

# Trinnov Optimizer ST2

Loudspeaker/Room Optimizer



## Maximal

The challenge of every sound engineer is to create a mix that sounds great not only in the studio, but for a **majority** of listeners. Whether it's mixing music, film, radio or TV material, **accurate** monitoring is half the job.

## Mix

Trinnov's Optimizer uses state-of-the-art phase and frequency response optimization algorithms, so we feel confident that what we hear comes from the **mix**, not from the **room**.

## Translation

The Optimizer allows you to meet our industry **standards** with unmatched precision. Optimal sound reproduction accuracy means **maximal translation of mixes** across a majority of rooms.



# Trinnov Optimizer 3.3

## Key Features and Benefits

The room's problems have been identified, and are taken into account while recording or mixing. But *as long as the room's acoustics are distorting the mix, how will it translate in other rooms?* Trinnov has applied the results of breakthrough research in the area of loudspeaker/room acoustics to create a new generation of loudspeaker processors, setting a new benchmark for accurate sound reproduction. The Trinnov Optimizer takes *mix translation* to the next level.

### Modern Acoustic Measurements

The Optimizer uses MLS signals to measure the full *impulse response* of every loudspeaker in the room. This adds the time dimension to the frequency response, and enables the Optimizer to see the *full picture* of the loudspeaker's behavior in the room. In multichannel setups the Trinnov's unique cal mic identifies the real positions of the loudspeakers in *3D*.



Trinnov 3D  
measurement  
microphone  
(optional)

### Exclusive Acoustic Analysis

Trinnov's state-of-the-art *time-frequency* analysis algorithms identify room modes, first reflections and late reverberation. Every acoustic aspect is analyzed and compensated with a specific technique. All the subtlety of the Optimizer resides in knowing which defects can be corrected with *acoustic transparency*.

### Powerful Equalization

The Optimizer's intelligent acoustic analysis engine *automatically* computes FIR and IIR filters to dramatically improve the consistency of *direct sound* against *late reverberation*. Full-phase, time domain techniques are applied compensating for the loudspeaker's *group delay* and for very early reflections (deconvolution), while later reflections are left untouched.

### Fine Tuning

The integrated acoustic analysis tools provide both measurement graphs and access to the parameters of the optimization algorithms. Also, manual FIR, parametric and graphic EQs are included to quickly identify target listening curves and provide real time adjustment. Your ears have the final word.

### High Performance Audio

Pristine AD/DA Trinnov converters, 64-bit floating point processing, independent Audio and Processing sections power supplies.

### Clock Recovery and Jitter Attenuation

Clock variations under 25ps are recovered, and jitter attenuation superior to 50dB above 100Hz is achieved.

### High Flexibility

The 4 simultaneous I/O architecture and the 4 processing channels of the ST2 allows multiple loudspeaker configurations such as one stereo, two stereo, 2.1, 2.2, LCR, LCRS, 3.1, bi-amplified stereo quad.

## Wide Listening Area and Multi-point

Trinnov's sophisticated multipoint algorithm can take into account the measurements of *different positions* to perform the optimization. A higher *weighting* may be assigned to the most important listening position(s), and lower weighting to the remaining points.

## Improves Phase Response

The Optimizer improves the frequency response of the loudspeakers, both in *amplitude and phase*. Trinnov corrects the tonal balance to obtain a neutral timbre for every speaker, working in the time domain to achieve a high resolution stereophonic image with well-focused phantom sources. The loudspeaker's sound (including the *early reflections*) and the room (*energy response*) are separately equalized, opening up the listening window.

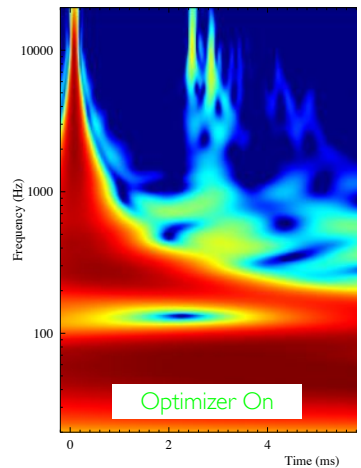
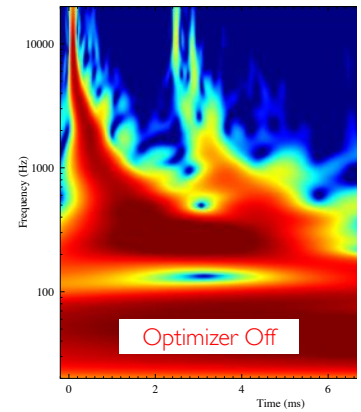
## Meets Your Target Curve

The Optimizer automatically defines the filters that will achieve the required frequency response defined by your target curve. This is particularly useful in post-production studios in order to *comply* with SMPTE standards (*X-Curve*). Phase and group delay targets can also be defined, making the Optimizer a unique tool for sound system designers.

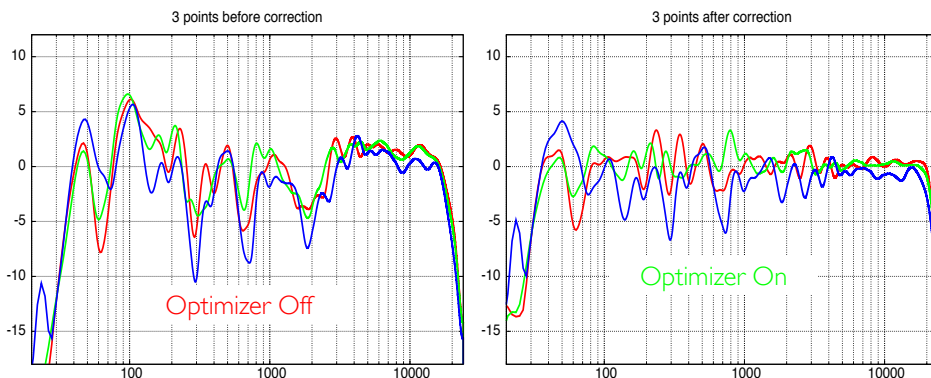
## Intelligent Crossover Alignment

The Optimizer takes a complex task and *simplifies* it with a better result: individual driver and system measurements are acquired and analyzed, including the impulse response, delays and gains of every driver. The Optimizer's calibration engine computes the ideal filters, finding the best compromise to improve *flatness*, directivity and attack in the *overlapping* frequency region.

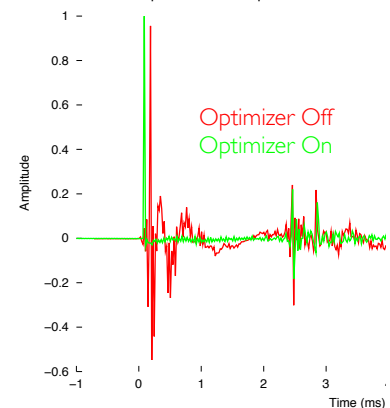
Time-Frequency analysis (wavelet)



Multi-point Optimization



Impulse Response



# Trinnov ST2 Processor

## Easy Setup

1. **Insert** the system between mixing desk and the loudspeakers, and connect the microphone
2. **Run** the measurements at one or multiple mic positions.
3. **Listen** to the optimized sound
4. **Change** the target curves and other optimization parameters

## Powerful Algorithms

- **Multi-point** measurements of all loudspeakers
- **Time-frequency** analysis: the **loudspeaker** and the **room** are separately equalized
- Automatic optimization of **amplitude** and **phase** response according to **target curves**
- Intelligent active crossovers: **automatic** alignment of delays and gains for every driver

## Flexible Fine-Tuning

- Comprehensive acoustical **graphs**
- Optimization **parameters**: maximum boost, maximum attenuation...
- **Manual** FIR, parametric and graphic EQs
- Stores up to 29 user-defined **presets**

## High Performance Audio

- All audio boards **designed and manufactured by Trinnov**
- A/D signal-to-noise ratio: 119 dB (A-Weighted)
- D/A signal-to-noise ratio: 118 dB (A-Weighted)
- **Independent** power supplies for audio and processing sections
- Advanced jitter-rejection technologies
- **64-bit** floating point processing

## Remote control

- Via optional GPIO board, optional IR module and/or KVM
- using optional touchscreen
- From any PC, Mac, iPad, iPhone or Google phone (from a **VNC** client application, through the network)
- **Real-time** control of the processor

## Inputs & Output

- 4 balanced analog inputs & outputs via XLR connectors
- 2 AES pairs (4 channels) in & out via XLR connectors
- Word clock in & out via BNC connectors
- GPIO interface via D-Sub25 connector (optional)
- 4 processing channels
- 2U rack mount

## Dimensions

- Width x Height x Depth: 444 x 88,5 x 405 mm



ST2 rear panel without the GPIO option

Request a demo from a Trinnov partner near you