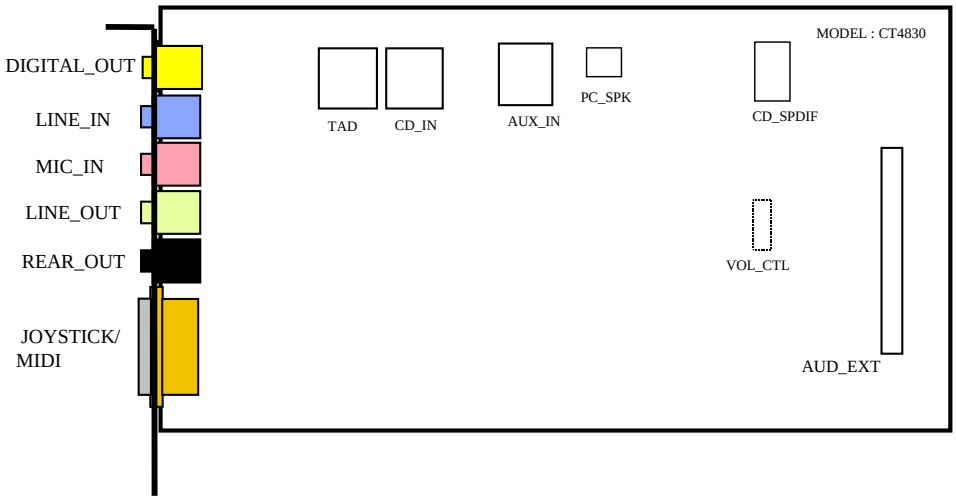
CREATIVE
CREATIVE TECHNOLOGY LTD

DATASHEET

Sound Blaster Live! Value Audio Card
Model CT4830
Revision 1.0



The heart of the Sound Blaster Live! Value is the EMU10K1 audio processor chip, which is the most powerful integrated music, audio and effects engine available. Every signal is processed at 32 bit, 48kHz using E-mu's patented 8-point interpolation wave-table synthesis with much more powerful effects processing. Therefore, the result is a cleaner reproduction of the wave-table musical instruments at all degrees of pitch shifting.

Sound Blaster Live! Value lets users experience depth and realism beyond existing 3D audio. It even provides preset environments such as Hall, Cave or Underwater that can be supplied to your existing games and applications for incredibly true sound.

Sound Blaster Live! Value supports Surround Sound audio on the PC with built-in support for two or four speakers. With S/PDIF output now accommodated in this latest design, users would be able to experience the compelling 3D audio on superior multiple speaker systems such as Creative's FPS2000 Digital or DeskTop Theater 5.1 DTT2500 Digital. Multi-speaker output also allows users to position any audio devices such as CD Audio, WAV or MIDI anywhere within the speaker environment. Sound Blaster Live! Value is now capable of producing a whopping 1024-voices. This remarkable 1024-voices capability goes beyond the quality and performance available in most professional music equipment. With additional voices, Sound Blaster Live! Value delivers richer MIDI playback, simultaneous playback of more instrument notes and multi-layering of instruments to create better quality sound.

With Environmental Audio Extension™ (EAX), Creative has made it easier for any developer who wants to incorporate high-quality 3D audio environments into their titles. In addition, Sound Blaster PCI Standard has provided Sound Blaster emulation on the PCI bus by using a combination of software and hardware wizardries.

Sound Blaster Live! Value is targeted at seamless integration into the PC for the best novice and advanced users experience in gaming, professional music recording and playback, and DVD/Video playback.

Key Features:

- Environmental Audio™ experience generated by the powerful effects engine.
- Creative Multi Speaker Surround™ (CMSS™) for upmixing ordinary stereo sources.
- Support multiple speakers to PC through LINE_OUT and REAR_OUT.
- Supports Digital Speakers such as Creative's FourPointSurround FPS2000 Digital.
- Patented 8-point interpolation reduces noise/distortion to inaudible levels and produce music that is more complete and closer to actual sound.
- A more faithful music reproduction of the actual musical instrument.
- Capable of producing a virtually limitless variety of professional-quality digital sound effects.
- Allows multiple audio sources playback on the same speaker system.
- Realistic and immersive 3D positional audio experience and DirectSound3D hardware acceleration.
- Low noise, low distortion, better SNR and frequency response with a high performance AC97 codec.
- SoundFont® technology enable users to create their own unique set of sound libraries and enhanced existing instrument sounds, drums and audio effects.
- 64 hardware, 1024 PCI Wavetable
- Digital audio Multiple wave file playback
- Stereo wave file recording
- 64 Voice 2 Port hardware wavetable MIDI playback
- Digital input from CD-ROM / DVD-ROM drive.
- PCI Bus Mastering for CPU efficiency

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Playback and Recording Sources

Digitized Sounds

- Sound Blaster 16 Emulation in DOS box and real mode DOS.
- Playback of 64 audio channels each at an arbituary sample rate. Each audio channel can function as a WaveTable Synthesizer voice.
- Each audio channel can playback either 8 bit or 16 bit data from host memory.
- Pairs of audio channel can be programmed to play 8 or 16 bit interleaved data from host memory.
- 48kHz recording from AC97 sample rate converted to 8 common rates to host memory.
- Playback Sources: CD_IN, CD_SPDIF, AUX_IN, LINE_IN, MIC_IN, TAD, MIDI and Wave.
- Recording Sources: CD_IN, CD_SPDIF, AUX_IN, LINE_IN, MIC_IN, TAD, MIDI and Wave.
- Full duplex recording and playback.

Wave Table Synthesis

- E-mu® Systems EMU10K1™ music synthesis engine.
- 64-voice hardware polyphony with E-mu's patented 8-point interpolation algorithm for excellent fidelity.
- 64 hardware and 1024 PCI wave-table synthesis
- 48 MIDI channels with 128 GM & GS-.compatible instruments and 10 drum kits
- Uses SoundFont® technology for user-definable wave-table sample sets; includes 2MB, 4MB and 8MB sets.
- Loads up to 32MB of samples into host memory for professional music reproduction.

Effects Engine

- E-mu® Systems EMU10K1™ patented effects processor.
- Supports real-time digital effects like reverb, chorus, echo, flanger, pitch shifting, vocal morpher, ring modulator, auto-wah or distortion across any audio source.
- Capable of processing, mixing and positioning audio streams using up to 131 available hardware channels.
- Customizable effects architecture allows audio effects and channel control.
- Full digital mixer maintains all sound mixing in the digital domain, eliminating noise from the signal.
- Full bass, treble, and effects controls available for all audio.

Environmental Audio and 3D Audio Technology

- User-selectable settings are optimized for headphones and two or four speakers.
- Accelerates Microsoft® DirectSound® and DirectSound3D.
- Support for Environmental Audio™ property set extensions.
- Creative Multi Speaker Surround™ (CMSS™) technology allows real time panning and mixing of multiple sound sources using two or more speakers.
- Creative Environments – user-selectable DSP modes that simulate acoustic environments like concert hall, cave, underwater, and many more environments to any audio source.

Hollywood-Quality, 32-Bit Digital Audio Engine

- User-selectable bit rates from 8-bit to 16-bit.
- User-selectable sample rates from 8kHz to 48kHz.
- All sound sources are handled with 32-bit precision for highest quality output.
- Analog and Digital I/O modes supported.
- Hardware full-duplex support enables simultaneous record and playback at 8 standard sample rates.
- Utilizes AC97 audio codec.

MIDI Interface / Joystick Port

- Supports MPU-401 UART mode.
- IBM® compatible 15-pin joystick port with analog support.
- Support for digital and DirectInput™ game devices.

Audio Performance (Typical Values)

Reference signal is set at 1kHz

Frequency Response @ –1dB	10 Hz to 40 kHz

Record & Playback Sampling Rates

Recording :	8.0	kHz
(8 supported sampling rates)	11.025	kHz
	16.0	kHz
	22.05	kHz
	24.0	kHz
	32.0	kHz
	44.1	kHz
	48.0	kHz
Playback :	Any arbituary sampling rate <= 48kHz	
Line_Out Full Scale Output	1.0	Vrms
Line_In Full Scale Input	2.0	Vrms
Microphone Full Scale Input (without 20dB boost)	0.2	Vrms
CD Audio Full Scale Input	1.0	Vrms
Microphone Input Impedance	5.0 k	ohms
Line_In Impedance	10k	ohms
CD Audio Input Impedance	10k	ohms

LINE_IN / LINE_OUT @ $2V_{rms}$, 1kHz
(Measured with bandlimited filter from 22Hz to 22kHz)

Signal To Noise Ratio (SNR)	95	dB. (A-Wtg)
Total Harmonic Distortion + Noise (THD+N)	0.008	%

LINE_IN / LINE_OUT Record & Playback @ $2V_{rms}$, 1kHz
(Measured with bandlimited filter from 22Hz to 22kHz)

Signal To Noise Ratio (SNR)	82	dB (A Wtg)
Total Harmonic Distortion + Noise (THD+N)	0.02	%

Power Consumption

Vcc, nominal current	400	mA
+12V, nominal current	150	mA

Temperature Range

Operating	10 °C to 50 °C
Non-Operating	-40 °C to 125 °C

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