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DATA SHEET

*lab*BGN (Code 6486)

ACQUA*lab* (8+2)-channel Background Noise Hardware Platform

Overview

HEAD acoustics developed numerous background noise simulation systems for testing telecommunication equipment under realistic conditions. *lab*BGN is the dedicated ACQUA*lab* generation hardware platform for these systems serving as an audio distribution interface.

*lab*BGN distributes up to 10 output channels to amplifiers for background noise playback. Various other in- and outputs allow to receive, record and play back audio signals. *lab*BGN also offers a HEAD*link* connector for direct connection to supported HEAD acoustics devices.

The pulse channel of *lab*BGN allows automated triggering of playback to ensure repeatability of test runs under the exact same conditions.

Key Features

- Audio distribution hardware interface for all HEAD acoustics background noise simulation systems
- Supports up to 10 analog output channels
- Various digital inputs for recording
- HEAD*link* for direct connection to other HEAD acoustics devices
- Automatic playback triggering via pulse channel

Applications

- Fully repeatable testing of telecommunication and other devices in the presence of background noise

Description

Background noise has a major influence on voice transmission quality of telecommunication devices and systems. For conclusive testing under laboratory conditions, HEAD acoustics offers various background noise simulation systems for application in labs and vehicles:

- HAE-BGN
- HAE-car
- 3PASS *lab*
  (with and without 3PASS *reverb*)
- 3PASS *flex*
  (with and without 3PASS *reverb*)

For recording background noise scenarios, equalizing the test environment's loudspeaker setup as well as for playback itself, a powerful and versatile hardware interface is required. To work with the systems listed above, HEAD acoustics developed the ACQUA*lab* generation hardware platform *lab*BGN. It connects to the PC running the software part of the system – usually the ACQUA-PC or a dedicated PC – via USB.

*lab*BGN supports up to 10 loudspeakers through 8+2 analog outputs for connection to external amplifiers. The hardware interface also offers digital inputs in connection types such as ADAT, AES and general purpose inputs for custom application. All inputs are accompanied by an equal number of digital outputs of the same respective connection type. Monitoring playback is possible through front-sided 6.35 mm headphone output.

*lab*BGN also offers a HEAD*link* connector for uncomplicated connection to supported HEAD acoustics devices like the Microphone Surround Arrays MSA I or MSA II for recording and equalization. For custom microphone setups (e.g. in-vehicle hands-free systems with distributed microphones), *lab*BGN can also connected to the mobile 8-channel recording & playback front-ends SQuadriga II or SQuadriga III via HEAD*link*.

For full repeatability of testing, playback of background noise must be perfectly synchronized with the measurement. *lab*BGN offers a dedicated pulse input that connects to *lab*CORE (see exemplary setups on last page) to trigger playback of background noise in perfect sync with each measurement.

General Requirements

Software

- One of the following HEAD acoustics **background noise simulation systems** (plus necessary components)
  – **HAE-car (Code 6970)**,
  Background noise simulation system with semi-automated equalization for car cabins

  or

  – **HAE-BGN (Code 6971)**,
  Background noise simulation system with semi-automated equalization for labs

  or

  – **3PASS *lab* (Code 6990)**,
  Advanced background noise simulation system with automated equalization - lab version

  or

  – **3PASS *flex* (Code 6995)**,
  Advanced background noise simulation system with automated equalization - flex version

Overview of *lab*BGN connectors

Front

Power button

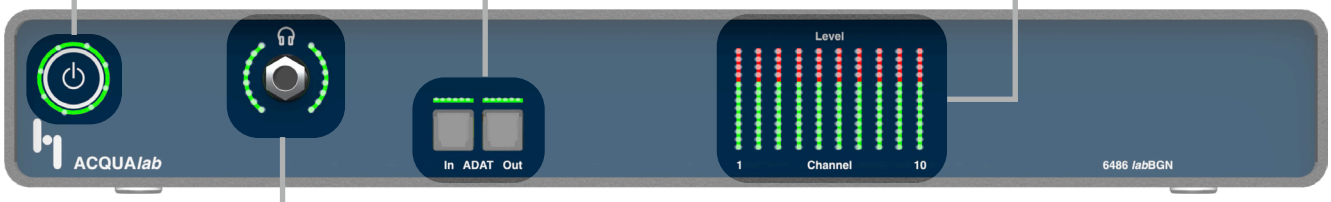
- Boots up/shuts down labBGN
- Indicates current system status via LED color

ADAT In/Output

- Allow receiving/sending digital multichannel audio via TOSLINK interfaces

Channel level indicators

- Indicates signal levels for up to 10 input/output channels via colored LED bars



6.35mm headphone jack

- Allows monitoring of played back background noise
- Indicates output level via LED color

Included cables

- USB cable for connection to PC
- Breakout cable for Analog Out Channel 1...8 (TASCAM-compatible)
- Breakout cable for digital AES input/output and pulse channel
- BNC extension cable for pulse connection to *lab*CORE
- XLR cable for AES input

Rear

Digital audio in/outputs

- Offers 10 general-purpose digital input/output channels:
  - 2 × general-purpose in/output
  - 4 × general-purpose input
  - 4 × general-purpose output

USB main connector

- Connects *lab*BGN to the PC running background noise simulation software

Power connector

- Delivery of power by included external PSU via 4-pin LEMO connector

Analog outputs 1...10

- Analog Out Channel 1...8:
  - Main analog outputs for connection to amplifiers
  - TASCAM-compatible
- Analog Out Channel 9...10:
  - Supplementary XLR outputs for connection to amplifiers
  - Can be used for adding 1 or 2 subwoofer(s) or loudspeaker(s) to the setup

AES/Pulse interface

- Offers automated triggering of background noise playback via pulse input
- Supplementary digital AES input/output via XLR

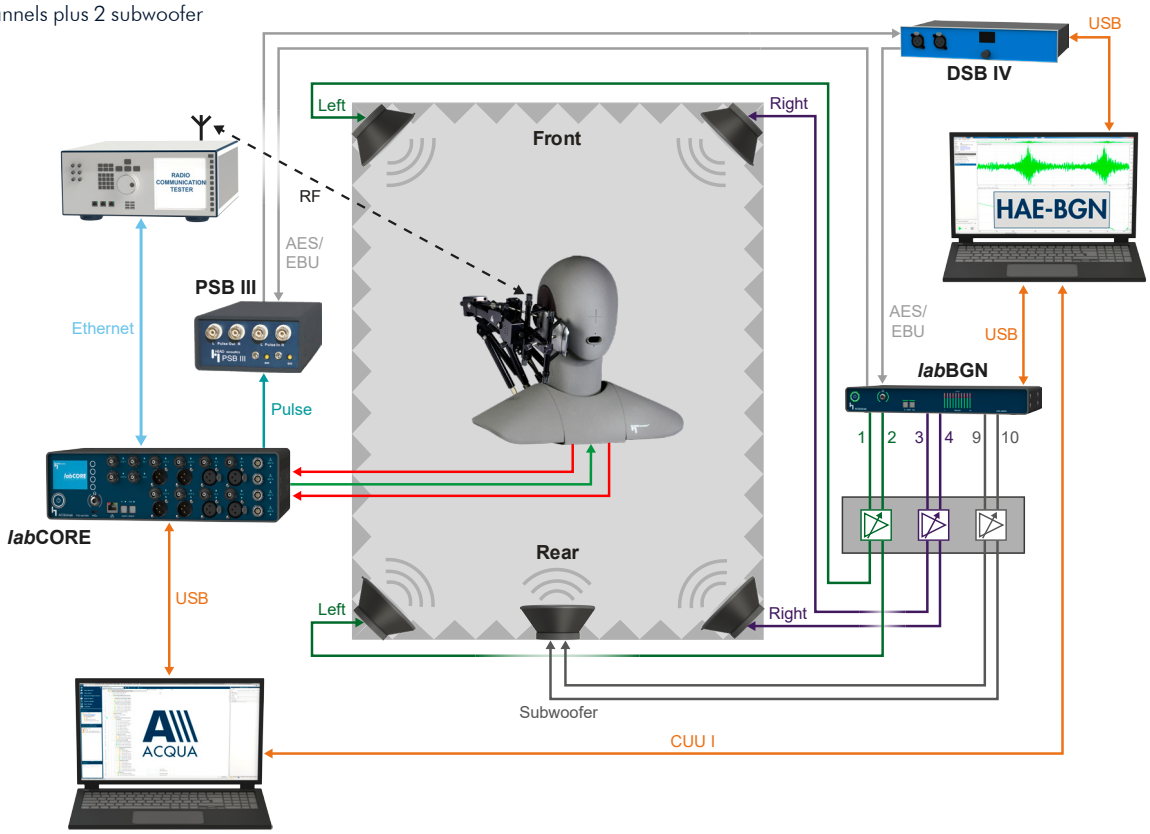
HEAD*link* interface

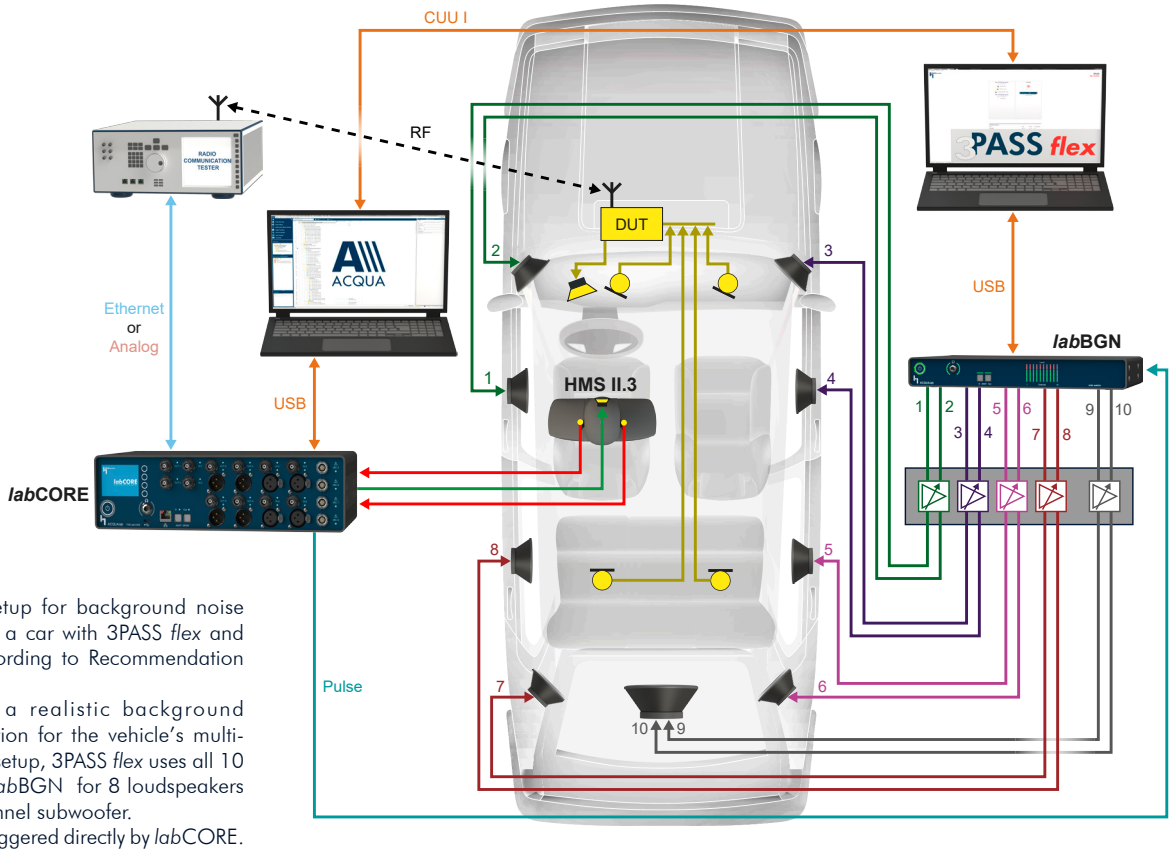
- Allows direct connection to other HEAD acoustics hardware:
  - MSA I
  - MSA II
  - SQuadriga II
  - SQuadriga III

The RJ45 connector (PC) and USB Type-A connectors (Host) currently are only for internal use. The USB Type-A connectors (Host) can be used for charging/powering USB devices.

Exemplary applications of *lab*BGN

Exemplary setup for background noise simulation in a test room with HAE-BGN and *lab*BGN according to ETSI Standard ES 202 396-1. HAE-BGN utilizes its maximum of 4 loudspeaker channels plus 2 subwoofer channels through *lab*BGN. Playback is triggered via the Pulse Splitter Box PSB III and the external Digital Sound Board DSB IV.





Exemplary setup for background noise simulation in a car with 3PASS *flex* and *lab*BGN according to Recommendation ITU-T P.1100.
To achieve a realistic background noise simulation for the vehicle's multi-microphone setup, 3PASS *flex* uses all 10 channels of *lab*BGN for 8 loudspeakers plus a 2-channel subwoofer.
Playback is triggered directly by *lab*CORE.

Technical Data				
General				
Operation	Remote control via background noise simulation software from HEAD acoustics			
System check	Automatic hardware check at boot up			
GND connection	< 0.05 Ω (for all Inputs/Outputs)			
Inputs / Outputs front				
	Input(s)	**Output(s)**	**Connector type(s)**	**Comment**
Headphones	-	1 ×	6.35 mm headphone jack	-
ADAT	1 ×	1 ×	TOSLINK	-
Inputs / Outputs rear				
Analog outputs 1...8	-	8 ×	D-Sub 25-pin female	TASCAM-compatible, breakout cable to 8 × XLR male is included
Analog outputs 9...10	-	2 ×	XLR male	-
Digital audio	4 ×	4 ×	D-Sub 25-pin female	Requires custom-made breakout cable
	2 × I/O			
AES	1 ×	1 ×	D-Sub 15-pin female	Breakout cable is included: XLR male (AES Out), XLR female (AES In) 2 × BNC male (Pulse In/Out)
Pulse	1 ×	1 ×		
USB (In)	1 ×		USB Type-B	Main USB connection, USB cable is included
USB (Host)	2 ×		USB Type-A	For internal use only (or for USB charging / powering)
HEADlink	1 ×		8-pin LEMO female	-
Power	1 ×	-	4-pin LEMO hermaphroditic	External PSU is included
Environmental conditions				
Operating temperature range	0° C – 50° C; 32° F – 122° F			
Storage temperature range	-20° C – 70° C; -4° F – 158° F			
Air humidity	20 % – 80 % (non-condensing environment)			
Other				
Power supply adapter	100 V – 240 V AC → 24 V DC, 60 W			
Power consumption	Typ. 15 W			
Dimensions (W x H x D)	327 x 44 x 175 mm			
Weight	Approx. 1.4 kg			

Options

- **RMB IV.3 (Code 9852.1)**, 19" rack mount bracket for labBGN, MFE VIII.1 (2 pcs.)

Delivery Items

- **labBGN (Code 6486)**, ACQUAlab (8+2 Channel) background noise hardware platform
- **Power supply**, external, 100-240 V AC → 24 V DC, 60 W
- **PCC I.9x (Code 997x)**, Power cable (to local specification)
- **CDM V (Code 1637)**, Cable D-Sub 15-pin → 2x XLR (AES/EBU in/out) + 2x BNC (Pulse in/out)
- **Breakout Cable**, D-Sub 25-pin → 8 × XLR male, TASCAM compatible, 1.5 m
- 1× **CBA II (Code 1640)**, Cable adapter BNC ↔ BNC for connection labBGN ↔ MFE (for pulse trigger)
- 1× **CUSB II.1.5 (Code 5478-1.5)**, USB 2.0 cable, type B ↔ type A, with ferrite, 1.5 m
- 1x **CXX II.3 (Code 5177-3)**,
- Cable AES / EBU XLR male 3-pin ↔ XLR female 3-pin, 2.95 m
- **Carrying case**
- **Manual** (hardcopy)