SoundSeat (Code 7040)

Multimodal playback system for vehicle interior noise

Overview

Scientific research proves that the validity of a perceptive auditory assessment of vehicle interior noise is highly context-sensitive. Compared to headphone-only playback, the authenticity of the simulation can be greatly improved by playing the noise signals in a realistic environment and allowing the user to control it interactively.

The SoundSeat provides realistic driving feeling by combining airborne and structure-borne sound playback with real vehicle controls.

With the H3S simulation software developed as a perfect match for the SoundSeat, subjects can operate the SoundSeat like a real vehicle: They can accelerate, brake and shift gears, while noise and vibrations realistically adapt to the current driving situation in real time. On a big screen, subjects can watch the corresponding visual scenery and thus obtain a realistic overall impression of the driving situation.

Even without H3S, the SoundSeat is excellently suited for non-interactive playback of sounds and vibrations in a vehicle context, e.g. for rating and comparing sound quality in connection with the SQuare jurytesting software.

Features

Playback and simulation

- Calibrated 4-channel playback and simulation system
  - Aurally accurate playback of binaural signals via headphone
  - Realistic playback of seat and steering wheel vibrations via shakers

Components

- Car seat with uniaxial vibration excitation on the seat rail
- Leather steering wheel with uniaxial vibration excitation
- Ultra-low-noise electronics for an undisturbed sound experience
- Compact and solid mechanical design (separable into two halves and mounted on casters for easy transport)
- Touchscreen for operating the playback software (touchscreen and software not included)
- VESA mounting for a monitor in the driver's field of vision, e.g. for including a visual road simulation (straight-ahead driving)

- Separate 19" rack with
  - a powerful PC as the central control unit
  - a 2-channel amplifier for the shakers
  - 4-channel playback equalization (equalizers not included)

Interaction with driving noise simulation

- High-quality accelerator and brake pedals
- Gearshift lever
- Button for starting and stopping the engine

Applications

- Realistic experience and assessment of vehicle interior noise and vibrations in an authentic context
- Interactive noise simulation (in connection with H3S, a software for interactive noise simulation in a driving simulator)
- Assessment of noise and vibrations (in connection with SQuare, a software for listening tests)

- Benchmarking (in connection with H3S, SQuare, or ArtemiS Classic; ArtemiS Classic is part of the analysis and playback software ArtemiS SUITE)
- Design of target sounds (in connection with H3S, SQuare, or ArtemiS Classic)

Scope of supply

- SoundSeat (Code 7040)
  Multimodal playback system for
  vehicle interior noise

  - Car seat with pedals, steering
    wheel, etc.
  - High-performance PC with sound
    card for real-time playback of
    vehicle interior noise
  - Shaker
  - Amplifier for Shaker
  - 19" rack
  - labADAT (Code 3794)
    ADAT-Adapter
  - CLW II.xx (Code 9825-xx)
    Fiber optic cable (ADAT) with
    TOSLINK connectors
  - Country-specific power cable

Options

Equalizer (required)

- *lab*O2-V1 (Code 3731-V1)
  2-channel playback
  equalizer

- *lab*P2-V1 (Code 3732-V1)
  Binaural headphone equalizer

Open, dynamic headphone (required)

- HD IV.1 (Code 2380)
  Frequency response:
  16 Hz - 30 kHz (-3 dB)

- HD VII (Code 2497)
  Frequency response:
  10 Hz - 42 kHz (-3 dB)

- HD IV.2 (Code 2481)
  Frequency response:
  16 Hz - 30 kHz (-3 dB)

- HD VIII (Code 2498)
  Frequency response:
  5 Hz - 54 kHz (-3 dB)

Touchscreen (required)

- Touchscreen for interactive control
  of the playback/jurytesting soft-
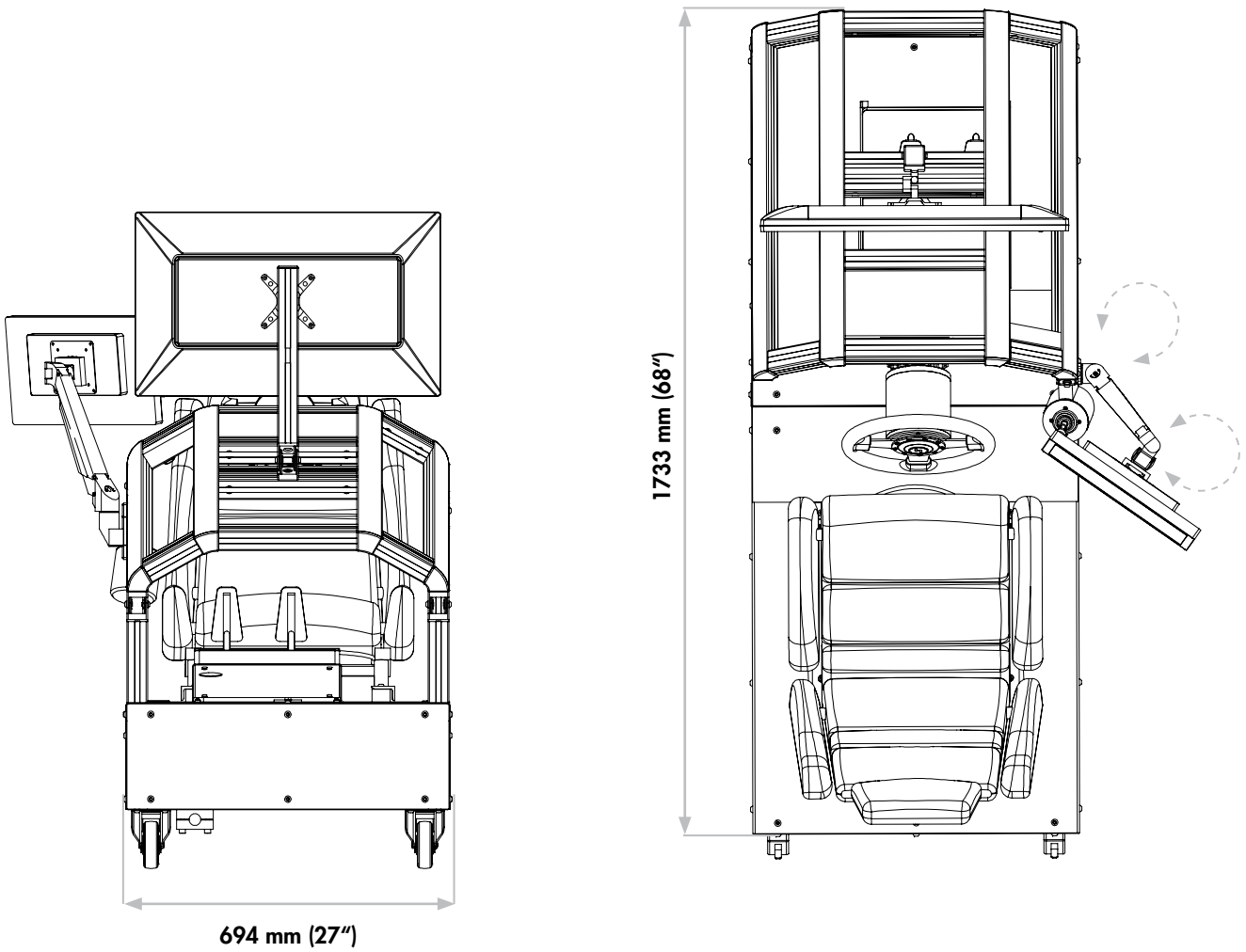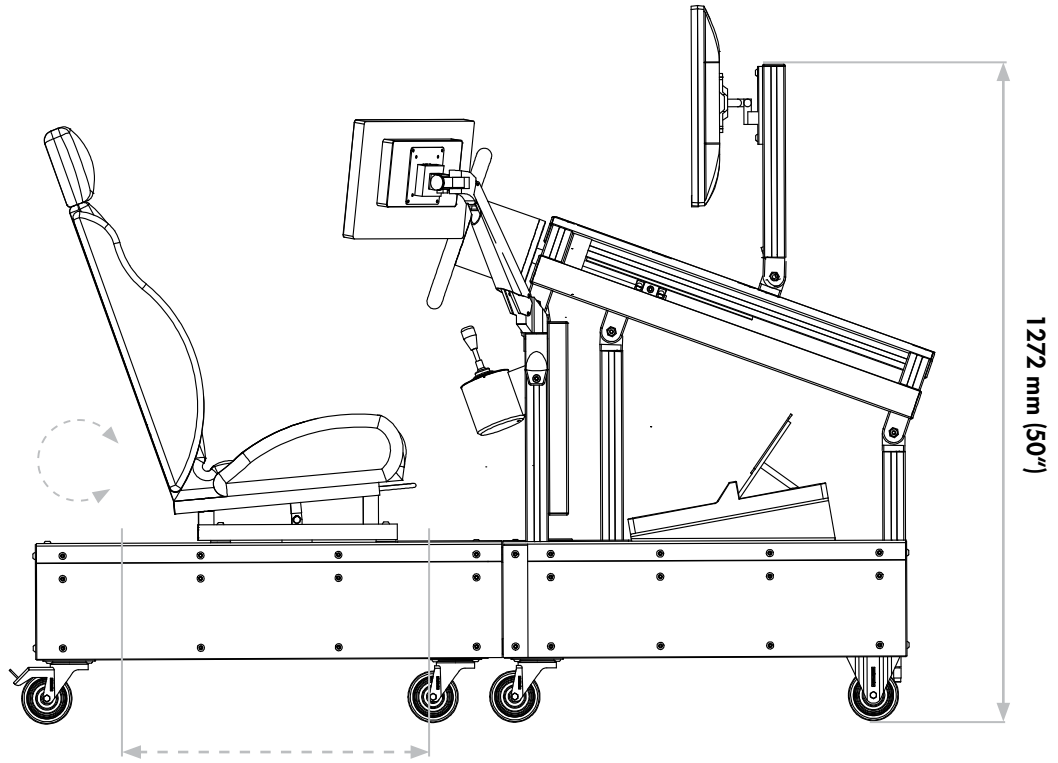 ware

Monitor (optional)

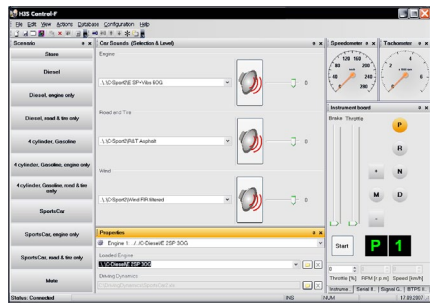- Monitor for visual road simulation
  (incl. speed and RPM display)

If you have any questions, please do not hesitate to
contact your HEAD acoustics support team.

Dimensions

1272 mm (50")

694 mm (27")

1733 mm (68")

Software (optional)

Simulation software H3S

The SoundSeat is optimized for using the HEAD 3D Sound Simulation System H3S.

H3S adapts sounds and vibrations to an individual "driving situation" and reacts in real-time to variations in speed, RPM, throttle position, etc. During the simulation, H3S allows the interactive replacement of engines, other components and much more. Modifications are working immediately, allowing a realistic prediction of the effects.

For further information see the data sheet H3S (Code 7007).

For convenient operation of H3S e.g. for switching between sound variants, a touch screen is attached via a pivoting arm on the operating console. During the simulation, H3S presents a visual driving simulation including current driving conditions such as RPM and speed via a monitor, which is centrally arranged behind the wheel.

Jurytesting software SQuare
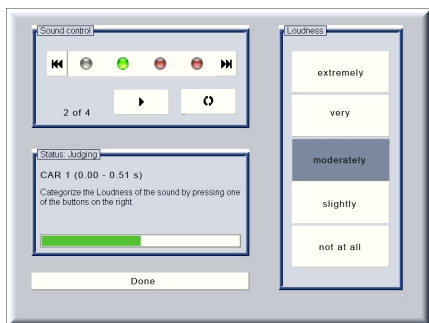
Using the jurytesting software SQuare, listening tests can be easily and quickly conducted in the SoundSeat.

In addition to the acoustic signals the subject perceives through a headphone, the matching vibrations can be created by shakers connected to the seat and the steering wheel (4-channel playback).

This system provides the subjects with an authentic environment, which vastly improves the validity of the judgments compared to tests conducted in listening studios.

For further information see the data sheet SQuare (Code 2420).

Analysis software ArtemiS Classic
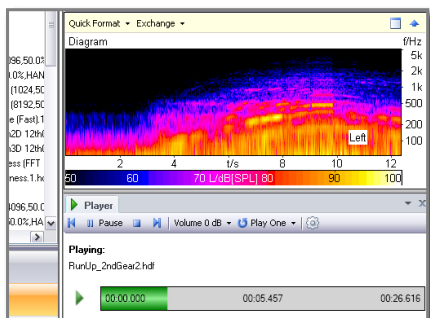
The analysis software ArtemiS Classic allows a non-interactive 4-channel playback (air-borne and vibrations) in the SoundSeat.

For example, filters can be used for generating variants, which can be played back immediately in a multimodal way. This increases the authenticity of the evaluation of vehicle interior noise.

ArtemiS Classic is part of the analysis software ArtemiS SUITE.

For further information see the data sheets of ArtemiS SUITE (Code 5000ff).