Audio AVAD: Detector for audio signals on vehicles

Application Areas:

- EuroNCAP
- NHTSA FCW
- NHTSA LDW
- And much more

EuroNCAP Test Protocol:

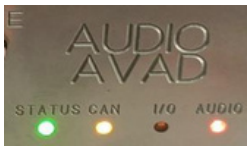
- Speed Assist Systems
- Park Assist Systems
- Lane Support Systems
- AEB Systems (TAEB, TFCW)
- Dead Reckoning Spots Systems

- **Detection of single frequencies or multi-frequency tones including real-time filter**
- **Configuration via client software on a laptop connected to the same network**
- **Measurement profiles can be saved arbitrarily and reloaded later**
- **CAN: switchable message collision detection for a more stable CAN bus**
- **Four status LEDs (Status, CAN, I/O, Audio) indicating measurement and operating states**

The Audio AVAD captures acoustic warning signals and messages in the vehicle's interior that are directed at the driver. It is equipped with a microphone for this purpose. It generates corresponding signals within a few milliseconds as LAN and/or CAN messages and through digital outputs upon detection of individual tones, tone patterns, and sequences. The heart of the Audio AVAD is a very fast, high-quality processor for signal processing, housed in a robust automotive, passively cooled enclosure along with all signal conditioning and interface modules.

Audio AVAD - Basic system

In its basic version, the Audio AVAD is equipped with a microphone and accompanying cabling. The software allows for easy handling and configuration of the system. Up to 5 tones with individual frequencies and amplitudes can be configured. The number of tones can be expanded up to 100. The detected tones are output as events via LAN/CAN and digital Pulses at a selectable rate of up to 500 Hz.



Audio AVAD - Software

The tones can be freely and easily configured through the menu of the Audio AVAD. Various sound patterns and sequences can be pre-set, in which the system searches for occurrences or changes and outputs the corresponding events with latencies in the range of 3 ms. All measurement profiles can be saved (with and without LAN or CAN configurations) and can be applied again during the next measurement.

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Option ES - Expansion of audio signal recognition

Your lane-keeping assistant signals via audio alert thetakeover of the steering, at the same time your FCW system issues an audio alert. We experience this or various exemplary scenarios daily on test tracks and in free traffic. To test these scenarios, the Audio AVAD works with up to 100 tones simultaneously. With minimal latency times (typically starting from 3ms), single or multi-frequency tones, including real-time filters, can be tested.

Euro NCAP Application examples

The Audio AVAD is ideally suitedfor the development, testing, and validation of acoustic alerts for emergency braking assistants (Autonomous Emergency Braking – AEB), collision warning systems (Forward Collision Warning – FCW), speed information systems (Speed Assist Systems – SAS), as well as lane-keeping assistants (Lane Support Systems – LSS) according to Euro NCAP guidelines. These warning and control systems are essential for achieving five-star ratings in the Euro NCAP assessment. They will continue to gain importance in the future. The extremely fast and easy-to-handle Audio AVAD is successfully used by most manufacturers, OEMs, and testing labs to develop and validate the alerts of driving assistance systems.

Audio AVAD Specification

- robust and compact aluminium housing
- 2m power supply cable with banana plug,
- adapter cable from banana sockets to car plug;
- microphone with amplifier;
- interfaces:

  1x CAN/CAN-FD
  2x Gigabit LAN (DHCP and static),
  3x USB3.0, Line out/Microphone 3,5mm connector, HDMI, DP;
  6x Digital Output 5V (GPIO) isolated;
  2x Digital Input 5V (GPIO) isolated

- 5 freely definable tones (single/multifrequency) for parallel detection included in the scope of delivery
- Operating frequency range: 30 - 5,500 Hz
- Latency times: 3ms (typ.)
- Delay between alarm signal detection and output in the nanosecond range
- Signaling via freely definable data packets (CAN/CAN-FD, Ethernet and/or digital outputs)
- Cyclic CAN/CAN-FD transmission frequency 100, 200, 500 Hz or application-specific
- CAN/CAN-FD with extended baud rates, e.g. 666.67KBaud
- CAN-FD bit rate switching (BRS) data rate up to 8 MBit
- Import/Export of configuration profiles and CAN configurations
- Status signals for activating the memory function or as markers
- Wide voltage input range 12-24 VDC (+/-10%)
- Operating temperature range: -30 to +50°C
- Dimensions: 11.5 x 9.5 x 7.5 cm (WxDxH)
- Weight approx. 1kg net (without accessories)

Scope of delivery

Audio AVAD in the device case with mono microphone, power cable, terminal adapter for digital I/O and software on USB stick

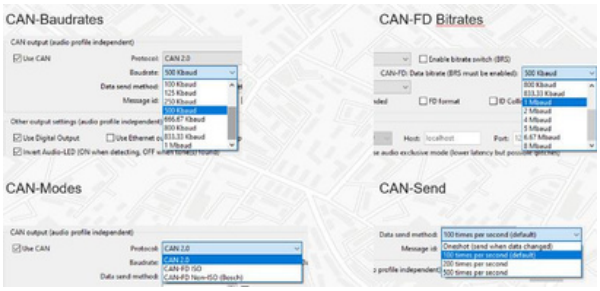
Optional Extensions

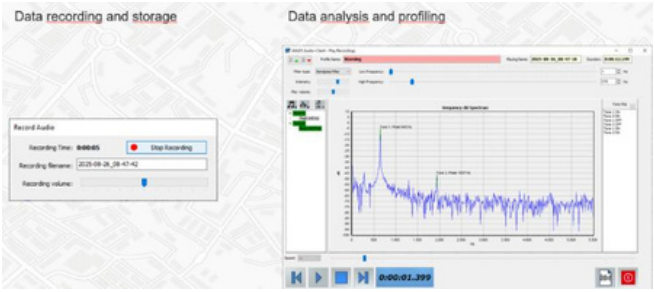
- Acoustic AVAD-Option ES1: Extension by one tone *
- Acoustic AVAD-Option ES10: Extension by 10 tones
- Acoustic AVAD-Option ES25: Extension by 25 tones *
- Acoustic AVAD-Option ES95: Extension by 95 tones *

* Maximumexpansion level: 100 tones

Upcoming Features

• Parallel 2-channel measurements (stereo microphone not included)
• 3D sound recognition • Haptic sensor for vibration measurements
• AI features for easier operation
• Audio AVAD option CBA: CAN bus analyzer





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