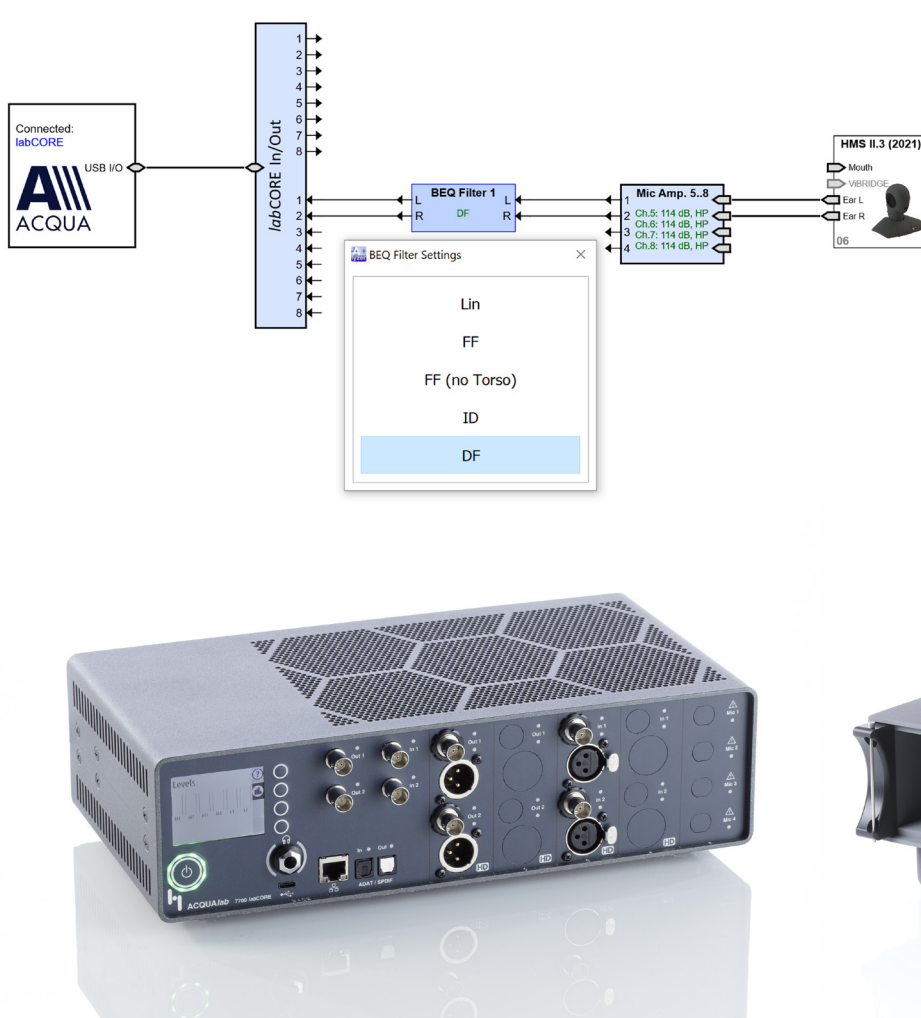




Code 7740

coreBEQ

labCORE Binaural Equalization, Including Filter Set for One Artificial Head

OVERVIEW

coreBEQ

Code 7740

*lab*CORE Binaural Equalization, Including Filter Set for One Artificial Head

coreBEQ is a software extension for *lab*CORE that enables digital binaural equalization for the ear simulators of one artificial head in ACQUA.

The extension consists of a coreBEQ license key for one *lab*CORE as well as equalization filters for one artificial head. The filter set is produced individually for each artificial head to ensure adequate digital real-time equalization.

For each additional artificial head, HEAD acoustics can generate another individual equalization filter set. This service is available by ordering coreBEQ-Add (Code 7741).

KEY FEATURES

Individual binaural equalization (BEQ) filters for the ear simulators of one artificial head from the HMS II Series or appropriate artificial heads from third parties

Three types of BEQ filters for different applications:

- › Free field (with or without torso)
- › Diffuse field
- › Independent of direction

Permanent storage of license key for coreBEQ and BEQ filters on *lab*CORE for convenient use and full portability

Storing multiple BEQ filter sets for different artificial heads on one *lab*CORE is possible

Full integration and application in ACQUA as real-time digital filtering

APPLICATIONS

Performing appropriate and comparable binaural measurements with artificial heads

Standard-compliant measurements which require individual binaural equalization

DETAILS

Using a binaural artificial head during recording enables a complete spatial imaging of a sound field and a realistic auditory impression that cannot be achieved by recording with conventional measurement microphones.

Due to its outer geometry, an artificial head changes a sound field in a comparable way to human beings. However, the geometry makes recordings not directly comparable with measurement microphone recordings. Thus, for the purpose of analysis, the directional and/or non-directional changes need to be subtracted (equalized) from the artificial head recording, resulting in a frequency response comparable to a conventional measurement microphone and achieving measurement compatibility between artificial head recordings and conventional microphone recordings.

A recording equalization is a filter that is applied to the recorded signal during recording. This filter is referred to as equalization filter because the sound that was previously altered by the artificial head is equalized again by this filter, and thus made comparable with conventional measurement microphone recordings.

DESCRIPTION

The coreBEQ software extension provides filters for *labCORE* to equalize the binaural ear simulators of one artificial head for recording. coreBEQ consists of a software license key for one *labCORE* as well as a filter set for one artificial head. After installing both to *labCORE*, the equalization can be applied in ACQUA.

For adequate equalization results, an individual filter set is produced for each artificial head. The filter set is determined during production at HEAD acoustics. If purchasing coreBEQ subsequently, the individual filter set is created based on the existing artificial head's filter set.

A valid calibration of the artificial head is mandatory for precise equalization results. If the calibration of artificial heads from the HMS II Series expires, we recommend a new calibration at

GENERAL REQUIREMENTS

Hardware

labCORE (Code 7700)

- › Modular multi-channel hardware platform

One of the following Head Measurement Systems:

HMS II.3

- › HMS II.3 (Code 1703)
 - » Head Measurement System, basic version with right ear simulator, 3.3 pinna, and artificial mouth
- › HIS L (Code 1701)
 - » Head Impedance Simulator, left

HMS II.3 LN

- › HMS II.3 LN (Code 1703.1)
 - » Head Measurement System, low-noise version with right ear simulator, 3.3 pinna, and artificial mouth
- › HIS L LN (Code 1701.1)
 - » Head Impedance Simulator, left, low-noise version

HMS II.3 LN HEC

- › HMS II.3 LN HEC (Code 1703.2)
 - » Head Measurement System, low-noise version with human-like ear canal simulator right and artificial mouth
- › HIS L LN HEC (Code 1701.2)
 - » Head Impedance Simulator, left, low noise, human-like ear canal version

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HEAD acoustics facilities. Third-party artificial heads shall be maintained as well regarding calibration.

coreBEQ provides three types of binaural equalization:

- › Free field (FF) with or without torso
 - » Sound incidence from the front in a fully anechoic environment with idealized, point-like sound source located at least 3 m away from the artificial head at the height of the artificial head ears. The free field equalization contains non-directional attributes on the one hand and directional attributes for exactly one direction of sound incidence on the other hand.
- › Diffuse field (DF)
 - » Sound incidence from all directions with the same spectrum and level. The diffuse field equalization contains non-directional attributes on the one hand and directional attributes as an integral over all directions of sound incidence on the other hand.
- › Independent of direction (ID)
 - » Equalization of directional-independent resonances of the *cavum conchae* and ear canal entrance. This equalization is determined mathematically. It involves only the correction of the non-directional attributes, i.e., the resonances generated by the *cavum conchae* cavity and the ear canal entrance. Since this equalization only corrects the non-directional changes, it is called Independent of Direction.

coreBEQ-Add (Code 7741) enables *labCORE* and ACQUA to operate an additional artificial head with binaural equalization. It comprises the binaural equalization filter set for one additional artificial head. This filter set is applicable on any *labCORE* with a valid coreBEQ license. Any *labCORE* with a coreBEQ license can permanently store a virtually unlimited amount of equalization filter sets for different artificial heads.

OPTIONS

coreBEQ-Add (Code 7741)

- › *labCORE* Binaural equalization, Additional set of filters for one artificial head (coreBEQ Required)

GENERAL REQUIREMENTS

HMS II.3 ViBRIDGE

- › HMS II.3 ViBRIDGE (Code 1703.3)
 - » Head Measurement System, low-noise, with human-like ViBRIDGE (bone conduction simulation) ear simulators (left and right) and artificial mouth

HMS II.4

- › HMS II.4 (Code 1704)
 - » Head Measurement System, basic version with right ear simulator, 3.3 pinna
- › HIS L (Code 1701)
 - » Head Impedance Simulator, left

HMS II.6

- › HMS II.6 (Code 1706)
 - » Head Measurement System, with artificial mouth and free-field microphones (left and right)

HMS II.7

- › HMS II.7 (Code 1707)
 - » Head Measurement System, with artificial mouth and free-field ICP microphones (left and right)

Compatible third party artificial head

Software

ACQUA (Code 6810)

- › Advanced Communication Quality Analysis Software, full license version

ACQUA Compact (Code 6860)

- › Compact test system

RC-*labCORE* (Code 6984)

- › Remote configuration software for *labCORE*

SCOPE OF DELIVERY

coreBEQ (Code 7740)

- › *labCORE* Binaural equalization, incl. filter set for one artificial head

Initial equipping

- › coreBEQ software license key and filter set are stored on *labCORE* during production

Retrofitting

- › HEAD acoustics supplies the customer with the software license key and the filter set



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