



## Technology Overview

# QHD<sup>®</sup>

high definition audio engine

### About QHD<sup>®</sup>

**QHD** is comprised of several patented audio technologies designed to significantly enhance the playback of stereo and mono sound. It is especially effective when processing decompressed audio since it improves the dynamics, bass and treble performance over both speakers and headphones. While compression usually diminishes stereo width and the dynamics of audio content, **QHD** technologies restore these attributes to deliver a rich, immersive listening experience.

Today's multimedia and entertainment devices support a wide range of formats such as DVD, HD DVD, Blu-ray, HD television broadcast and new streaming Internet video formats, various audio CD standards, as well as MP3 and other compressed audio formats. Like all QSound audio enhancement algorithms, **QHD** offers high-efficiency performance and scalability while addressing the unique demands of multi-format audio playback.

By adding the **QHD** process library to your entertainment player or player-targeted digital signal processor (DSP), you benefit from an unparalleled suite of high-quality features in a surprisingly small and highly cost effective resource footprint. The **QHD** software package can be easily ported to virtually any platform.

### Product Suite

The QHD suite enhances your audio experience with:

#### *QSound Spatial Enhancements*

- **QXpander<sup>®</sup>** 3D stereo sound stage expansion.
- **QVerb<sup>™</sup>** digital reverberation effect.

#### *QEQ Spectral Enhancements*

- **QSizzle<sup>™</sup>** dynamic high-frequency enhancement.
- **QRumble<sup>™</sup>** dynamic low-frequency enhancement.
- **QLoudness<sup>™</sup>** Fletcher-Munson equalization adjustment.
- **QEQ** static multi-band equalization.

#### *QVolume*

- **QDRC<sup>™</sup>** dynamic range control.
- **QLimiter<sup>™</sup>** anti-saturation dynamic range control.



Home Theater



Stereos



TVs



Speakers



Earphones



Computers



Car Stereos



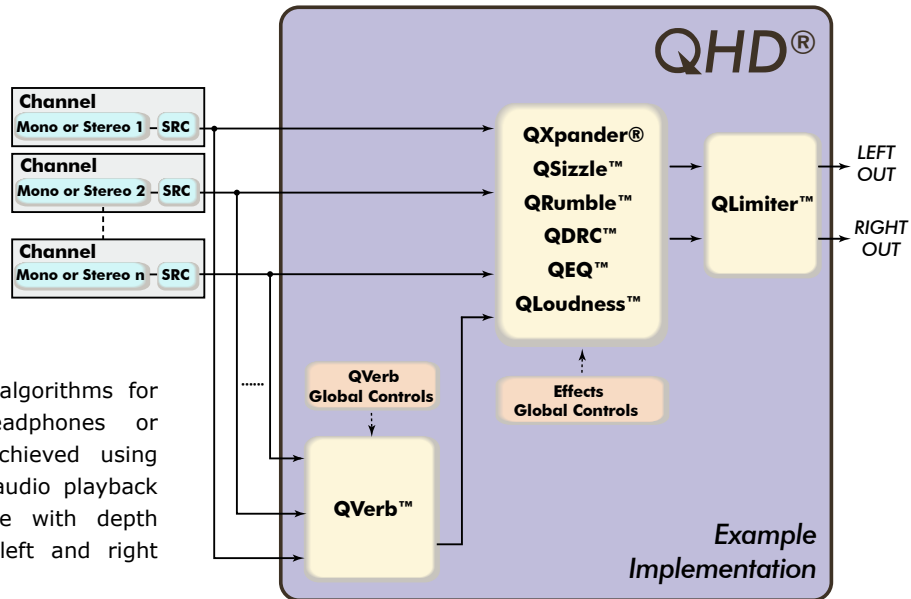
### *The QHD Competitive Edge*

- *Rich, immersive sound stage expansion and enhancement*
- *Efficient resource utilization with small software footprint*
- *Patented, industry proven audio enhancement technology*
- *Selectable, scalable, modular components for easy implementation*

## Feature Set Description

**QXpander®** QSound's proprietary 3D spatial processing literally adds new dimension to music playback, expanding the sound stage beyond the physical limitations of speaker locations, and expanding the acoustic image outside the listener's head when listening with headphones.

**QXpander** employs purpose-specific algorithms for maximum spatial impact on headphones or speakers. Audio enhancement is achieved using normal stereo signals and standard audio playback equipment, creating a stereo image with depth in three dimensions from ordinary left and right input channels.



**QVerb™** 3D acoustic environment simulation enables users to place their music in the sonic context of choice, with presets for stadium, concert hall, club and more.

**QSizzle™** An adaptive mid-high frequency spectral enhancement, **QSizzle** restores a natural-sounding sonic punch to highly compressed audio formats like MP3 by selectively adding upper spectrum energy according to the real-time characteristics of the input signal. The result is lively, sparkling highs without the strident, harsh side-effects of simple frequency boosters.

**QRumble™** The low-frequency counterpart to QSizzle, **QRumble** also adds energy in a selective fashion, bringing substance and warmth to the low end spectrum without overloading on loud passages.

**QLoudness™** Compensates for human insensitivity to high and low frequencies at low listening levels, restoring natural frequency balance across the spectrum.

**QEQ™** A familiar multi-band equalizer option provides users with a familiar interface for shaping overall frequency response.

**QDRC™** Dynamic range control boosts soft passages to prevent them from being lost against ambient noise and reduces the need to continually adjust controls.

**QLimiter™** A high-efficiency, anti-saturation dynamic range controller, **QLimiter** handles any combination of signals and extreme effects settings, eliminating output distortion with surprisingly little CPU bandwidth.

## Hardware Partners



## Contact Us

**QSound Labs, Inc.**

#102, 2816 - 11th Street NE  
Calgary Alberta Canada T2E 7S7

Tel: +1-403-291-2492

Fax: +1-403-250-1521

Email: [info@qsound.com](mailto:info@qsound.com)

[www.qsound.com](http://www.qsound.com)

