

Loudness Measurement & Adjustment for automated, file-based environments

AudioTools Loudness Control Server

The AudioTools Loudness Control Server (AT LCS) is an enterprise class software suite for faster-than-real-time automated processing, measurement, and control of loudness in audio for video programs. AudioTools Loudness Control Server is a smart choice for streamlining PCM, Dolby E, or Dolby Digital and Dolby Digital Plus operations in a file-based environment.

Running on the Windows platform, AudioTools Server bundles all of the functions needed to maintain consistent perceived loudness into one, software-based system that seamlessly integrates with existing service-oriented architectures (SOA) without the need for additional hardware.

Measure and Maintain Loudness

AudioTools Loudness Control Server is a purpose-built configuration of the AudioTools Server platform that performs measurement and adjustment of loudness based on ITU-R BS.1770 and according to EBU R 128, ATSC A/85, ARIB TR-B32 and OP-59 recommendations, enabling compliance with the CALM Act and international loudness regulations.

AudioTools Loudness Control Server provides:

- Loudness measurement & adjustment according to all international standards & recommended practices
- PCM, Dolby E, Dolby Digital & Dolby Digital Plus encoding & decoding
- Loudness control driven by Programme Loudness or Dialogue Intelligence™
- Seamlessly handles mixed PCM , AAC, mp2, mp3 & Dolby content, in parallel
- Integration through Web Services or Watched Folders
- Intelligent adaptation of motion picture sound to broadcast standards via proprietary pürPath processing
- MXF & QuickTime® audio essence extraction/rewrapping
- Faster than realtime operation

The Recommended Practice

Current loudness standards were conceived with file-based workflows in mind. R 128 provides well defined measurement recommendations, in conjunction with circumscribed workflow guidance and specific best practices. The overwhelming value of file-based workflows are:

- Faster than real time throughput
- Automating tedious loudness adjustment chores
- Uniform & consistent output



AudioTools Loudness Adjustment

Loudness measurement is useful for determining whether an asset is compliant. However, what if your assets are not acceptable? AudioTool Loudness Control Server offers a wide range of tools and solutions.

- Changing all audio files to be 'on target'
- Changing only 'on demand'
- Adjusting only the playout level
- Correct loudness metadata

Though jobs and workflows can be configured as measure-only, measure and correct or, a combination of measure, correct and QC, processing often consists of measurement with correction. Programme Loudness plus True Peak Limiting, combined with Maximum Momentary and Maximum Short Term limiting, are part of many broadcast delivery specifications.

Rather than forcing the material to fit within a prescribed dynamic range and amplitude envelope, all adjustments are made based on each program's individual characteristics, what the ATSC refers to as an "agile" workflow. AudioTools Loudness Adjustment can adjust according to the following parameters:

- Programme Loudness ITU & EBU R 128
- Programme Loudness based on Dialogue Intelligence™
- Maximum True Peak using Accelerated TruPeak™
- Maximum Short Term Loudness
- Maximum Momentary Loudness
- Loudness Range
- Flexible dynamic range correction
- Embedded metadata via accurate metadata updating

Dynamic range and Loudness Range can be adjusted using a variety of tools, including multiband dynamics, a broadband Program Range adjustor, a combination of level adjustment and limiting, or any combination of your choice. Unlike hardware and conventional software-based loudness control products, AudioTools Loudness Control Server's correction modules have an extremely wide range of adjustment parameters. This flexibility, coupled with proprietary processing algorithms like pürPath and the non-linear workflows available via AudioTools WFC, means that AudioTools Loudness Control Server can accommodate your workflows with the utmost fidelity.

The AudioTools pürPath algorithm:

- Reduces Loudness Range and/or dynamic range
- Preserves transients & artistic intent of the original while preventing subjectively compressed sound
- Maintains dialog intelligibility
- Provides a compliant, fully automated process for *all* program genres & all target requirements

Intelligent Adaptation

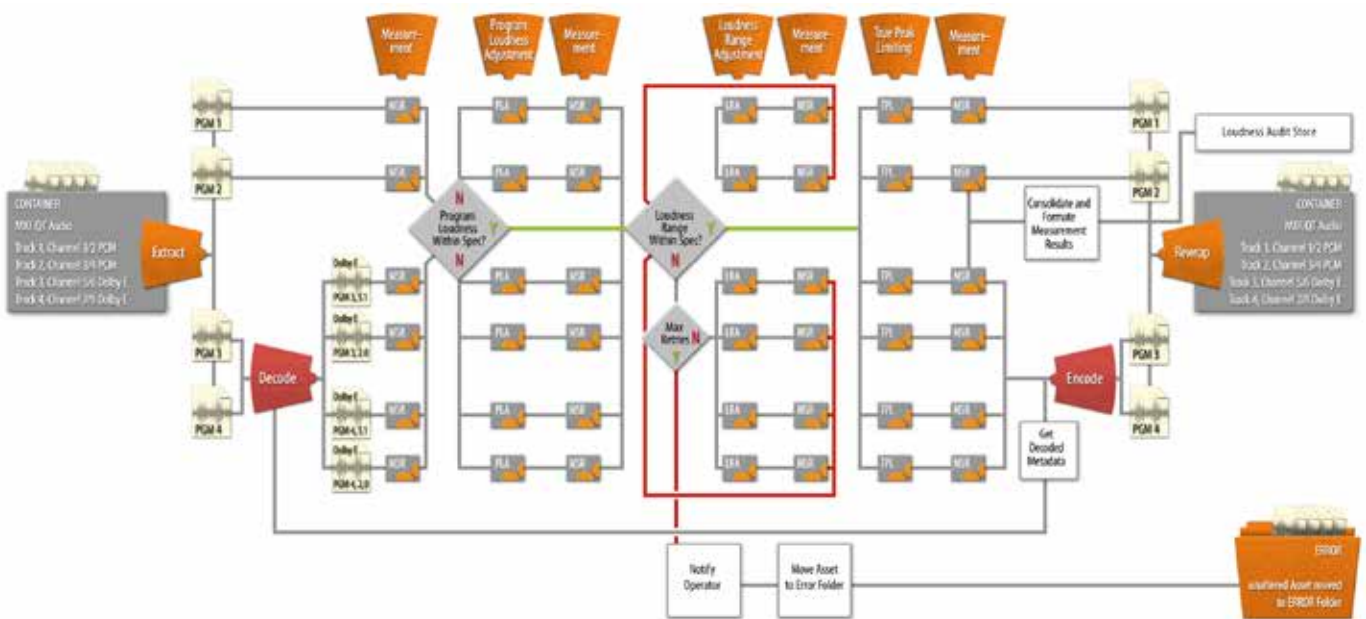
While AudioTools Loudness Normalization processes are designed to fully preserve the existing audio and only apply a gain change combined with optional peak limiting, there are other use cases that require changing the dynamic range and other more complex parameters of the audio content. Examples include adapting a theatrical audio mix for broadcast, and creating the best possible audio experience for modern platforms with restricted dynamic range such as OTT/web, mobile/handheld and SVOD. This is where pürPath's intelligent adaptation of highly dynamic, modern mixes produces better subjective results.

Config & ReWrap

After completion of all measurement and correction steps, AudioTools Loudness Control Server can not only ReWrap the audio, inserting back into the source container, but it can also completely re-configure the program to accommodate requirements that are different from the source. For instance, Dolby E sources can be rewrapped as a combination of re-encoded Dolby E and linear PCM, all while preserving, appending and correcting associated metadata.

A Comprehensive Solution

AudioTools Loudness Control Server can run a broad range of processes, from simple linear jobs defined with our AudioTools Job Wizard, to iterative and conditional workflows requiring the optional AudioTools WFC workflow controller.



Whichever configuration you decide on, AudioTools Loudness Control Server delivers fully automated and unattended operation. Agile, flexible, affordable and interoperable, AudioTools Loudness Control Server preserves your high production values while increasing productivity and consistency.

A Beneficially Narrow Focus

Our dedicated staff of field engineers and programmers are an integral part of every AudioTools Loudness Control Server installation, translating your prerequisites into a design that implements your specific workflows. At Minnetonka Audio, we're a nimble company concentrating only on audio, and we maintain close ties to standards bodies. This allows us to pivot as market conditions change, allowing our products to rapidly adapt as your needs transform. AudioTools Loudness Control Server enables you to be compliant, with greater accuracy and repeatability, while easily future-proofing your investment...Quality *with* compliance.

For more detailed information and tutorials for AudioTools Server, please visit our website:

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