

AeonWave-HD 64

Technical Specifications

System	Lines of code								
<ul style="list-style-type: none">• Available for x86, x86-64 and ARM processors.• SSE, AVX and NEON optimized rendering paths.• Load balancing multi-threading for up to 16 CPU cores.• Windows 7 and up, Linux, Stream, BSD and SDL audio backends.• Supports automatic streaming of WAV, MP3 or OGG/Vorbis formats.• Streams from HTTP and from, and to audio-files.	<table><tr><td>AeonWave</td><td>77593</td></tr><tr><td>Support code</td><td>11440</td></tr><tr><td>Test utilities</td><td>10920</td></tr><tr><td>Total</td><td>105353</td></tr></table>	AeonWave	77593	Support code	11440	Test utilities	10920	Total	105353
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3D and 4D Environment	Filters								
<ul style="list-style-type: none">• Directional filter to define a radiation pattern.• Distance attenuation with frequency filtering supporting 9 distance models, including ISO9613 using atmospheric conditions.• Physically correct Doppler effect which uses atmospheric conditions when the distance filter is set to ISO9613.• Support for distance delayed sound arrival and state changes.• Indoor sound propagation with direct path occlusion.	<ol style="list-style-type: none">1. Volume2. Tremolo3. Gain Envelope4. Frequency5. Bit-crusher6. Compressor7. Equalizer								
Audio Scene Graph	Effects								
<ul style="list-style-type: none">• Absolute or relative matrices for position and orientation.• Absolute or relative vectors for velocity.• Audio-frames can manage a group of emitters and/or audio-frames:<ul style="list-style-type: none">- Can be used to build a tree-structure of all scenery objects.- Objects can be moved from one audio-frame to another.- Changing playback state affects all registered objects.- Applying filters or effects influences all registered emitters.- Changing its 3D position and orientation matrix or velocity vector affects the position or velocity of all registered objects.	<ol style="list-style-type: none">1. Pitch2. Vibrato3. Pitch Envelope4. Phasing, Chorus5. Flanging6. Ring-modulator7. Distortion8. Reverb9. Convolution								
Buffers	Output								
<ul style="list-style-type: none">• Can be filled with data streamed from a file or HTTP connection.• Supports 14 audio formats in big and little endian encoding (30 in total).• Can be used to convert to another supported audio format.• Can be filled with sound data generated by the builtin synthesizer.• Supports the XML encoded AAXS configuration file format which can define filters, effects and sound configuration for emitters, audio-files and the mixer.	<ul style="list-style-type: none">• down to 3ms latency• HRTF (headphone)• Multi-speaker<ul style="list-style-type: none">- up to 8 speakers- Surround Sound- Spatialised								
C++11	MIDI								
<ul style="list-style-type: none">• Adds easy device enumeration.• Adds a named buffer cache which keeps track when a buffer can be destroyed.• Adds the option to tie filter and effects state, and parameters. Changing a tied parameter automatically updates the filter or effect.• Supports automatic streaming of a background audio stream (File or HTTP).	<p>C++ code supports handling all aspects of a single MIDI instrument in 3D space including panning and filter and effect handling.</p>								

<p>Volume Filter</p> <ul style="list-style-type: none"> • Fixed Gain. • Optional Auto Gain adjusting. • Min and Max Gain. • Optional Occlusion. <ul style="list-style-type: none"> - Obstruction or Pass-through. 	<p>Dynamic Gain Filter</p> <ul style="list-style-type: none"> • Initial Delay. • LFO Frequency. • LFO Offset and Depth. • Waveform following. 	<p>Timed Gain Filter</p> <ul style="list-style-type: none"> • 6 stages, linear or exponential. • Sustained or unsustained with a release-time. • Looped or Sampled release. • Repeating with no. repeats. • Stops the emitter when ready.
<p>Frequency Filter</p> <ul style="list-style-type: none"> • Fixed, Timed, Waveform or Envelope-following. • LFO Frequency. • LFO Offset and Depth. • Linear or Logarithmic. • Shelve, Low or High-pass. • Adjustable Resonance Factor. • 6, 12, 24, 36 or 48 dB/oct. • Butterworth or Bessel type. 	<p>Bit-crusher Filter</p> <ul style="list-style-type: none"> • Fixed, Timed, Waveform or Envelope-following. • LFO Frequency. • LFO Offset and Depth. • Optional static noise <ul style="list-style-type: none"> - also Fixed, Timed or Envelope-following. 	<p>Compressor</p> <ul style="list-style-type: none"> • Attack Rate. • Release Rate. • Compression Ratio. • Threshold. • Gate Period. • Gate Threshold.
<p>Distance Filter</p> <ul style="list-style-type: none"> • Reference Distance. • Maximum Distance. • Roll-off Factor. • None, Linear, Exponential or atmospheric conditions based ISO9613-1 distance model. • Optional distance delaying. • 6 OpenAL compatible modes. 	<p>Directional Filter</p> <ul style="list-style-type: none"> • Inner Angle. • Outer Angle. • Outer Gain. • Forward Gain • Allows for a doughnut shaped radiation pattern. 	<p>Equalizer</p> <ul style="list-style-type: none"> • 8-band Graphic or • 3-band Parametric <ul style="list-style-type: none"> - Adjustable cut-off frequency. - Adjustable Resonance factor.
<p>Pitch Effect</p> <ul style="list-style-type: none"> • Fixed Pitch. • Max Pitch. • Start Pitch. • Pitch Rate. <ul style="list-style-type: none"> - Optional Pitch gliding. - Linear or Logarithmic. 	<p>Dynamic Pitch Effect</p> <ul style="list-style-type: none"> • Initial Delay. • LFO frequency. • LFO Offset and Depth. • Waveform following. 	<p>Timed Pitch Effect</p> <ul style="list-style-type: none"> • Up to 6 stages. • Linear or Exponential.
<p>Delay Effect</p> <ul style="list-style-type: none"> • Phasing, Chorus or Flanging. • Delay Gain, Feedback Gain. • Fixed, Timed, Waveform or Envelope-following. • LFO Frequency. • LFO Offset and Depth. • Optional Frequency filtering of the delayed signal. 	<p>Ring-modulator Effect</p> <ul style="list-style-type: none"> • Effect strength • Fixed, Timed, Waveform or Envelope-following. • LFO Frequency. • LFO Offset and Depth. 	<p>Distortion Effect</p> <ul style="list-style-type: none"> • Distortion Factor. • Mixing Factor • From Hard to Soft Clipping • Symmetric to Asymmetric. • Fixed, Timed or Envelope-following.
<p>Convolution</p> <ul style="list-style-type: none"> • Frequency Filtering of the convoluted signal. <ul style="list-style-type: none"> - Low-pass or Shelve. • Convolution Threshold <ul style="list-style-type: none"> - To improve efficiency. • User supplied audio buffer. 	<p>Reverb</p> <ul style="list-style-type: none"> • Delay Depth, Delay Frequency Filter • Decay Level, Decay Depth • Option to split up the 1st order reflections and add one or more 2nd order reflection sections using multiple audio-frames. • Optional Occlusion. <ul style="list-style-type: none"> - Obstruction or Pass-through 	

Waveforms: Sine, Triangle, Square, Sawtooth or Impulse. Waveforms, Timed and Envelope-following can also be inverted.