GIVERNyLABS

High Definition Audio DAC Single Channel I2S & I2C Appliance

DESCRIPTION

The Giverny High Definition Audio DAC Single Channel I2S & I2C Appliance is designed for the highest music enjoyment. It is built on a monaural, fully balanced architecture. With it, whether Stereo, Surround 5.1 and Surround 7.1, music is an authentic, overwhelming experience.

The Appliance can be connected to digital music sources via the I2S bus. And it is steered by the standard I2C bus for easy configuration.

All components, from the power supply up to the analog DAC output stages, have been implemented at the highest technical and most demanding level. Using a gold plated printed circuit 6-layer board for optimal powering and signal shielding. The result is a fantastic, vitalizing sound with a unique spatiality:

- Superior Sound Quality and Spatiality
- Excellent Dynamic Performance
- Extremely Low Distortion
- Extremely Low Noise
- Extremely Low Magnitude Deviation

High dynamic monaural DAC Architecture

Fully balanced DAC circuits for highest dynamic, parallelized for lowest quantization noise (monaural) and improved tolerance to clock jitter, featuring the TI/Burr-Brown PCM1792A:

- Very High Dynamic Range: 132dB, 9V rms
- Ultralow Total Harmonic Distortion: 0.0004% / 0.0015% (44.1 kHz / 192kHz)
- 8× Oversampling Digital Filter for excellent digital out-of-band noise filtering
    - Stop-Band Attenuation: –130 dB
    - Pass-Band Ripple: ±0.00001 dB
- PCM 44.1/48/88.2/96/176.4/192 kHz; 16, 20 and 24 bit resolution
- DSD64
- Separate power supplies for the analog and digital sections

Superior Fully Balanced Analog Sound Quality

Industry leading analog technology to prepare the delicate analogue signal for transmission out of the device, making it less susceptible to noise and degradation:

- Fully balanced, differential architecture with 4th-order linear analogue filter to reduce out-of-band noise
- Use of the very best OPA1611 SoundPlus™ high-performance, bipolar-input audio operational amplifiers with outstanding dynamic audio performance:
    - Ultralow noise: 1.1 nV/√Hz at 1 kHz
    - Ultralow distortion of 0.000015% at 1 kHz (-136db)
    - Extraordinary high precision impulse behavior due to a high slew rate and a wide bandwidth
    - Excellent dynamic behavior stable over a wide range of load conditions
    - High power-supply rejection ratio about 0.1 µV/V
- Use of low-noise precision resistors and hand selected WIMA high precision pulse-resistant polypropylene film capacitors
- Mute relay for the differential analog output including the monitoring of the correct voltage supply for the analog amplifier section

Ultrapure Power Supplies

Industries best of class linear ultralow noise and ultralow ripple on board power supplies for all digital and analog sections resulting in far lower distortion and noise:

- Ultralow noise: 0.8µVRMS (10Hz to 100kHz)
- Ultrahigh ripple rejection: 90dB at 1kHz for powering the digital and analog applications
- Separate Ground for the digital and the analog sections

Digital Interface

- Digital ground
- 4.5V-6.5V digital supply operation
- I2S bus (DATA, MCLK, BCLK, LRCK)
- I2C bus (four selectable I2C addresses)
- Zero signal flag
- DAC hardware reset
- Out relay reset

Analog Interface

- Analog ground
- 6.5V-7.5V analog DAC supply operation
- ± 15V-17V operational amplifier supply operation
- Differential, fully balanced analog output, SMA connectors
- Enable/Disable of operational amplifier supply

Configuration

- For Stereo two high definition audio DAC single channel appliances, one I2S bus and one I2C bus are required
- For Surround 5.1 six high definition audio DAC single channel appliances, one I2S busses with three Data traces and two I2C busses are required
- For Surround 7.1 eight high definition audio DAC single channel appliances, one I2S busses with four Data traces and two I2C busses are required
- Stabilized voltage sources are required for the power supplies. It's important to connect to clean and quiet power supplies. Don't connect to switching supplies, LDO’s will be less noisy!
- 3.3V digital logic, 5V tolerant digital inputs