

audiopraise

AVARICE

User Manual

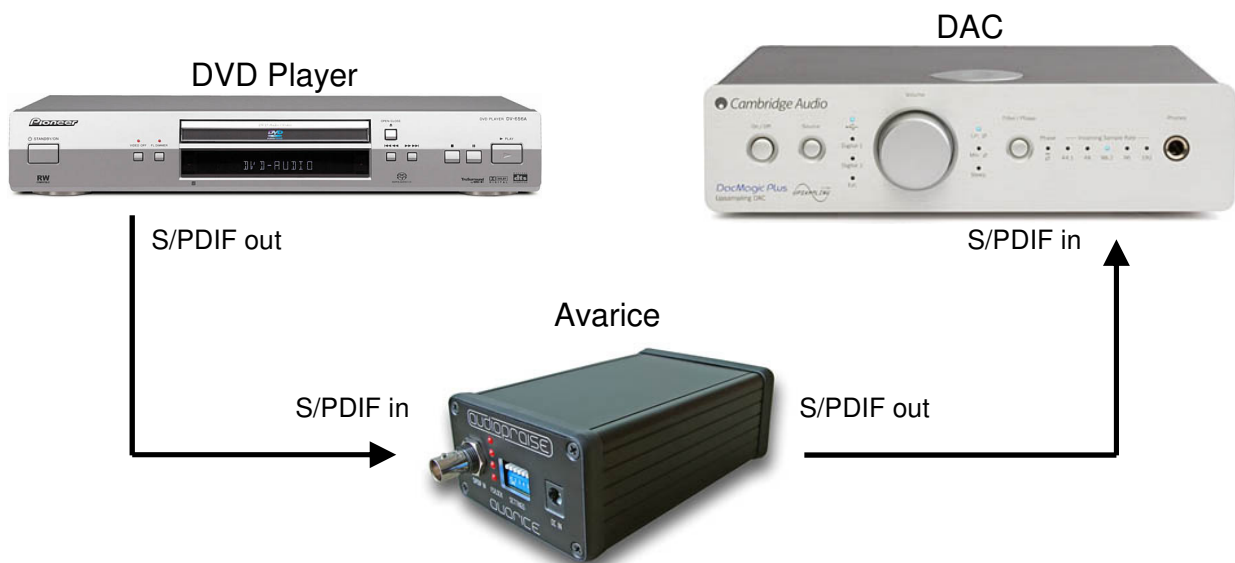


Introduction

The Avarice is a device primarily aimed at the owners of digital to analog converters, digital amplifiers, digital crossovers and other devices which perform digital to analogue conversion, and therefore rely on a high quality of the incoming digital signal. The Avarice helps to attenuate and reject all sorts of interference between various devices, to restore the time domain of the S/PDIF signal (i.e. to attenuate jitter) and to upsample the signal up to four times, thus bypassing the imperfect digital filters present in any integrated DAC chip. Connecting the Avarice into the signal path and setting its signal processing parameters is very simple and intuitive.

Connection

The device has one input and one output, and can therefore be simply introduced into the S/PDIF signal path by placing it between the signal source and the signal receiver. Typical signal sources include CD/DVD players, satellite or cable TV receivers, multimedia players, PC sound cards, portable music players, etc. Signal receivers performing DA conversion include stand-alone DA converters, AV receivers, digital amplifiers, digital crossovers and the like. The diagram below shows an example of a signal path employing the Avarice. Suitable S/PDIF cables terminated by BNC connectors can be included in the packaging of the Avarice on the customer's request.



The Avarice version employing the optical input may serve as a high-quality optical-to-metallic SPDIF converter (TOSLINK -> S/PDIF). The improvement delivered by the Avarice can be particularly significant when used to connect an optical signal source, which is more susceptible to jitter.

The Avarice can be fed with power by the supplied universal power source, or by any other DC source meeting the required parameters (see specification sheet).



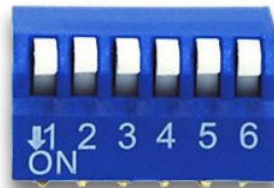
LED indicators

The current operational mode of the device is indicated by four diodes located on the front panel. The LEDs light up individually or in various combinations to indicate the input sampling frequency ranging from 32kHz to 192kHz, as shown on a schematic printed on the back panel of the device. If no input signal is detected, all four diodes light up and become slightly dimmed after some 30 seconds, so that the device does not visually disturb the room interior.

Settings

Various audio signal processing parameters can be user-configured, using six jumpers accessible from the front panel. Jitter attenuation is active at all times, for all input sampling frequencies. It is a result of the choice of circuit topology and cannot be deactivated by the user.

The effect of the jumper settings is also shown on a schematic on the back panel.



Switch 1 – enables (ON) or disables the upsampling function

Switch 2 – upsampling to 96 kHz or 192 kHz (ON)

Switch 3 – output bit depth value set to 16 bit or 24 bit (ON)

Switch 4 – digital filter characteristic #1 (ON) or #2

Switches 5 and 6 – compatibility setting of the S/PDIF output

Switch 1 activates 2x or 4x upsampling performed in a single filtering stage. If this switch is set to the OFF position, the Avarice does not alter the audio data – the position of switches 2 and 4 has no effect in this case. Whenever switch 1 is at the ON position, the position of switch 2 determines if two or four-fold upsampling is performed according to the maximum output sampling frequency. Switch 4 allows the user to select one of two available digital filter characteristics.

The following table contains the input and output sampling frequencies and the corresponding switch settings.

Input Fs	Output Fs		
	S1:OFF	S1:ON S2:OFF	S1:ON S2:ON
32 kHz	32 kHz	32 kHz	32 kHz
44.1 kHz	44.1 kHz	88.2 kHz	176.4 kHz
48 kHz	48 kHz	96 kHz	192 kHz
88.2 kHz	88.2 kHz	88.2 kHz	176.4 kHz
96 kHz	96 kHz	96 kHz	192 kHz
176.4 kHz	176.4 kHz	176.4 kHz	176.4 kHz
192 kHz	192 kHz	192 kHz	192 kHz

Fs – sampling frequency

Switch 3, determining output bit depth, is active at all times. It is useful mainly for the owners of so-called non-oversampling DACs or older devices which usually employ a 16-bit word length. The setting of this switch to 16 bits will ensure correct bit depth reduction of a 24-bit input signal by applying TPDF dithering.

Switches 5 and 6 enable the user to modify the structure and certain synchronization elements of the S/PDIF protocol, which can have an impact on sound (so-called data jitter). Four setting configurations are available in total, as some S/PDIF receivers may not work with some of the available settings. The setting combinations have to be tested by trial and error. With both switches in the OFF position (up) the output is set to a standard format compatible with all receivers.

Should you have any questions or concerns, you can contact our dealers. Alternatively, please contact us on ap@audiopraise.com.

Specifications

S/PDIF input

- protocol: S/PDIF (IEC958 / EIAJ CP1201)
- type: coaxial, transformer-coupled, 75Ω impedance, BNC connector, optional version equipped with TOSLINK input available on request
- format: linear PCM stereo
- supported sampling frequencies: 32/44.1/48/88.2/96/176.4/192kHz
- supported bit depth: 16–24bit

S/PDIF output

- protocol: S/PDIF (IEC958 / EIAJ CP1201)
- type: coaxial, transformer-coupled, 75Ω impedance, BNC connector
- format: linear PCM stereo
- supported sampling frequencies: 32/44.1/48/88.2/96/176.4/192kHz
- supported bit depth: 16 / 24bit

Jitter attenuation

- recovery of the clock signal using digital PLL
- two-stage re-clocking of the output SPDIF signal
- three data-jitter attenuation modes
- low-noise discrete regulators for the clock and the output circuits

High-quality synchronous upsampling

- proprietary linear phase Zero Alias digital filters
- 33bit arithmetic / 67bit accumulator
- 2x and 4x upsampling performed in one single filter stage

User settings

- Zero Alias LPCM Upsampling: on / off
- Zero Alias LPCM Upsampling: 2x / 4x
- output bit depth: 16 / 24bit
- two user selectable upsampling filter characteristics
- data jitter attenuation: off / mode 1–3

Power supply and dimensions

- power supply connector: 2.1mm DC jack
- voltage / current rating: 8–15VDC / 1A
- lxxh: 120x78x43mm