HEAD acoustics

DATA SHEET

Codes 3370 / 3371.x

BMK Binaural Microphone Kit

including installation in an MH I.x Motorcycle Helmet for the purpose of binaural recording

OVERVIEW

BMK Binaural Microphone Kit

Codes 3370 / 3371.x

including installation in an MH I.x Motorcycle Helmet for the purpose of binaural recording

The motorcycle helmet with an installed binaural microphone unit is intended for audio recording on a motorcycle in conjunction with a mobile frontend or with stationary test-bench systems (e.g., in a wind tunnel).

The compact BMK Binaural Microphone Kit is installed in the interior recesses of the SHOEI GT-Air 3 motorcycle helmet (MH I.x), utilizing the existing space provided for a hands-free communication system to avoid any impact on wearing comfort. This also prevents any modifications that could compromise safety, and the microphone unit is virtually invisible from the outside.

Connecting a mobile frontend (e.g., SQuadriga III or SQobold) or an IEPE/ICP-capable HEAD*lab* module as part of a HEAD*lab* system enables the entire ride to be recorded and subsequently analyzed, for example, directly on the device or in ArtemiS SUITE.

The motorcycle helmet with an installed binaural microphone unit enables more realistic audio recording and provides greater wearing comfort than previous solutions. Thus, in combination with a suitable recording system, the motorcycle helmet constitutes an ideal measurement instrument for reproducible binaural audio recording for the motorcycle industry.

KEY FEATURES

Fixed installation of the binaural microphone unit in the motorcycle helmet

Ease of handling during measurements

Individual helmet fit

Connection to a mobile frontend, e.g., SQuadriga III or SQobold

Compact and secure design

Reliable and convenient tool for sound measurement during test rides

High usability and comfort

Consistent and reproducible results

Basis for realistic playback of the auditory impression during motorcycle operation

Quick-release mechanism with snap-in connector for rapid disconnection from the setup

APPLICATIONS

Binaural recording during motorcycle operation

Reduction of noise pollution during motorcycle operation

Improvement of the auditory impression during motorcycle operation

Capability to compare test ride and test bench measurements within a single system

DETAILS

Binaural Recording

In combination with a suitable mobile frontend, the motorcycle helmet with an installed binaural microphone unit constitutes an optimal solution for uncomplicated binaural recording on a motorcycle. Simply connect the motorcycle helmet via the CBB VI.0.85 cable to a mobile frontend, such as SQuadriga III or SQobold, or an IEPE/ICP-capable HEAD*lab* module as part of a HEAD*lab* system, and start your ride.

Your recordings can be played back either on the recording and playback systems themselves or by using the Players of ArtemiS SUITE, SQala, or HEAD Companion.

Interfaces

- Snap-in connector with two BNC connectors for connection to a recording system

Motorcycle helmet connected to SQuadriga III

Scope of Delivery

- BMK (Code 3370)
  Binaural Microphone Kit
  incl. installation in an MH I.x Motorcycle Helmet
- MH I.x (Code 3371.x)
  Motorcycle Helmet for binaural recording
  (head circumference, depending on the selected size)
  - MH I.1 (Code 3371.1)
    Size XS (53 cm–54 cm)
  - MH I.2 (Code 3371.2)
    Size S (55 cm–56 cm)
  - MH I.3 (Code 3371.3)
    Size M (57 cm–58 cm)
  - MH I.4 (Code 3371.4)
    Size L (59 cm–60 cm)
  - MH I.5 (Code 3371.5)
    Size XL (61 cm–62 cm)
  - MH I.6 (Code 3371.6)
    Size XXL (63 cm–64 cm)
- CBB VI.0.85 (Code 3379-0.85)
  Snap-in connector to 2 x BNC for BMK, 0.85 m
- Manual

Complementary Products

The following products can be used to complete the process from recording to playback and analysis:

- HD OP I.1 (Code 2511.1)
  Premium open-back dynamic headphones
- HD OP II.1 (Code 2512.1)
  High-end open-back dynamic headphones
- playBasic (Code 2443)
  Binaural playback unit
- playPro (Code 2450)
  High-end binaural playback unit
- ArtemiS SUITE
- SQala

Compatible Devices

- Mobile Frontends
  - SQobold (Code 3302)
    Mobile 4-channel recording and playback system
  - SQuadriga III (Code 3324)
    Mobile 8-channel recording and playback system
- HEAD*lab* Modules
  - *lab*COMPACT12 II (Code 31020)
    Second-generation HEAD*lab* 12-channel compact module with HEAD*link* 2.0
  - *lab*COMPACT24 II (Code 31021)
    Second-generation HEAD*lab* 24-channel compact module with HEAD*link* 2.0
  - *lab*HSU (Code 3710)
    HEAD*lab* high-end 2-channel frontend
  - *lab*CF6 (Code 3725)
    HEAD*lab* 6-channel charge/IEPE/ICP input module with HEAD*link* 2.0, with low-pass filter
  - *lab*V6HD (Code 3728)
    HEAD*lab* 6-channel Line/IEPE/ICP input module with high dynamic wide-range input
  - *lab*VF6 II (Code 3752)
    HEAD*lab* 6-channel voltage/IEPE/ICP input module with HEAD*link* 2.0, with low-pass filter
  - *lab*V12 II (Code 3753)
    HEAD*lab* 12-channel voltage/IEPE/ICP input module with HEAD*link* 2.0
  - *lab*M6 II (Code 3754)
    HEAD*lab* 6-channel microphone/IEPE/ICP input module with HEAD*link* 2.0
  - *lab*V24 II (Code 3755)
    HEAD*lab* 24-channel voltage/IEPE/ICP input module with HEAD*link* 2.0
  - *lab*VF6-Iso II (Code 3757)
    HEAD*lab* 6-channel voltage/IEPE/ICP input module with electrically isolated inputs, with HEAD*link* 2.0
  - *lab*V12-O4 II (Code 3759)
    HEAD*lab* 12-channel voltage/IEPE/ICP input module with four analog outputs (shakers) and HEAD*link* 2.0

COMPONENTS INSIDE THE HELMET

Microphone Kit

Surface microphone

The microphone kit installed in the motorcycle helmet consists of two surface microphones mounted at the wearer's left and right ear positions. Each microphone is centrally positioned in a silicone enclosure inside the helmet and is protected by foam padding.

The microphones' low profile enables measurements to be performed comfortably at positions where conventional microphones do not fit.

Snap-In Connector

SQuadriga III

SQobold

HEADlab modules

The CBB VI.0.85 cable, which is connected to the motorcycle helmet via a snap-in connector, can be connected to two BNC connectors on our mobile frontends (SQuadriga III, SQobold) to enable binaural recording using the integrated microphone unit. Alternatively, you can connect the motorcycle helmet to our IEPE/ICP-capable HEAD*lab* modules as part of a HEAD*lab* system.

The snap-in connector enables rapid and straightforward disconnection of the motorcycle helmet from the connected recording system, thereby enhancing both user safety and ease of handling.

TECHNICAL DATA

GENERAL SPECIFICATIONS

Number of channels	2
Plug connector	IP67 5-pin snap-in connector or BNC with CBB VI.0.85
Dimensions (W x H x D)	MH I.x: 28 cm x 30 cm x 28 cm
Helmet sizes (head cirumference)	XS (53 cm–54 cm) S (55 cm–56 cm) M (57 cm–58 cm) L (59 cm–60 cm) XL (61 cm–62 cm) XXL (63 cm–64 cm)
Weight BMK (3370) + CBB VI.0.85 (3379-0.85) MH I.x (3371.x) Total	 0.128 kg 1.7 kg 1.828 kg
Operating temperature	-40 °C–+80 °C (-40 °F–176 °F)

ELECTRICAL SPECIFICATIONS

IEPE/ICP current	2 mA–20 mA
TEDS (IEEE 1451.4)	Yes

ACOUSTIC SPECIFICATIONS

Microphone sensitivity	8.5 mV/Pa or -41.4 dB re. 1 V/Pa
Inherent noise	32 $dB(A)_{SPL}$
Frequency range	20 Hz–20 kHz 100 Hz–3 kHz (±1 dB) 20 Hz–3 kHz (±3 dB) 20 Hz–20 kHz (±6 dB)
Maximum sound pressure level	150 dB_{SPL}, with 3% THD 142 dB_{SPL}

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IEPE denotes an industry standard for piezoelectric sensors equipped with integrated impedance converter electronics. Comparable technologies are marketed by individual manufacturers under proprietary designations, such as *ICP*, *CCLD*, *IsoTron*, or *DeltaTron*. In this document, the term *IEPE/ICP* is used as a general designation representing corresponding manufacturer-specific product and brand names.

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