

DESCRIPTION

The ASI6044 is a professional PCI audio adapter designed for use in radio broadcast automation.

The ASI6044 offers four or nine play streams that are mixed to four balanced stereo outputs. Four record streams are fed from four balanced stereo inputs.

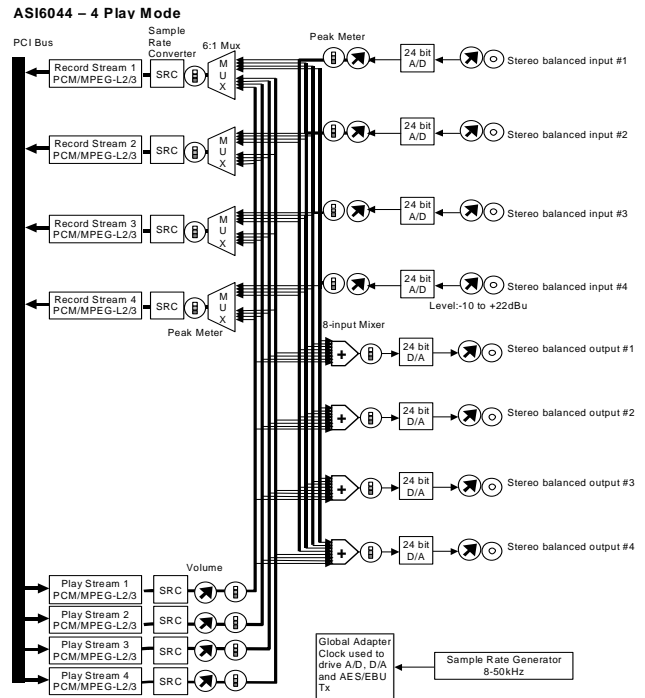
A choice of 16bit PCM, MPEG layer 2 and MP3 compression is available on all playback streams. Record formats include PCM16, MPEG layer 2 and MP3.

MRX multi-rate mixing technology allows streams of different sample-rates and formats to be mixed digitally.

TSX timescaling allows compression/expansion of any or all playback streams in real time with no change in pitch.

FEATURES

- Four/Nine stereo streams of playback into four stereo outputs
- Four stereo stream of record from four stereo inputs.
- Formats include PCM16, MPEG layer 2 and MP3.
- MRX™ technology supports digital mixing of multiple stream formats and sample rates.
- TSX™ timescaling allows compression/expansion of play streams by up to +/-20% with no pitch shift.
- Four balanced stereo analog outputs. Four balanced stereo analog inputs.
- 24bit analog-to-digital and digital-to-analog converters: 100dB SNR and 0.002% THD+N
- SoundGuard™ transient voltage suppression protects against lightning and other high voltage surges on all I/O
- Up to 8 cards in one system.
- Windows 2000,XP and Linux software drivers available.



1. SPECIFICATIONS

ANALOG INPUT/OUTPUT

Type	Balanced
Connector	Mini50(SCSI-II type)
Input Level	-10 to +22dBu in 0.5dBu steps
Input Impedance	20K ohms
A/D converter	24bit Oversampling
Output Level	-10 to +22dBu in 0.5dBu steps
D/A converter	24bit Oversampling
Load Impedance	600ohms or greater
S/N Ratio[1]	100dB (record or play)
THD+N[2]	0.002% (record or play)
Frequency Response	20Hz to 20kHz +/-0.2dB

SAMPLE RATE CLOCK

Internal	32, 44.1 and 48kHz
----------	--------------------

SIGNAL PROCESSING

DSP	Texas Instruments TMS320C6713@300MHz
Memory	8MB
Audio Formats	8 bit unsigned PCM 16 bit signed PCM 32 bit floating point PCM MPEG-1 Layer 2 MPEG-1 Layer 3(MP3) (MPEG Layer-3 audio coding technology licensed from Fraunhofer IIS and THOMSON multimedia)

BREAKOUT CABLES (NOT INCLUDED)

Analogue	CBL1004 : Mini 50 to Centronics 50 adapter. CBL1044: Centronics 50 to 8 in and 8 out XLR.
----------	--

GENERAL

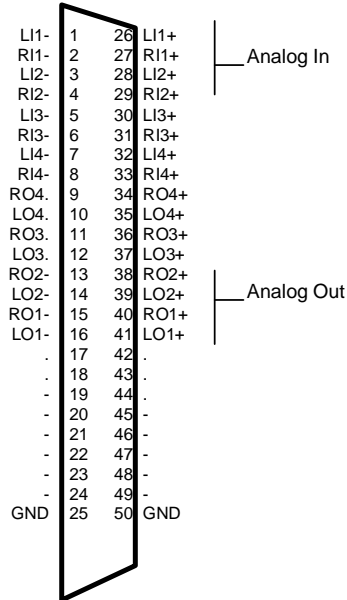
Bus	Universal 32bit PCI (3.3V or 5V signaling)
Dimensions	PCI form factor - 10" x 3.9" x 0.6" (255mm x 100mm x 15mm)
Weight	8 oz (227g) max
Operating Temperature	0C to 70C
Power Requirements	+3V @ 1A, +5V @ 300mA, +12V @ 200mA, -12V @ 100mA (if no 3V is available then the board may be powered from a +5V only PCI bus)

[2] - THD+N measured using a +14dBu 1kHz sinewave sampled at 48kHz and A weighting filter

[1] - S/N Ratio is the difference between a 1kHz +14dBu sinewave and digital zero using an A weighting filter

2. CONNECTORS

Mini 50pin - Analog



3. AUDIO FORMATS

The ASI6114 supports the following audio formats:

Format	Rec/Play	HPI format	Windows format
8 bit unsigned PCM	P	HPI_FORMAT_PCM8_UNSIGNED	WAVE_FORMAT_PCM, wBitsPerSample=8
16 bit signed PCM	R/P	HPI_FORMAT_PCM16_SIGNED	WAVE_FORMAT_PCM, wBitsPerSample=16
32 bit signed PCM	R/P	HPI_FORMAT_PCM32_SIGNED	WAVE_FORMAT_PCM, wBitsPerSample=32
32 bit floating point PCM (+/-1.0)	R/P	HPI_FORMAT_PCM32_FLOAT	WAVE_FORMAT_IEEE_FLOAT
MPEG-1 Layer 2	R/P	HPI_FORMAT_MPEG_L2	WAVE_FORMAT_MPEG -fwHeadLayer=ACM_MPEG_LAYER2 -fwHeadMode=ACM_MPEG_SINGLECHANNEL, ACM_MPEG_DUALCHANNEL, ACM_MPEG_STEREO
MPEG-1 Layer 3	R/P	HPI_FORMAT_MPEG_L3	WAVE_FORMAT_MPEG - fwHeadLayer=ACM_MPEG_LAYER3 -fwHeadMode=ACM_MPEG_SINGLECHANNEL, ACM_MPEG_DUALCHANNEL, ACM_MPEG_STEREO OR WAVE_FORMAT_MPEGLAYER3

Not all combinations of channels, samplersates and bitrates are allowed for compressed formats. The following table shows the supported variations:

	Sample Rates	Channels	Bitrates (kbs)
MPEG-1 Layer 2	32,44.1,48kHz	Mono	32,48,56,64,80,96,112,128,160,192
MPEG-1 Layer 2	32,44.1,48kHz	Stereo	64,96,112,128,160,192,224,256,320,384
MPEG-1 Layer 3	32,44.1,48kHz	Mono/Stereo	32,40,48,56,64,80,96,112,128,160,192,224,256,320, VBR

4. DSP UTILISATION

The ASI6000 series of adapters have world-class audio signal processing capabilities. The ASI6000 algorithm complexity has increased at a faster rate than DSP processing power, resulting in a situation where not all available algorithms on an ASI6000 can run simultaneously.

The following tabulates processing “budgets” so that problem configurations can be identified before system design is completed. The following tables assign a utilization percentage for various operations. By summing up the utilizations for the target (worst case) configuration, one can determine whether audio processing will run without causing dropouts or breakup.

Adapter: ASI6044 Rev:G0 (9-Play Mode)
Driver: 2.94rc7

Adapter sample rate 32 kHz, Idle utilization 8%.

Operation	Record (utilization/ device)	Play (utilization/ device)
PCM16/24/32 @ 32 kHz	2%	2%
TimeScale (90%)	NA	4%
SamleRateConversion (110%)	NA	6%
SampleRate Conversion to/from 44.1kHz	5%	6%
SampleRate Conversion to/from 48kHz	5%	4%
MPEG layer-2, 256 kbps @ 32 kHz	4.5%	9%
MPEG layer-3, 256 kbps @ 32 kHz	22%	12%

Adapter sample rate 44.1 kHz, Idle utilization 12%.

Operation	Record (utilization/ device)	Play (utilization/ device)
PCM16/24/32 @ 44.1 kHz	2%	2%
TimeScale (90%)	NA	7%
SamleRateConversion (110%)	NA	7%
SampleRate Conversion to/from 32kHz	6.5%	6.5%
SampleRate Conversion to/from 48kHz	8%	8%
MPEG layer-2, 256 kbps @ 44.1 kHz	12%	6%
MPEG layer-3, 256 kbps @ 44.1 kHz	30%	12%

Adapter sample rate 48 kHz, Idle utilization 13%.

Operation	Record (utilization/ device)	Play (utilization/ device)
PCM16/24/32 @ 48 kHz	2%	2%
TimeScale (90%)	NA	7%
SampleRateConversion (110%)	NA	9%
SampleRate Conversion to/from 32kHz	7%	10%
SampleRate Conversion to/from 44.1kHz	8%	12%
MPEG layer-2, 256 kbps @ 48 kHz	12%	10%
MPEG layer-3, 256 kbps @ 48 kHz	32%	17%

From the above table 4xMP2 playback (all at 44.1 kHz) = idle + 4x6% = 12% + 24 % = 36%.

[end]