

DESCRIPTION

The ASI6114 is a professional PCI audio adapter designed for use in the broadcast and entertainment markets.

A choice of 16bit PCM, MPEG layer 2 and 3 (MP3) compression is available on all streams. A multi-rate digital mixer allows streams of different sample-rates and formats to be mixed together and sent to both analog and digital AES/EBU outputs

The ASI6114 provides two modes of operation – mono and stereo. In stereo mode, the board implements 4 stereo play streams, 1 stereo record stream, 4 stereo balanced analog and AES/EBU outputs and 1 stereo balanced analog and AESEBU input.

In mono mode, 8 playback streams and 1 record stream can be mixed to 8 mono outputs.

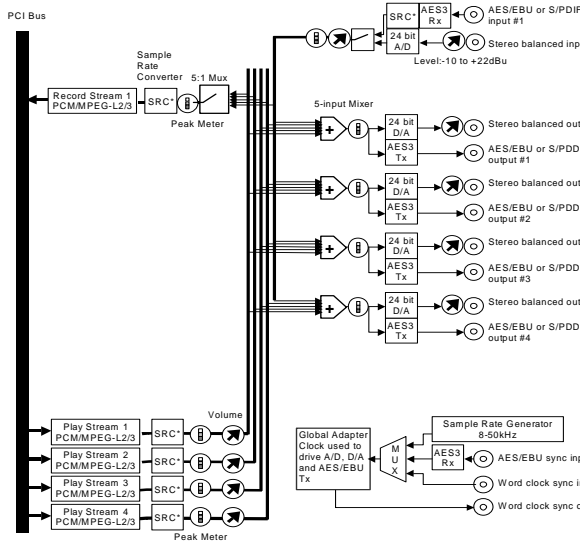
Synchronization capabilities include an AES/EBU sync input and Word clock input and output.



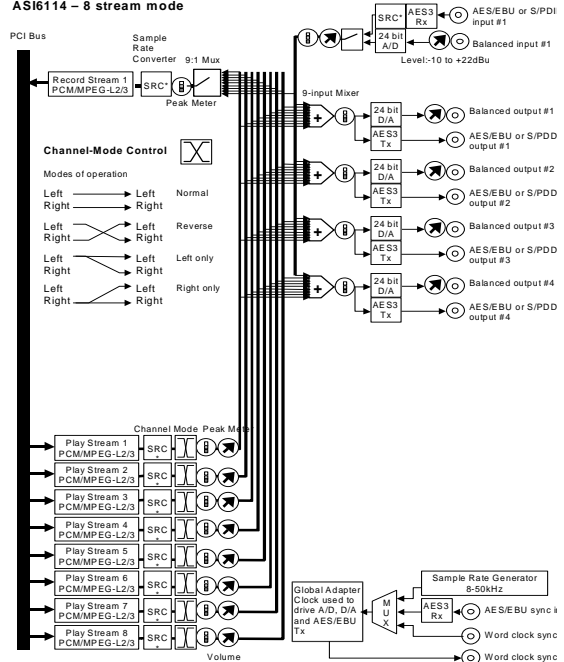
FEATURES

- Four stereo streams/ eight mono streams of playback into four stereo/ eight mono outputs
- One mono/stereo stream of record.
- Formats include MPEG layer 3 (MP3), MPEG Layer2 and 8, 16 and 32bit PCM.
- MRX™ multi rate mixing 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-stereo/eight mono balanced analog and digital play outputs. One balanced mono/stereo analog and digital input.
- 24bit analog-to-digital and digital-to-analog converters - 100dB SNR and 0.002% THD+N
- AES/EBU and S/PDIF digital audio input and output (software selectable) with sample rate converters on all inputs.
- AES/EBU and Word clock Sync input allows adapter clock and AES/EBU outputs to be synchronized to external references
- SoundGuard™ transient voltage suppression protects against lightning and other high voltage surges on all I/O
- Up to 8 cards in one system.
- Windows 95/98, Windows NT/2000 and Linux software drivers available.

ASI6114 – Stereo mode



ASI6114 – 8 stream mode



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)
Sample Rates	8 to 48kHz with 100Hz resolution
Frequency Response	20Hz to 20kHz +/-0.2dB

DIGITAL INPUT/OUTPUT

Type	AES/EBU (EIAJ CP-340 Type I / IEC-958 Professional) S/PDIF (EIAJ CP-340 Type II / IEC-958 Consumer) (software selectable)
Connector	Mini26 (SCSI-II type)
Sample Rates	32, 44.1 and 48kHz with sample rate converter on inputs

SAMPLE RATE CLOCK

Internal	8 to 48kHz with 100Hz resolution
AES/EBU In	Dedicated AES/EBU clock input
Word In	External and Internal board-to-board link
Word Out	External and Internal board-to-board link

SIGNAL PROCESSING

DSP	Texas Instruments TMS320C6711 @ 150MHz
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)

Analog	CBL1004: Mini 50 to Centronics 50 adapter. CBL1044: Centronics 50 to 8 in and 8 out XLR.
Digital	CBL1101: Mini 26 to Centronics 50 adapter. CBL1144: Centronics 50 to 1 in, 4 out XLR, 1 BNC in, 1 BNC out (Word Clock).

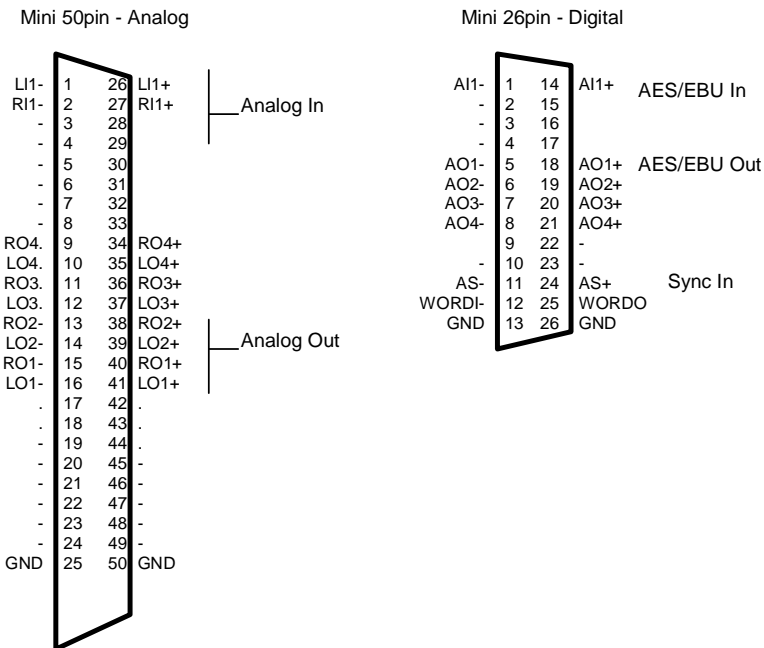
GENERAL

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 @ 400mA, -12V @ 120mA (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



3. INSTALLATION

ASI6000 series adapters need a PCI slot that supplies 3.3V. Most PCs manufactured in 2000 or after will have this. If 3.3V is not supplied, then connect jumper J9. 3.3V will then be generated from an on-board regulator from the PCI's +5V.

4. 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, samplerrates 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

5. 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.

ASI6114 revF, Driver: 2.77

Adapter sample rate 32 kHz, Idle utilization 0%.

Operation	Record (utilization/ device)	Play (utilization/ device)
PCM16/24/32 @ 32 kHz	2%	2%
TimeScale (90%)	NA	9%
SamleRateConversion (110%)	NA	8%
SampleRate Conversion to/from 44.1kHz	10%	9%
SampleRate Conversion to/from 48kHz	10%	10%
MPEG layer-2, 256 kbps @ 32 kHz	17%	7%
MPEG layer-3, 256 kbps @ 32 kHz	40%	18%

Adapter sample rate 44.1 kHz, Idle utilization 2%.

Operation	Record (utilization/ device)	Play (utilization/ device)
PCM16/24/32 @ 44.1 kHz	3%	3%
TimeScale (90%)	NA	10%
SamleRateConversion (110%)	NA	11%
SampleRate Conversion to/from 32kHz	13%	10%
SampleRate Conversion to/from 48kHz	14%	11%
MPEG layer-2, 256 kbps @ 44.1 kHz	23%	11%
MPEG layer-3, 256 kbps @ 44.1 kHz	53%	23%

Adapter sample rate 48 kHz, Idle utilization 3%.

Operation	Record (utilization/ device)	Play (utilization/ device)
PCM16/24/32 @ 48 kHz	3%	3%
TimeScale (90%)	NA	11%
SamleRateConversion (110%)	NA	13%
SampleRate Conversion to/from 32kHz	10%	9%
SampleRate Conversion to/from 44.1kHz	12%	12%
MPEG layer-2, 256 kbps @ 48 kHz	27%	14%
MPEG layer-3, 256 kbps @ 48 kHz	60%	27%

From the above table 4xMP2 playback (all at 44.1 kHz) = idle + 4x11% = 2% + 44 % = 46%.

[end]