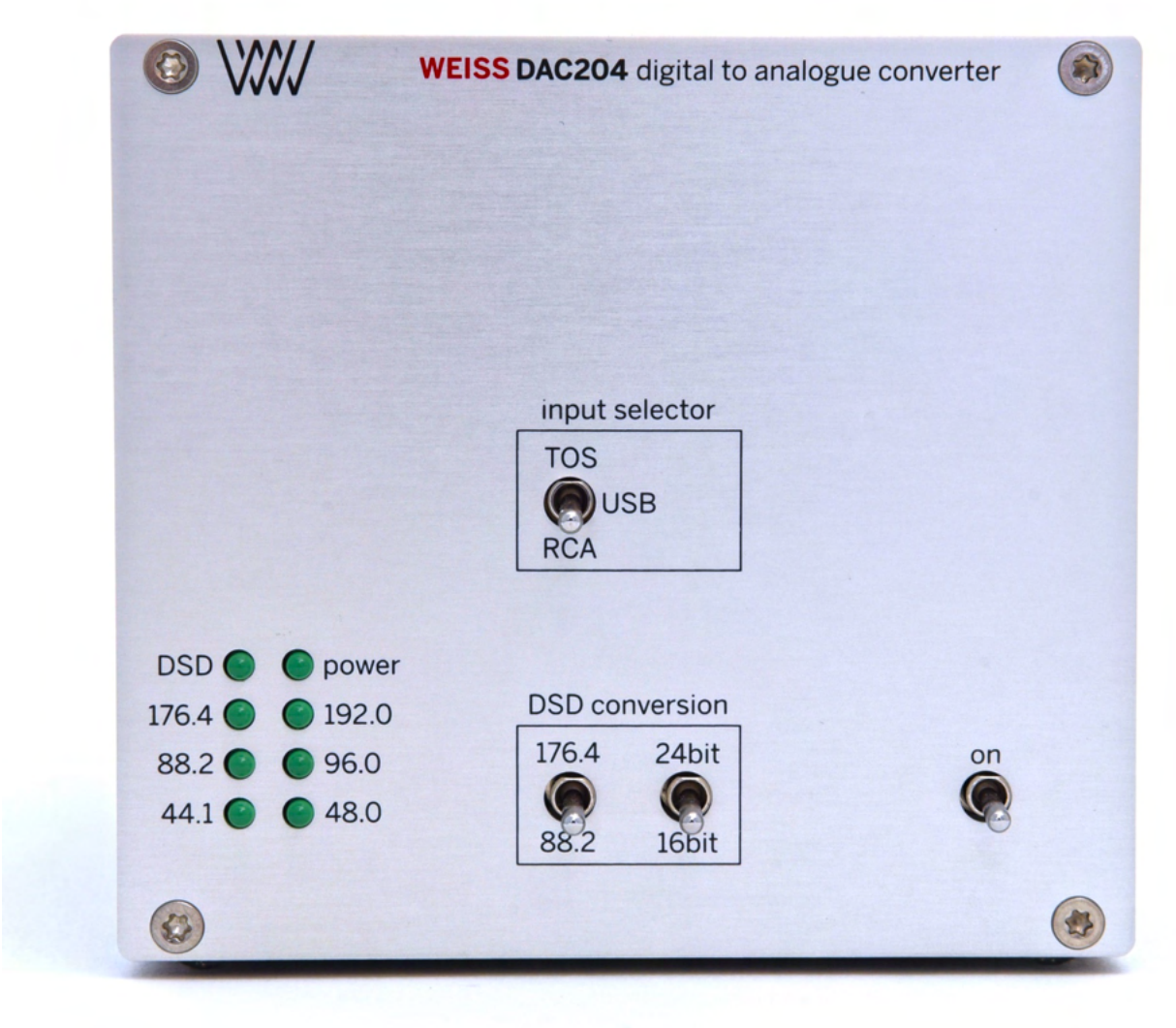
  - Digital inputs (one RCA and one Toslink connector).

  - Digital outputs (one XLR, one RCA and one BNC connector).

  - USB input connector.

  - External power supply connector.

  - Two toggle switches for output level setting.


WEISS DAC204 digital to analogue converter
input selector
TOS
USB
RCA
DSD
power
176.4
192.0
88.2
96.0
44.1
48.0
DSD conversion
176.4
24bit
88.2
16bit
on


analogue out right
analogue out left
S/PDIF in
10dB
20dB
analogue attenuation
AES/EBU out
power
6...9V
USB
in
S/PDIF out
+
-
SNR:
made in switzerland
CE

OPERATION

Unpacking and Setup of the DAC204/204-MK2
Carefully unpack the DAC204. The following items should be enclosed:

- The DAC204 D/A Converter unit
- A power supply
- Warranty card

Power Supply Connection
Connect the enclosed power supply or any other appropriate supply to the input socket. See the Technical Data section for more information on the power supply.

USB driver
On macOS, the DAC204 does not require any USB driver. For Windows systems the appropriate USB driver has to be downloaded from our website at the INT204 downloads page. www.weiss.ch

Input Connection
The DAC204 operates either with the RCA input, the optical Toslink input or the USB input. Select the input with the appropriate switch. The data format can be either AES/EBU or S/PDIF. The USB input also supports DSD64 and DSD128 streams. Note, the LEDs indicating the sampling frequency are active for the USB input only.

Output Connection
Connect your preamplifier or power amplifier to the output connectors of the DAC204.

Use either the symmetrical (balanced) lines (XLR) or the asymmetrical (unbalanced) lines (RCA). It is also possible to use both outputs simultaneously. We do not recommend to connect a low impedance headphone and an amplifier simultaneously though, as the headphone may compromise the signal going to the amplifier.

If the XLR outputs are used to connect to an unbalanced input then make sure that XLR pin 1 is used for the ground connection and XLR pin 2 is used as the hot signal. XLR pin 3 must be left open.

If there isn't any signal at the DAC204 outputs check the power switch / LED and also make sure the sampling frequency is in the range supported. See the Technical Data section for details.

Output Level
The output level can be set with the two switches in 10dB steps. Four different output levels can be selected.

Downsampling

The USB input signal is treated as follows:
- Sampling frequencies between 44.1 and 192 kHz are passed unaltered.

- Sampling frequencies of 352.8 or 384 kHz are downsampled to half of their value, i.e. to 176.4 or 192 kHz.

- DSD64 or DSD128 signals are converted to PCM with the parameters according to the settings of the switches. I.e. a sampling frequency of 88.2 or 176.4 kHz can be selected. Plus a word-length of 16 or 24 Bit. These selection switches may make sense if an external D/A Converter is connected to the digital outputs of the DAC204. If only the internal D/A Converter is used we recommend to set the switches to 176.4 kHz and 24 Bit.

TECHNICAL DATA

Digital Inputs:
(1) RCA connector, (1) Toslink connector (optical)
- All inputs accept professional or consumer standard , i.e. accept AES/EBU or S/PDIF signals.
- Sampling frequencies: 44.1, 48.0, 88.2, 96.0, 176.4 or 192 kHz on the RCA input.
- Sampling frequencies: 44.1, 48.0, 88.2, 96.0 kHz on the Toslink input.
- Maximum input word-length: 24 Bits.

(1) USB connector
- Accepted sampling frequencies: 44.1, 48.0, 88.2, 96.0, 176.4, 192, 352.8, 384 kHz, DSD64, DSD128

Analog Outputs:

(2) XLR connectors (hot output on pin 2, **not** servo controlled), DC coupled, short circuit proof output circuitry, Output impedance: DAC204: 44 Ohm, DAC204-MK2: Close to 0 Ohm
(2) RCA connectors, DC coupled, short circuit proof output circuitry, Output impedance: DAC204: 22 Ohm, DAC204-MK2: Close to 0 Ohm

Output level: Selectable by two toggle switches, 4 settings:

XLR outputs:
7.5 Vrms, +19.7 dBu, with a 0 dBFS sinewave input
2.3 Vrms, +9.7 dBu, with a 0 dBFS sinewave input
0.75 Vrms, -0.3 dBu, with a 0 dBFS sinewave input
0.23 Vrms, -10.3 dBu, with a 0 dBFS sinewave input

RCA outputs:
3.75 Vrms, +13.7dBu, with a 0 dBFS sinewave input
1.15 Vrms, +3.7dBu, with a 0 dBFS sinewave input
0.375 Vrms, -6.3dBu, with a 0 dBFS sinewave input
0.115 Vrms, -16.3dBu, with a 0 dBFS sinewave input

Digital Outputs:

(1) XLR connector, (1) RCA connector, (1) BNC connector

Synchronization:
- Synchronized via the input signal in the case of RCA or Toslink inputs. In the USB input case the DAC204 is the master clock.
- Extremely efficient Jitter attenuation.
- Sampling frequencies supported: 44.1 kHz, 48.0 kHz, 88.2kHz, 96.0kHz, 176.4khz, 192kHz, 352.8kHz, 384kHz, DSD64, DSD128

Power:
- DC input voltage: 6 to 9 Volt
- DC input current: 1050mA at 6V, 700mA at 9V
- Power consumption: 6.3 W

Measurements:
The measurements below have been taken at the following conditions (unless noted otherwise): 1 kHz measurement frequency, maximum selectable output level, 192kHz sampling frequency (Fs), 22kHz measurement bandwidth, unweighted, 0 dBr equals the output level at 0 dBFS input.

FrequencyResponse
Fs = 44.1 kHz, 0Hz-20kHz: within +- 0.25dB
Fs = 88.2 kHz, 0Hz-20kHz: within +- 0.25dB
Fs = 88.2 kHz, 0Hz-40kHz: within +- 0.8dB
Fs = 176.4 kHz, 0Hz-20kHz: within +- 0.25dB
Fs = 176.4 kHz, 0Hz-40kHz: within +- 0.8dB
Fs = 176.4 kHz, 0Hz-80kHz: within +- 2.5dB

Total Harmonic Distortion plus Noise (THD+N)
−116 dBr (0.00016 %) at −3 dBFS input level
−125 dBr (0.000056 %) at −40 dBFS input level
−125 dBr (0.000056 %) at −70 dBFS input level

Linearity
At 0 dBFS to −120 dBFS input level: less than ±0.4 dB deviation from ideal

Spurious components (including harmonics)
At 0 dBFS input level, maximum output level, 1 kHz, all components at less than −120 dBr
At 0 dBFS input level, maximum output level, 4 kHz, all components at less than −115 dBr

Crosstalk
Better than 120 dB, 20 Hz–20 kHz

Interchannel Phase Response
+- 0.05° 20 Hz–20 kHz
+- 0.30° 20 Hz–80 kHz