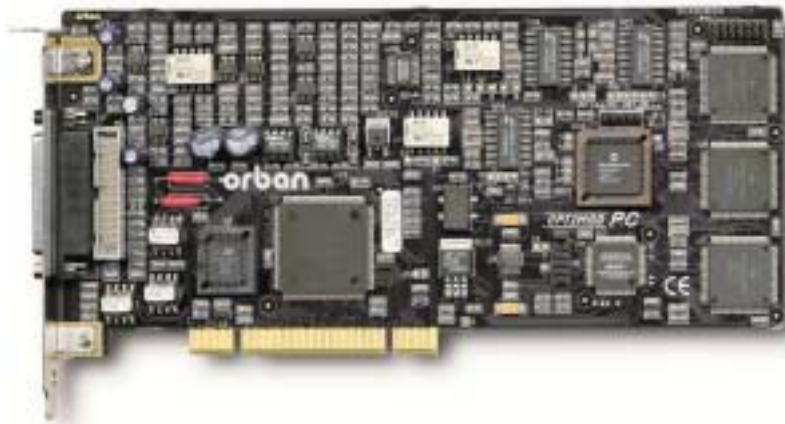


Make your Audio Stream Scream!

Introducing OPTIMOD-PC



Optimod-PC tailors your audio signal to help you compete in digital audio broadcasting (DAB), Internet web/netcasting, and recording applications. Optimod-PC is a PCI Sound Card with on-board digital signal processing that's suitable for both live streaming and on-demand programming. The DSP provides a loud, consistent sound to the consumer by performing automatic gain control, equalization, multiband gain control, and peak-level control.

Without Optimod-PC processing, audio can sound dull, thin, or inconsistent in any combination. Optimod-PC's multiband processing automatically levels and re-equalizes its input to the "major-market" standards expected by the mass audience. Broadcasters have known for decades that this polished, produced sound attracts and holds listeners, and Orban has long been the number one vendor of stand-alone transmission processing to professional broadcasters worldwide. Now Orban's broadcast-quality Optimod processing is available to you on a PCI card—an economical, space-saving alternative to conventional stand-alone boxes. But thanks to its tight integration into the PC, Optimod-PC offers more features than any stand-alone processor. Among others, these include two digital inputs with mixing of asynchronous sources, and sound card emulation that allows Optimod-PC to talk through the operating system to applications running on the host.

Optimod-PC uses advanced "look-ahead" limiting with very low overshoot, effectively preventing clipping in the sound card or encoder overload. "Look-ahead" limiting technology automatically produces maximum loudness with minimum side effects. Unlike clipper-based peak limiting, look-ahead limiting doesn't generate extra spectral "junk" that wastes precious encoder bits in the lossy codecs universally used in digital transmission. It's the ideal way to perfect your sound for any digital audio, streaming audio, or audio-over-IP application.

Optimod-PC ships with over 20 factory presets (each adjustable with easy LESS/MORE control), allowing immediate, effortless setup for any programming format. It includes an interface for complete remote administration over TCP/IP. You can adjust and monitor levels, tweak the processor's sound through a versatile user interface, and save and recall presets. It also includes software that enables the card to batch-process audio files without user intervention.

On-board DSP minimizes CPU load. By comparison to processing running on the computer's CPU, Optimod-PC's built-in DSP allows several streams from a single computer, and minimizes signal delay to help preserve lip sync in video streams.

Multiple cards can be used in a given computer, which is useful in multi-program environments like a Eureka-147 multiplex or large encoder farms. Optimod-PC is compatible with industry standard encoders such as Microsoft Windows Media Encoder, RealNetworks RealSystem Producer, Apple QuickTime, MP2/MP3, and OEM applications. Optimod-PC ships with an analog/digital audio I/O cable assembly, plus drivers for Microsoft Windows 98/ME/2000/XP, and command-line Linux.

Preliminary Product Information

OPTIMOD-PC PRELIMINARY SPECIFICATIONS

SYSTEM

Frequency Response: ±0.1dB, 2-20,000Hz (Bypass software running).

Input/Output Delay: Approximately 25 milliseconds. Can be padded to full frame of: 30 fps (33.33ms), 29.97 fps (NTSC color video; 33.37ms), 25 fps (most PAL video; 40ms), 24 fps (film; 41.67ms), and 96 milliseconds systems.

Internal Sample Rate: 48kHz.

Internal Resolution: 24-bit fixed point (Motorola DSP56362).

Input/Output Resolution: 24-bit.

Peak Control Accuracy: If output samples are synchronous with internal samples, maximum overshoot of any output sample is 0.1dB. This is true at 48kHz output sample rate. If sample rate conversion after internal processing makes output samples asynchronous with internal samples, output samples can overshoot as much as 1dB (0.3dB typical).

Phase Response: All processing is linear-phase (constant group delay).

Internal Processing: Input→Two-Band defeatable AGC→Four-Band Equalizer→Multiband Compressor→Look-ahead Limiter→Output.

Multiband Compressors: Three available: Five-Band, Two-Band, and Protect, selectable by mute-free crossfade.

Equalizers: Shelving Low Bass Eq, selectable 12dB or 18dB/octave Shelving Mid Bass Eq. Parametric Midrange Eq with analog-style bell-shaped curves. Parametric High Frequency Eq with analog-style bell-shaped curves.

Number of Factory Presets: 26, each with 19-step LESS-MORE control. Presets are fully customizable with FULL CONTROL.

Number of User Presets: Essentially unlimited. User presets can be saved on the host hard drive or on other storage devices.

ANALOG AUDIO INPUT

Configuration: Stereo.

Impedance: >10kΩ impedance, electronically balanced, floating and symmetrical.

Nominal Input Level: Software adjustable (via AI REF control) -9dBu to +13dBu VU (-1dBu to +21dBu PPM).

Maximum Input Level: +20 dBu, peak.

Connector: DB-25, EMI suppressed. Captive in plug-in 6'/1.8m I/O cable assembly with two XLR-type, female. Pin 1 chassis ground, Pins 2 (+) and 3 (-) electronically balanced, floating and symmetrical.

A-D Conversion: 24-bit 128X oversampled delta sigma A/D converter with linear phase anti-aliasing filter.

ANALOG AUDIO OUTPUT

Note that this output is primarily for monitoring. Nevertheless, it has been designed for low noise, distortion, and overshoot and can drive an STL or transmitter in an analog plant. Peak control will not be as good as at the digital output because transmitted samples will be asynchronous with peak-controlled internal samples. The source of this output is switchable between the peak limiter output and the multiband compressor output. Because most of the delay occurs in the peak limiter, this can make headphone monitoring much more comfortable for live talent when live microphone inputs are used.

Configuration: Stereo.

Source Impedance: 50Ω, electronically balanced and floating.

Load Impedance: 600Ω or greater, balanced or unbalanced. Termination not required or recommended.

Output Level: +4dBu nominal; adjustable in software. Clip level is +18dBu unbalanced, +24dBu balanced.

Signal-to-Noise: 90dB unweighted signal-to-noise, 20Hz-20kHz (bypass mode).

Distortion: <0.01% THD (bypass mode), 20Hz-20kHz.

Connector: DB-25, EMI suppressed. Captive in plug-in 6'/1.8m I/O cable assembly with two XLR-type, male. Pin 1 chassis ground, Pins 2 (+) and 3 (-) electronically balanced, floating and symmetrical.

DA Conversion: 24-bit 128X oversampled D/A with linear phase anti-aliasing filter.

DC Offset: Less than 10mV differential offset.

Highpass Filter: 0.15 Hz.

DIGITAL AUDIO INPUTS

Number of Inputs: Two, each with sample rate converter. The two inputs can accept asynchronous inputs and will allow them to be mixed. One of the inputs can also be configured as sync reference to lock output sample rate to the sample rate at this input.

Configuration: Stereo per AES/EBU-standard (AES3-1992) or S/PDIF, 24-bits resolution, software selection of stereo, mono from left, mono from right, or mono from sum (as source to use as a mono processor).

Impedance: Transformer balanced and floating, 110Ω impedance, AES/EBU, 75Ω impedance, S/PDIF, software selectable.

Sampling Rate: 32, 44.1 and 48kHz.

Connector: DB-25, EMI suppressed. Captive in plug-in 6'/1.8m I/O cable assembly with XLR-type, female. Pin 1 chassis ground, Pins 2 and 3, transformer balanced and floating.

Input Reference Level: Variable within the range of -30 to -10dBFS (VU) in 0.5dB steps.

Internal Input: The card is equipped with a driver that allows it to look like a standard sound card to the operating system (Windows or Linux). The input can therefore be received from multiple software applications running on the host system by use of the standard operating system hooks. For example, this could include audio over IP routed into the host computer through an Ethernet port and/or two different encoders.

DIGITAL AUDIO OUTPUT

Configuration: Two-channel per AES/EBU-standard (AES3-1992) or S/PDIF (consumer) standard, selectable in software.

Output Level Control: Peak level is adjustable from -20dBFS to 0 in 0.1dB steps. Controlled by software.

Sampling Rate: Internal free running at 32kHz, 44.1kHz, or 48kHz, selected in software. Can also be synced to either AES/EBU input at 32kHz ±4%, 44.1kHz ±4%, or 48kHz ±4%.

Word Length: Selectable 24, 20, 18, or 16-bit. Optional dither can be added, with level adjusted appropriate to word length. This is first-order noise-shaped dither. (i.e., white TPDF dither of peak amplitude equal to the quantizer step size with noise shaping spectral density of 6dB/octave.) It sounds substantially quieter than white triangular PDF dither but, in contrast to more extreme noise-shaped dither, it adds only 3dB unweighted noise by comparison to white PDF dither.

Sync: Internal free running or external. Either AES/EBU input can be used as source for external sync.

Connector: DB-25, EMI suppressed. Captive in plug-in 6'/1.8m I/O cable assembly with XLR-type, male. Pin 1 chassis ground, Pins 2 and 3 transformer balanced and floating.

Jitter: Less than 10ns rms.

Internal Output: The card is equipped with a driver that allows it to look like a standard sound card to the operating system (Windows or Linux). The output can therefore be routed to software running on the host system by use of the standard operating system hooks.

POWER

PCI Connector: +5V at 800mA, +12V at 200mA maximum, -12V at 100mA maximum, 7.5 watts total maximum.

COMPUTER

Bus: Plug & Play PCI Version 2.2 compliant, 32-bit, 33MHz, transfer rate up to 132MBytes/sec. Will operate in 3.3V or 5V PCI slot, and bus extenders.

Drivers: Microsoft Windows 98/ME/2000/XP, WDM, DirectSound, bus mastering, and Linux command-line, OSS compliant, bus mastering.

Software: Mixer Application provides complete control of digital mixer and all hardware settings. Control Application provides subjective adjustment controls of the audio processing and remote administration. It also allows factory and user presets to be recalled, and stored on host storage device. The Control Application will address multiple Optimod-PC cards, either housed in the local host or anywhere on a TCP/IP network.

REGULATORY

Certifications: CE and FCC Class B

ENVIRONMENTAL

Operating Temperature: 32° to 122° F / 0° to 50° C for all operating voltage ranges.

Humidity: 0-95% RH, non-condensing.

Size: (L x H x W): 9"/22.9cm x 5"/12.7cm PCI Standard Height x 0.75"/1.9cm PCI Standard Width

Shipping Weight: 4lbs./1.8kg with cable assembly.

These specifications are preliminary and are subject to design improvements and changes without notice.

