Odéon-m1
Owner's Manual

24 bit Digital to Analog Converter
Passive Preamplifier

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Dear Audiophile,

On behalf of Birdland Audio, I would like to thank and congratulate you on your acquisition of our 24 bits Digital-to-Analog Converter (DAC) and preamplifier, the *Odéon-m1*. As digital techniques have greatly been improved over the past 10 years and with the recent availability of 24bits / 96kHz masters on DVD, we wanted you to be ready to jump to the next level of digital experience by providing you with this technologically advanced DAC.

The *Odéon-m1* not only converts any digital format from 8 to 24 bits at sampling rates of 32kHz, 44.1kHz, 48k, 88.2k and 96kHz but it is also a passive preamplifier which allows you to connect your legacy components such as a tape-deck, tuner or receiver to its analog bypass inputs. Of course, the *Odéon-m1* takes advantage of our 14 years of experience and knowledge in the audio domain to provide you with the most natural sounding DAC available today at any cost.

Our only trade secret is elegance of the whole design and quality of every component. You will be pleased to find only the highest quality components in our products and the finest audiophile parts.

I am sure you will appreciate the *Odéon-m1* as much as I do and I wish you many hours of true revelation as you listen to music the way it should sound.

Sincerely,

Gilles Gameiro
President / Design Engineer

Table of Contents

1 - Safety instructions and important notes

Please read and observe the warnings and instructions in this owner's manual to insure your personal safety and proper care of your unit.

The Odéon-m1 digital-to-analog converter has been designed with safety in mind.
Improper use may however result in electric shock or fire hazard. Please read the following safety instructions carefully.

1 Do not remove the unit's cover as you will be exposed to dangerous voltages which may result in electric shock. Refer servicing to qualified technicians only.

2 When connecting components to your Odéon DAC, it is a good idea to turn it off or to make sure that it is not connected to the main electrical outlet.

3 To reduce the risk of fire or electric shock, do not expose the Odéon DAC to rain or heavy moisture. Wait at least one-half hour before plugging the amplifier in after transferring it from a cold place to a warmer room allowing for internal condensation of water to dissipate.

4 The Odéon DAC has openings provided for ventilation. Proper operation may only occur if these openings are not obstructed or covered. Do not cover the unit. It should not be used in a built-in installation such as a bookshelf or rack unless proper vertical ventilation is provided.

5 It strongly recommended to lower the volume knob to the minimum before turning your Odéon DAC on if the attenuated output is being used. Failing to do so could send high audio levels to your amplifier and could overload and damage your amplifier or speakers.

2 - How to properly care for your DAC

Heat
Keep the Odéon DAC away from heat sources such as radiators, space heaters, stoves or other sources.

Water and moisture
Do not use the Odéon DAC near water sources such as bath tubs, sinks, wash bowls, swimming pool or other sources that may lead you to get water in the unit. Do not spill liquid of any kind on the unit.

Objects entry
Do not insert objects of any kind through the unit's opening vents as they may touch electric parts with dangerous voltages or may short-out parts inside and damage your DAC.

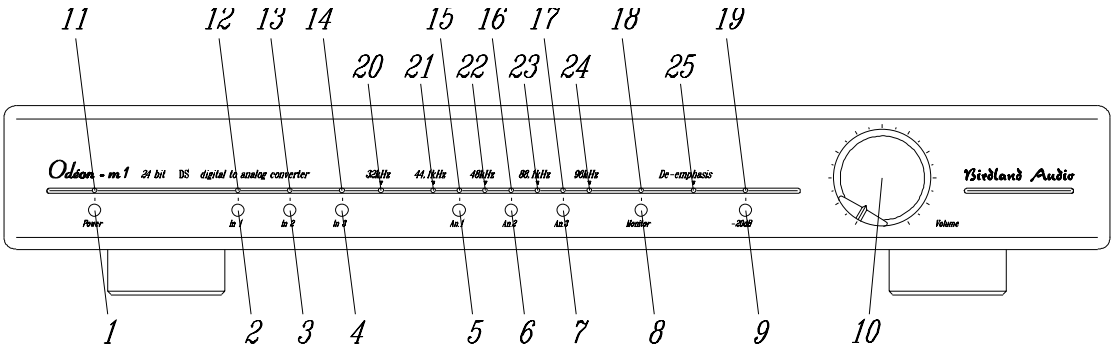
Stack and height
Do not stack too many components or heavy objects on top of the Odéon. Doing this could prevent heat from dissipating properly out of the top vents and could cause damage or deformation to the unit's case.

Cleaning
Use a simple damp soft cloth to clean. Do not use liquid or abrasive cleaners.
Make sure your Odéon is not connected to the electrical outlet before cleaning it.

Protection
For added protection, you may choose to disconnect your Odéon from the wall outlet if you are planning to leave it unattended for a long period of time or during storms. This may prevent damage due to lightning.

Volume
Reduce the volume on your preamplifier or Odéon to the minimum level before you turn on the unit. Doing so will prevent sudden loud volume sounds which could cause speaker, amplifier or hearing damage.

3 - Identification of controls



Controls

1 Power On / Standby

2 Digital input 1 select
3 Digital input 2 select
4 Digital input 3 select

5 Analog input 1 select
6 Analog input 2 select
7 Analog input 4 select

8 Monitor On/Off
9 Mute -20dB On/Off

10 Volume control

Indicators

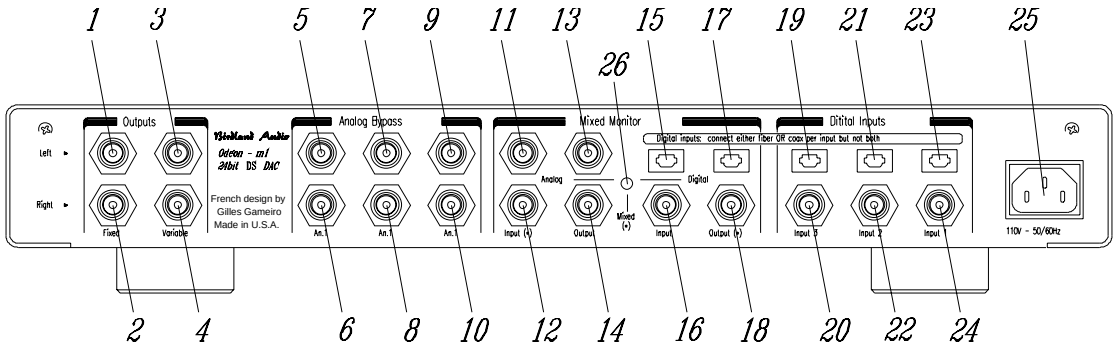
11 Power on indicator

12 Digital 1 select indicator
13 Digital 2 select indicator
14 Digital 3 select indicator

15 Analog 1 select indicator
16 Analog 2 select indicator
17 Analog 3 select indicator

18 Monitor on indicator
19 Mute -20dB on indicator

20 32kHz digital conversion
21 44.1kHz digital conversion
22 48kHz digital conversion
23 88.2kHz digital conversion
24 96kHz digital conversion
25 De-emphasis material conversion



Connections

1 Left non-attenuated analog output
2 Right non-attenuated analog output
3 Left attenuated analog output
4 Right attenuated analog output

5 Analog input 3 - left
6 Analog input 3 - right
7 Analog input 2 - left
8 Analog input 2 - right
9 Analog input 1 - left
10 Analog input 1 - right

11 Analog monitor input - left
12 Analog monitor input - right
13 Analog monitor output - left
14 Analog monitor output- right
15 Digital monitor input - fiber
16 Digital monitor input - coax
17 Digital monitor output - fiber
18 Digital monitor output - coax

19 Digital input 3 - fiber
20 Digital input 3 - coax
21 Digital input 2 - fiber
22 Digital input 2 - coax
23 Digital input 1 - fiber
24 Digital input 1 - coax

25 Power cord AC receptacle

26 Monitor mode select switch

4 - Understanding the Odéon-m1

The Odéon-m1 is mainly a 24 bit Digital-to-Analog Converter (DAC) and also a commodity passive preamplifier which allows you to not only connect digital but also analog sources.

A DAC is a unit that converts digital data from CDs or any other digital medias into analog music that can be fed to a power amplifier for listening. Digital data is usually extracted from Compact Disks (CD) using a transport or a player and can be fed to the Odéon through either a digital coaxial interconnect cable (commonly called S/PDIF) or a fiber optic. CDs store music using a digital format of 16bits/44.1kHz but there are other formats which allow to increase the fidelity of digital conversions such as the recent availability of 24bits/96kHz on audio DVDs (Digital Versatile Disk) sometimes also called DAD (Digital Audio Disk). The Super Audio Disk format - recently introduced by Sony/Philips - does not offer a way to carry digital data out of the box and are not compatible with widely used S/PDIF or AES/EBU consumer and professional formats.

The Odéon-m1 will convert any digital data from 12 to 24 bits at sampling rates of 32kHz, 44.1kHz, 48kHz, 88.2kHz and 96kHz. You can connect 3 and up to 4 different digital sources to your Odéon and use the buttons on the front panel to instruct it which source to convert.

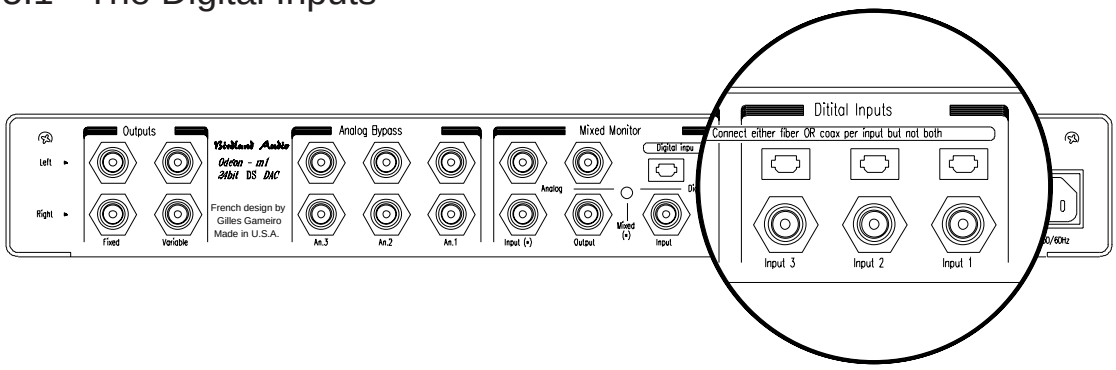
The Odéon-m1 is also a passive preamplifier that allows you to connect 3 and up to 4 existing legacy analog sources. Passive means that there are no active components in its analog section. You can select which analog source to route to the Odéon output and the sound is passed on as-is unmodified so you get out exactly what you feed in.

Your Odéon DAC is the result of the latest developments in both Digital and Analog domains along with the highest quality components providing you with the most natural sounding conversion you can get from your digital sources.

The DAC is a 24 bits delta-sigma converter which is composed of a 5^{th} order digital interpolation filter, a digital filter, a switched capacitor filter and a final 2nd order filter all developed together to provide an overall constant group delay insuring no phase shift and a perfect stereo imaging. The volume attenuator is a high-quality ALPS stereo potentiometer and the passive analog matrix is made of the highest quality miniature air sealed relays with gold-plated over silver contacts.

5 - Connecting the Odéon-m1

5.1 - The Digital Inputs



There are three simple digital inputs on the back which can be used to connect digital sources such as a CD, DVD player/transport or any other digital source. The Odéon DAC will receive and decode digital audio data according to the AES/EBU IEC-958 also known as S/PDIF or toslink as well as EIAJCP340/1201 professional[1] or consumer formats. The digital inputs are activated using the front panels buttons In.1 through In.3 (see controls on page 6).

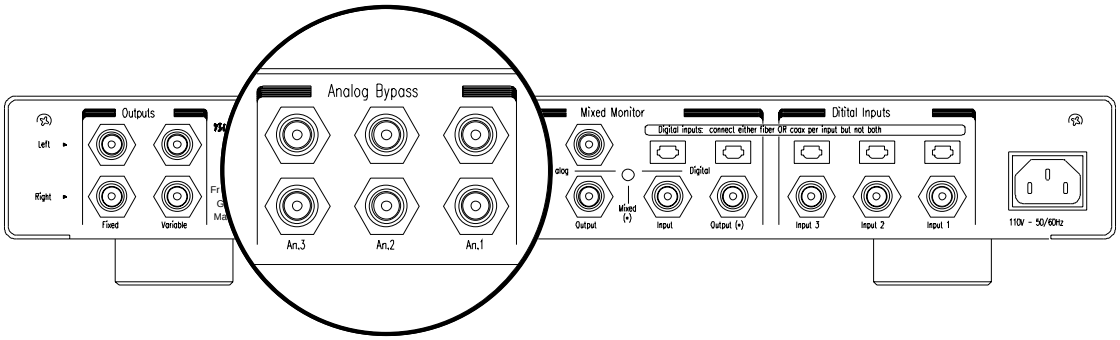
When connecting the AC3/PCM output from a DVD player to a Odéon digital input, make sure to switch the DVD player format to PCM. RF outputs from laser disk players can not be connected directly to the Odéon DAC without the use of a RF to S/PDIF converter.

Either optical OR the coaxial inputs can be used when connecting a source to the Odéon DAC for each of the digital inputs. The Odéon will automatically select the format used but you should NEVER connect both the coaxial and optical sources for any one input.

There was a time when optical receivers were not as performant as today. Recent technologies offer excellent constant time delay optical transmitter/receivers. For this reason if the digital source offers both optical and coaxial outputs, it is recommended to use the optical connection rather that the coaxial as it ensures separation of the units grounds and offers signal immunity to EMI.

[1] Professional sources may require an impedance adapter from AES/EBU to 75 ohm S/PDIF. Such adapters are commonly available from many sources.

5.2 - The Analog Inputs



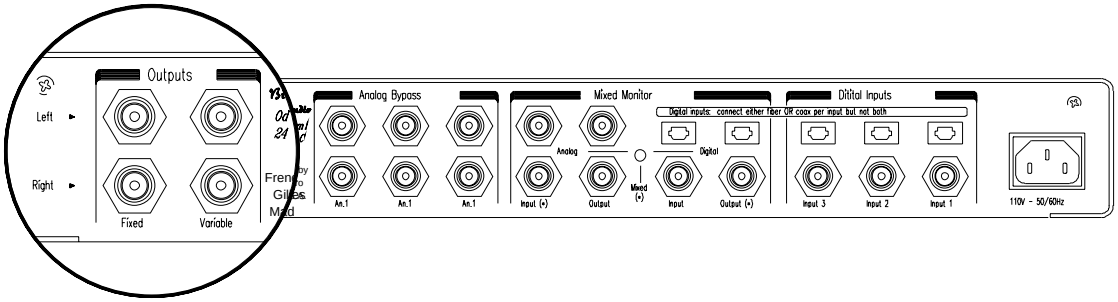
The Odéon offers 3 analog inputs which can be used to connect legacy analog sources such as a tuner, RIAA preamplifier or any other analog sources with a high-level line output, turning the unit into a commodity passive preamplifier. These sources can be selected using the front panel buttons labeled An.1 to An.3 (see controls on page 6).

A passive preamplifier is a unit that does not insert any active components in the analog signal's path. As a preamplifier, the Odéon becomes a perfect transparent switch that lets you enjoy your legacy analog components just the way they sound with no added distotion.

As a passive preamplifier, the Odéon only inserts one high-quality air sealed gold-plated over silver contact switch to connect the selected analog source to the output exactly as-is. If using the variable output, an additional high-quality potentiometer (ALPS) is added.

An exception however is made for the monitor analog output which includes a highly transparent unity gain buffer to avoid interference between the unknown load of the monitor and the analog signal being listened to. The monitor buffer however has no gain and benefits from Birdland Audio's fifteen years of research on building transparent electronics. But don't take our word for it, go ahead and try it!

5.3 - The Outputs



The Odéon-m1 offers two sets of outputs in the back, one labeled variable and one labeled fixed.

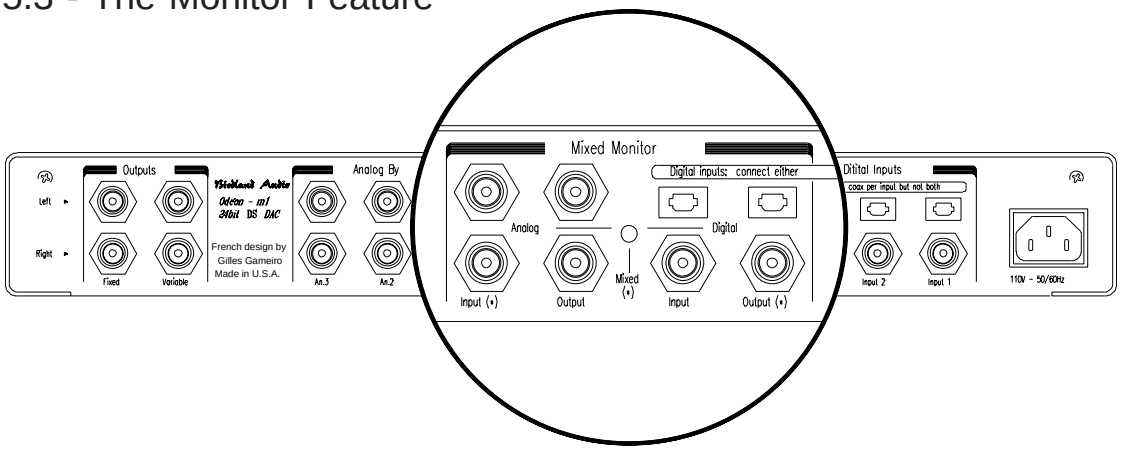
The fixed set will always output the source selected on the front panel selector buttons (see controls on page 6) at the maximum level. You should use this output if you are planning to connect your Odéon DAC to an integrated amplifier or an amplifier with a volume control. It is better to bypass the Volume control of the Odéon on this configuration and to use the amplifier's volume control to adjust the level.

The variable set is the same analog output as the fixed set but it is controlled by the Odéon's volume knob on the front Panel. You should use this variable output if you are planning to connect your Odéon DAC to amplifier blocks without volume control or monoblock amplifiers. In this configuration, you will use the volume knob on the Odéon front panel to adjust the level.

It is to be noted that both the Fixed and Variable outputs are passive outputs, this means that unless you are using the Odéon as a DAC (which has it's own active stage), you will get out on the output the same level that is fed to the analog inputs. This also means that the variable output set presents an output impedance that reaches a maximum of 5KΩ. This design was chosen over an active low impedance for several reasons, so let's view here what this means for you:

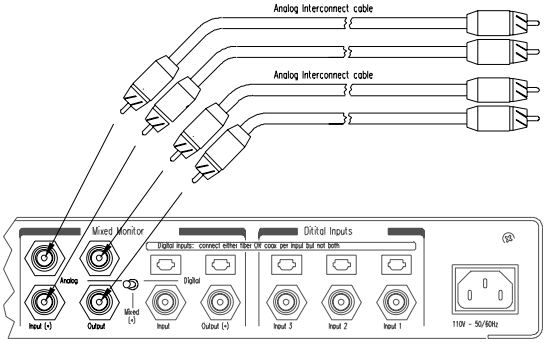
The positive aspects of such a design is that it provides music just the way it should sound with no added distortion of active stages. A possible downside could be only downfall could only be observed if using especially long and unshielded interconnect cables. However long unshielded interconnect cables are extremely rare and never recommended as a general rule.

5.3 - The Monitor Feature



The Odéon also offers a versatile monitor that can be used in analog, digital and mixed mode. The mode in which the monitor is used is selected by the monitor mode select switch (see item 26 on page 6).

Analog Monitor



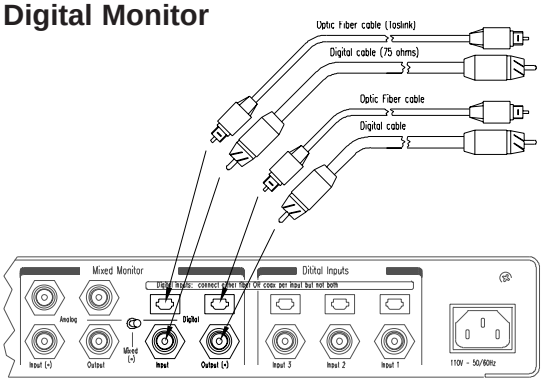
Analog Left: from tape deck line output
Analog right: from tape deck line output

Analog left: to tape deck line output
Analog right: to tape deck line input

When the mode switch is in the Analog position (left on the picture), the monitor works in a fully analog mode and allows the connection of a unit with both analog inputs and outputs such as a tape deck or an equalizer. In this mode, the monitor analog output always outputs the selected source. If a digital source is selected, the Odéon's internal DAC first converts the digital source before sending the analog out to the monitor output. The Odéon's output will either be the source or the return from the monitor if the monitor switch on the front panel is turned on.

If you do not have a unit that can be used as an analog monitor, you may use the Analog monitor input as a spare auxiliary input for a fourth high level line input (just ignoring the analog output).

Digital Monitor

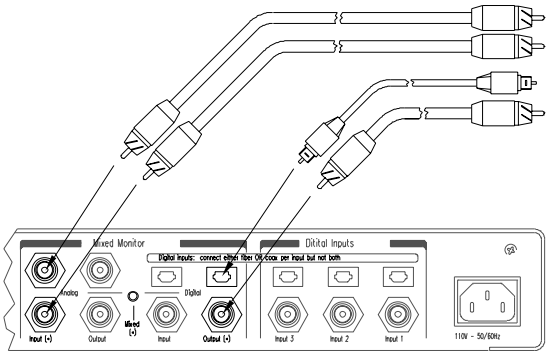


use fiber: from DAT digital fiber output
OR coax: from DAT digital coaxial output

use fiber: to DAT digital fiber input
OR coax: to DAT digital coaxial output

When the mode switch is in the Digital (rightmost) position, the monitor works in a fully digital mode and allows the connection of a unit with both digital input and output such as a Digital Audio Tape (DAT). It is to be noted that the digital monitor can only be used when the selected source is digital (In.1 to In.3 on the front panel). In this mode, the selected digital input is fed back out as-is on the monitor digital output connectors while the internal DAC will convert either the source or the return from the monitor if the monitor switch on the front panel is turned on. It is to be noted that the digital monitor input however, like the digital inputs, must be used either as coaxial or fiber optic but not both. The digital monitor output is simultaneously available as coaxial and fiber. It is recommended to use fiber interconnects whenever possible as it provides ground separation of the units being connected and immunity to signal degradation due to EMI.

Mixed Monitor



Analog Left: from processor line output
Analog Right: from processor line output

use Fiber: to the processor digital fiber input
OR coax: to the processor digital coax input

When the switch is in the center position, the monitor works in a mixed mode in which the digital output and analog inputs are used. This mode could be useful to connect an external digital processor with its own DAC such as an AC/3 decoder, a HDCD DAC or similar unit. As for the digital monitor, this mode can only be used when the selected source is digital, however, the internal DAC is bypassed when monitor is selected. Since this monitor mode uses both digital and analog interconnects to an external component, it is strongly recommended to use a fiber digital interconnect cable to prevent a ground loop between analog and digital grounds.

6 - Technical Specifications

DAC caracteristics

Frequency response	10..32kHz $^{+0}_{-1}$ dB [1]
Measured dynamic	better that 106dB
Signal/Noise ratio	better that 115 dB
Max Output Level	5.2V RMS

Output caracteristics

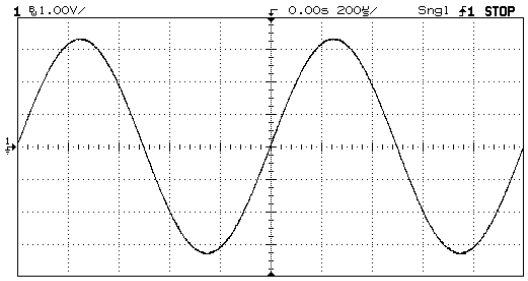
Channel Separation	better that 120 dB
Variable output impedance	less that 5kΩ
Fixed output impedance	less that 200Ω

Mechanical

Front Panel	6061H3	
Chassis and misc	5052H6[2]	
Finish	Grained and Hard Anodized	
Weight	4.2 Kg	(9.2 lbs)
Dimensions	432 x 56 x 330mm	(17" x 2.2" x 13")

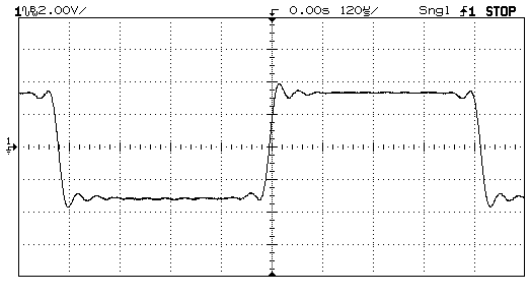
[1] Measured at 24 bits/96kHz sampling rate.
[2] Limited Edition only.
Birdland Audio reserves the right to modify any specification without prior notice.

1 KHz sinewave at 0dB



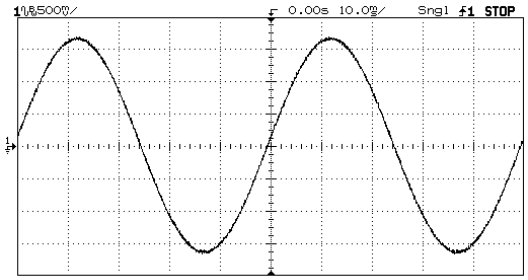
Time - 200µs/div Sensitivity - 1V/div

1 KHz squarewave at 0dB



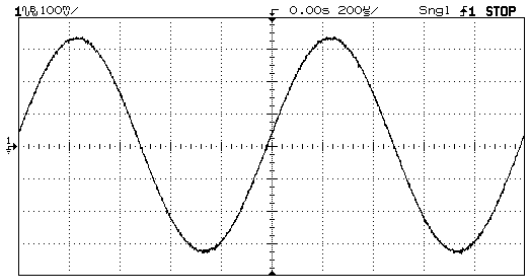
Time - 120us/div Sensitivity - 2V/div

20 Hz sinewave at -6dB



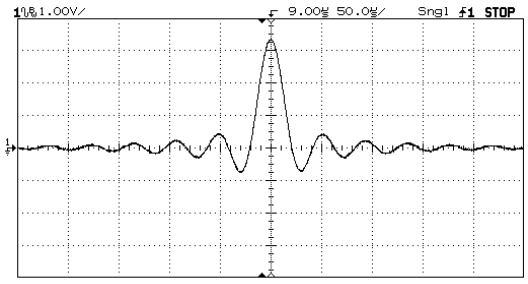
Time - 10ms/div Sensitivity -500mV/div

1 KHz sinewave at -20dB



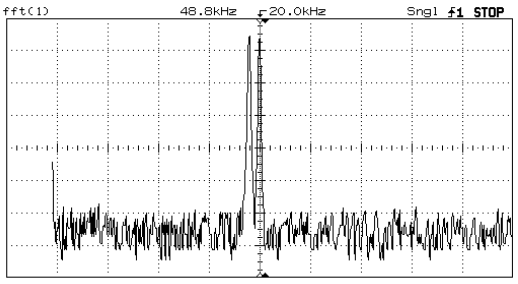
Time - 200µs/div Sensitivity -100mV/div

Single impulse full scale



A Single pulse full scale is filtered to produce the full scale output.

19kHz and 20kHz at 0dB



This plot highlight an attenuation of less that 0.5 dB at 20kHz.

• Notes •

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