Acoustics Engineering

PD003

Product Data

TRITON

USB Audio Interface

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TRITON USB Audio Interface

Description

The Triton is a compact and robust USB Audio Interface, intended for acoustical measurements. The analog inputs and outputs operate phase-synchronously, thereby enabling the use of deconvolution techniques, such as with MLS and sine sweep measurements. USB's Plug & Play architecture and the compatibility with native Microsoft™ Windows™ and Apple Computer™ Mac OS drivers enable instant use without driver installation.

Features

- Phase-synchronous sampling of analog input and output
- Fully compliant with USB 1.1 specification
- USB-bus powered
- Input and output 1 kHz level measurement report included
- Power, USB and Overload indication
- Very compact and robust design
- No manual controls, ensuring reproducible measurements
- Output gain control from the PC
- Input attenuation settable through input series resistor
- Input gain exceeding 0 dB available on request
- Reduced measurement noise compared with built-in audio device of a PC
- 16 bit / 48 kHz, 44.1 kHz and other sample rates
- Ideal for use with DIRAC
- Includes USB cable and protective leather pouch
- Uses native Windows (98/ME/2000/XP) and Apple Computer Mac OS (9.1/X 10.0/X 10.1) drivers

Applications

- Acoustical measurements
- Vibration measurements
- Electronic system measurements
- MLS or sine sweep based measurements
- Professional audio

Accessories

Triton package contents: **Triton** USB Audio Interface, **CA03** USB cable assembly, **LP03** leather pouch, **manual** and **measurement report**. Optional accessory: **CA04-xxY** attenuator cable (xx = attenuation in dB: 0, 3, 6, 10 or 20 dB; Y = connector color: B(lack) or R(ed)).

Characteristics

All specifications at T_A = 25ºC, f_S = 48 kHz, f_{IN} = 1 kHz, f_{OUT} = 1 kHz, 16 bit data, 0 dB input gain, unless otherwise noted.

Parameter	Condition	Min	Typ	Max	Unit
Input 1, 2					
Input voltage [1)]	Full scale peak voltage Nominal RMS level Headroom at nominal RMS level Allowable AC voltage Allowable DC voltage	1.95 -6.2 -10	2.00 -6.0 12 	2.05 -5.8 25 10	V dBV dB V V
Overload voltage		1.38 -0.2	1.41 0.0	1.43	V_{rms} dB
Input impedance (see **figure 1**)		18.3	18.5	18.6	kΩ
Frequency range (see **figure 3**)	**dB re 1 kHz level** **dB re median level** +0.04…-0.06 ±0.05 +0.05…-0.25 ±0.15 +0.05…-0.95 ±0.5 +0.05…-3.0 ±1.5	 60 20 9 4		 22 k 23 k 23 k 23 k	Hz
Resolution		8, 16			bit
Sample frequency		8 11.025 16 22.05 32 44.1 48			kHz
Output 1, 2					
Output voltage [1)]	Load impedance = 10 kΩ Full scale peak voltage Nominal RMS level Headroom at nominal RMS level Allowable DC voltage	 1.95 -6.2 -2	 2.00 -6.0 12 	 2.05 -5.8 2	 V dBV dB V
Load impedance	Nominal 2 outputs simultaneously, each output 1 output at a time	 1 0.5	10 	 	 kΩ
Output impedance (see **figure 1**)		104	107	110	Ω
Frequency range (see **figure 4**)	**dB re 1 kHz level** **dB re median level** +0.1…-0.1 ±0.1 +0.1…-0.5 ±0.3 +0.1…-0.9 ±0.5 +0.1…-2.9 ±1.5	 7 4 3 2		 14 k 19 k 21 k 22 k	Hz
Resolution		8, 16			bit
Sample frequency		32 44.1 48			kHz

Alterations reserved

TRITON USB Audio Interface

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Parameter	Condition	Min	Typ	Max	Unit
Loopback [2]					
SNR	Full scale / Silence, unweighted 0…24 kHz		87		dB
Crosstalk	Channel 1 to 2, vice versa, 0…24 kHz		-85		dB
THD+N	Full scale, input + output [2]		-80		dB
USB					
Compatibility			USB 1.1		
Power consumption			1		unit load
Connector			USB-B		
Cable length	Cable supplied		1.8		m
General					
Supply current	Output load impedance: 2 x 1 kΩ, full scale sine wave. Input overload LED's on		70	85	mA
Audio connectors			RCA Phono		
Dimensions	w x h x d		82 x 22 x 40		mm^3
Weight			105		g

Alterations reserved

Notes

1. A measurement report on the input and output full scale voltage levels at 1 kHz is provided with each individual Triton supplied.
2. Because system measurements are often performed by generating an excitation signal at the output, while recording the system response at the input, measurement system quality parameters depend on the Triton input + output chain. Therefore these parameters are given for the loopback configuration depicted in figure 2.

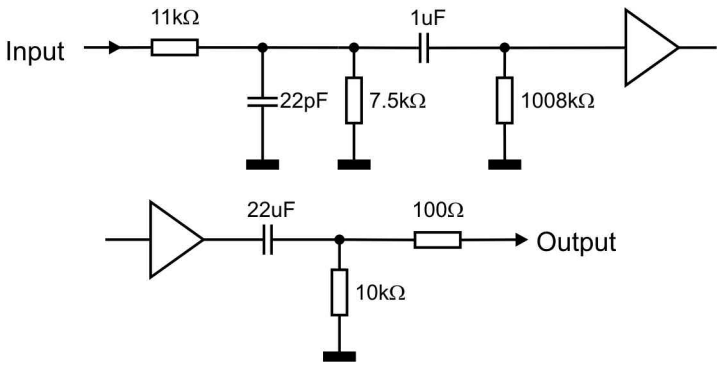

Figure 1. Equivalent analog input and output circuits.

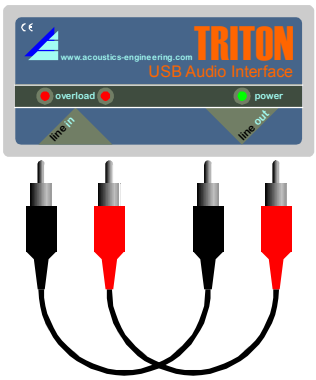

Figure 2. Loopback configuration.

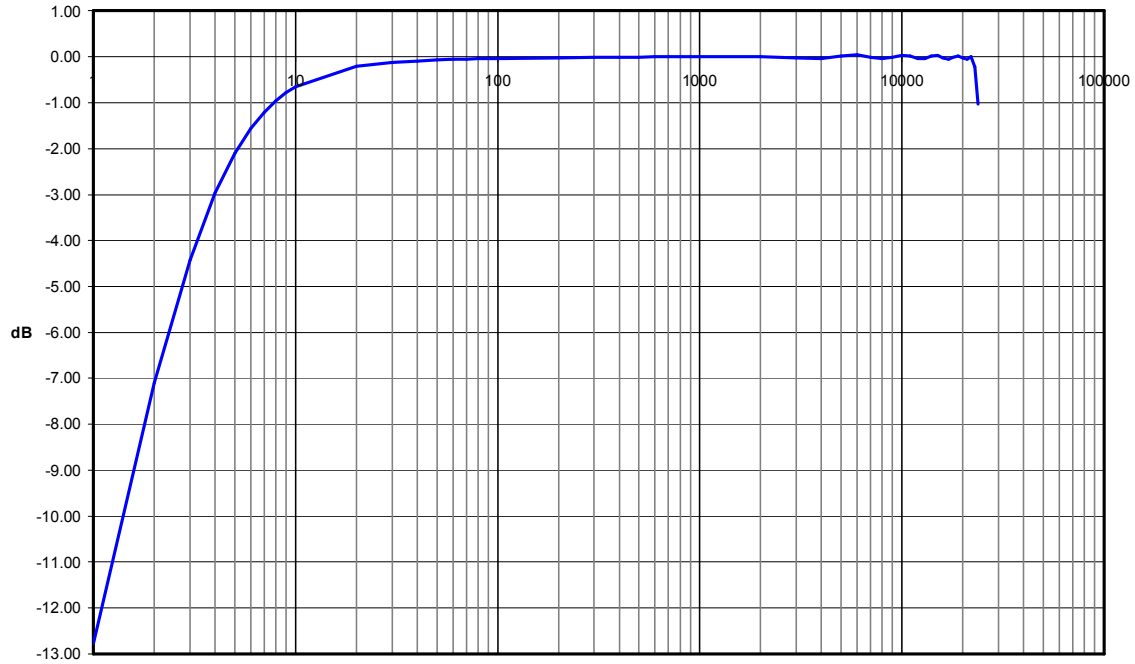

Figure 3. Typical input frequency characteristic.

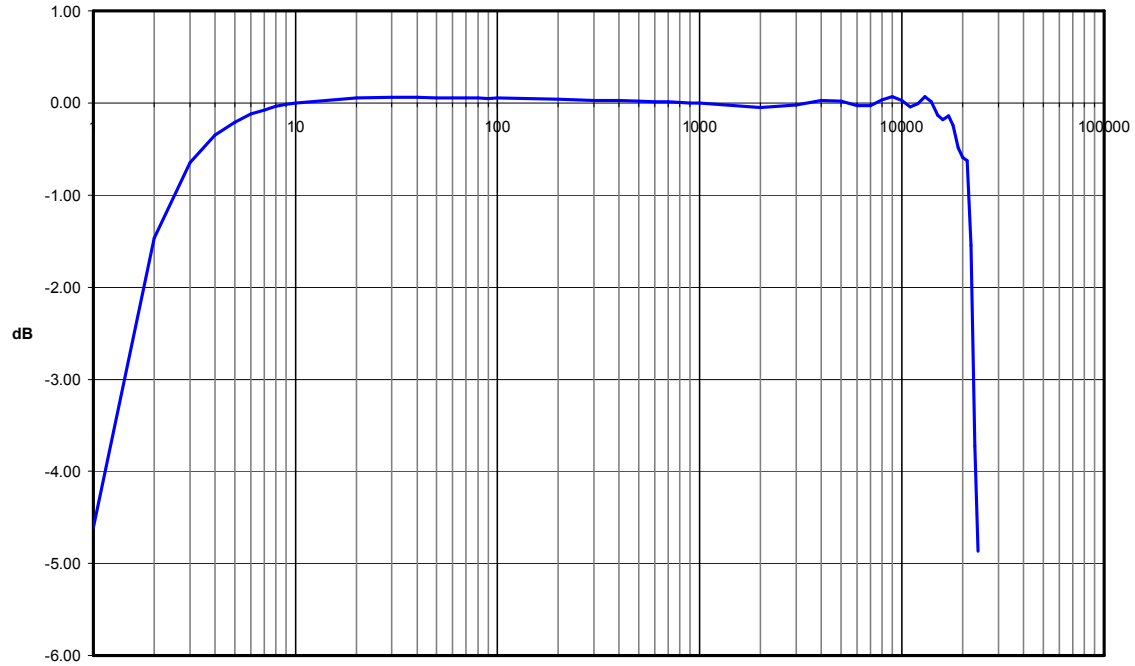

Figure 4. Typical output frequency characteristic.

Input Attenuation

To attenuate the input voltage or to increase the input impedance, you can use an input series resistor, which forms a voltage divider with the Triton input impedance. The series resistor can be included in an insertion cable, as depicted in figure 5. Table 1 shows the attenuation for some standard E96 series resistors. Attenuator cables can also be ordered from Acoustics Engineering.

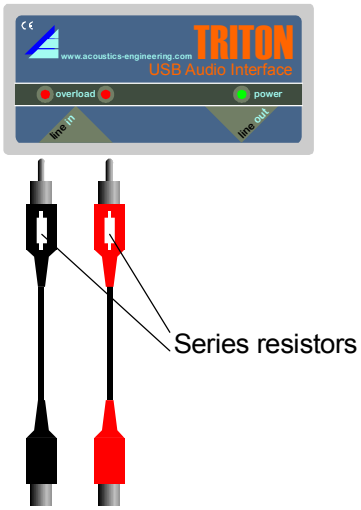

Figure 5. Inserting an input attenuator cable.

Table 1. Input attenuation and impedance versus series resistor.

Series Resistor [kΩ]	Input Attenuation [dB]	Input Impedance [kΩ]
0	0	18.5
7.68	3.0	26.1
18.2	6.0	36.7
40.2	10.0	58.7
165	20.0	183.5

Input Gain

An input gain exceeding 0 dB is available upon request. The additional gain will add a single pole/zero high-pass cutoff in the input frequency characteristic. The cutoff frequency is given for several gains in table 2.

Table 2. Additional high-pass cutoff frequency versus input gain.

Input Gain [dB]	High-pass Frequency [Hz]
0	0
3	0.4
6	0.9
10	2
20	8

Acoustics Engineering develops systems for the prediction and measurement of acoustical parameters, resulting in user-friendly tools that enable you to perform fast and accurate acoustical measurements and calculations.

For information on our products, please contact

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