

AVAD3: Detector for audio/visual signals from the vehicle



Application areas:

- EuroNCAP
- NHTSA FCW
- NHTSA LDW
- And many more

EuroNCAP test protocol:

- Speed Assist Systems
- Lane Support Systems
- AEB Systems (T AEB , FCW)

AVAD3: Detector for audio/visual signals from the vehicle

AVAD3 detects acoustic and optical warnings and messages from inside the vehicle and then directs them to the driver. A high-performance camera and microphone are fitted for this purpose. It triggers corresponding trigger signals as digital I/O, LAN and CAN messages within a few milliseconds whenever it detects sound patterns, shape and colour changes on the instrument cluster and head-up display. The AVAD3's core is a very fast, top-quality processor for sound and image processing, which is housed with all of the signal processing and interface modules in a robust automotive and passively cooled housing.

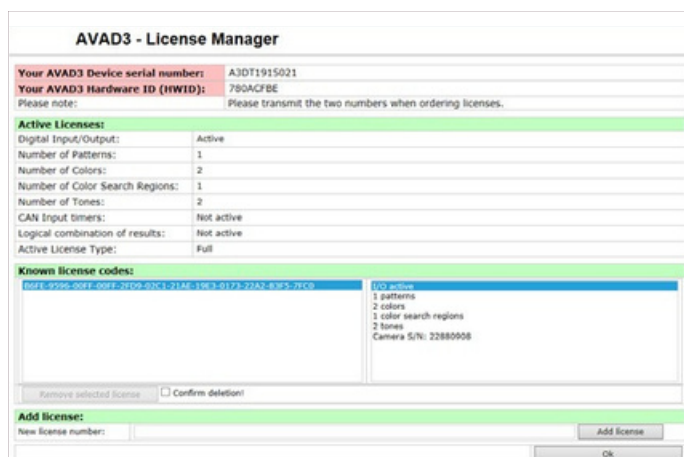


AVAD3: Basic system

The basic AVAD3 version is fitted with a high-performance camera and a microphone as well as the associated cabling. The software ensures easy handling and easy system configuration. The following options are enabled as standard options: 2 colours, 2 tones, 1 pattern, 1 search area. Image processing works with a 100 Hz frame rate (up to 300 Hz as an option); CAN and LAN work with a maximum output rate of 1 KHz.

AVAD3: the software

You can freely and easily configure the colours and sounds that you want via the AVAD3's menu. Fixed patterns and search areas can be pre-set so that the system will search for changes with the corresponding signalling outputs latencies in the ms range. Save the measurement profiles whenever you like, and you can access them again for the next measurement.



AVAD3 - License Manager

Your AVAD3 Device serial number: A3DT1915021
 Your AVAD3 Hardware ID (HWID): 790ACFBE
 Please note: Please transmit the two numbers when ordering licenses.

Active Licenses:

Digital Input/Output:	Active
Number of Patterns:	1
Number of Colors:	2
Number of Color Search Regions:	1
Number of Tones:	2
CAN Input timers:	Not active
Logical combination of results:	Not active
Active License Type:	Full

Known license codes:

License code: 00000000-0000-0000-0000-0000-0000-0000-0000-0000	No active
License code: 00000000-0000-0000-0000-0000-0000-0000-0000	1 patterns
License code: 00000000-0000-0000-0000-0000-0000-0000-0000	2 colors
License code: 00000000-0000-0000-0000-0000-0000-0000-0000	1 color search regions
License code: 00000000-0000-0000-0000-0000-0000-0000-0000	2 tones
License code: 00000000-0000-0000-0000-0000-0000-0000-0000	Camera S/N: 22880908

Remove selected license ☐ Confirm deletion!

Add license:

New license number:



DTC AVAD3 - Intelligent Car Signal Sensor v2.0.1

Camera image:

Global results:

Signal: **No Result**
 Accepted: **Not active**

Information / Inspection results:

Computer name:	AVAD3
Active profile:	Default
Processing time (ms):	0.00
Frame rate (Hz):	100
Color OFF match:	OK
Color ON match:	OK
Total pattern matches:	0
Angular search angle:	0
Angular search rate:	0
Captured images:	0
Operation mode:	Normal

Match options:

Use color match:	☐
Use pattern match:	☐
Use angular search:	☐
Use audio detection:	☐

Operation inputs:

Automatic on startup:	☐
Active Signal I/O:	☐
Active Ethernet I/O:	☐
Active CAN I/O:	☐
Capture Non-Off images:	☐
Camera: Auto exposure time:	☐
Camera: Manual exposure time (ms):	9
Camera: Black reference (S/N):	0

Functions:

- WSTW Measure smart
- License manager
- AVAD3 profiles
- Manage profiles
- Global signal detection
- Color search settings
- Pattern match settings
- Angular search
- Camera white balance
- Audio settings
- Event settings
- Ethernet settings
- CAN settings

Captured profile images:

Camera settings configuration menu.

You can use the license manager to easily unlock other options.

Option MF – Expanding colour detection

The basic AVAD3 version is able to detect 2 colours. They can be freely configured and adapted to meet your requirements. The new TFT displays and the corresponding colour and shape display options provide many new options for developers and designers. We provide you with the option to enable other AVAD3 colour options so that you can cover these various options with a test setup. You can then test a wide range of combinations in parallel.



Expanded search using four separately configured colours.

Option MM – Expanded pattern detection

The basic AVAD3 version is able to detect one pattern. It can be freely configured and adapted to meet your requirements/shapes. Expand your AVAD3 by adding the required pattern detection to your AVAD3 to simultaneously test the various assistance systems that work in parallel and output the corresponding signals. This will save you time when developing and testing the systems. AVAD3 can work simultaneously with up to eight configured patterns.



Expanded search using three separately defined patterns.

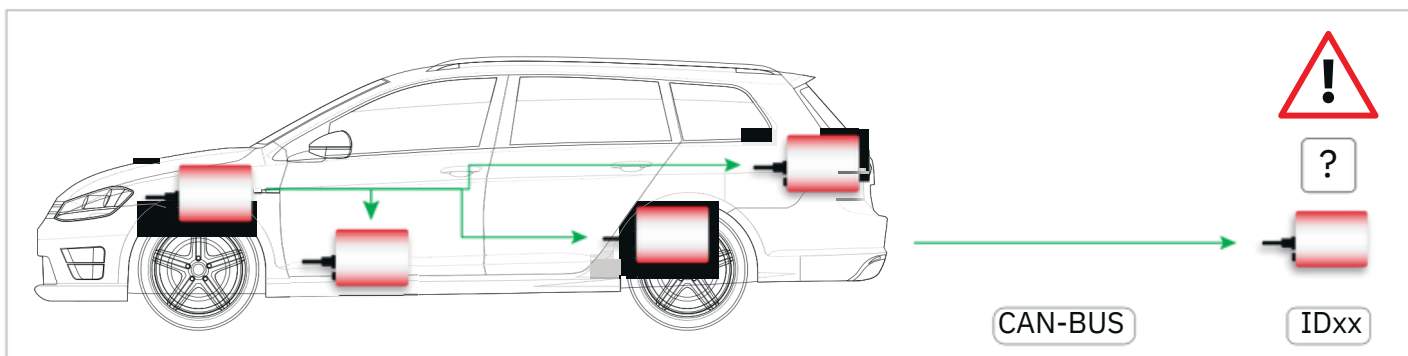
Option CI - Expanding the CAN input

The CI option is used for high-precision measuring of the CAN signal delay between the control unit and the display in the instrument cluster.

Feed your CAN test message directly into the AVAD3 and obtain a precise measurement of the vehicle's signalling process with ms accuracy. The AVAD3 is also able to test optical or acoustic signalling - both are possible with this high-precision test equipment.

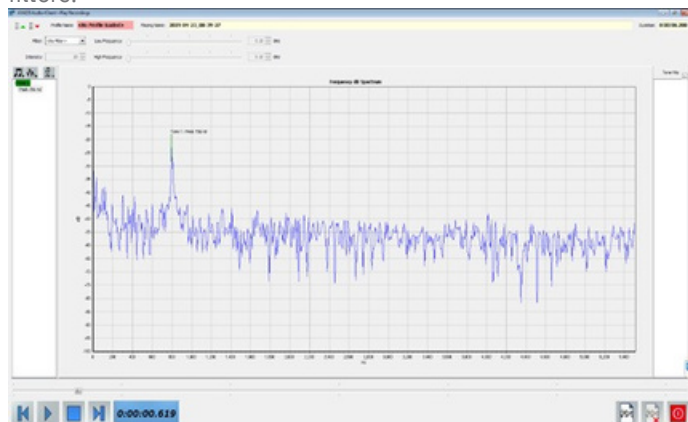


Latency between the signal input and the display



Option ES - Expanding audio signal detection

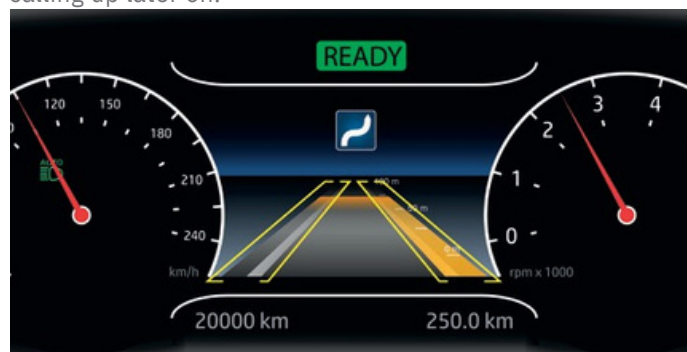
Your Lane Keeping Assistant will announce control acceptance via an audio alert and your FCW system will issue a simultaneous audio alert. We experience this or various exemplary scenarios daily on test tracks and in free traffic. The AVAD3 can work with up to 100 different tones simultaneously so that it can test these scenarios. Minimum latency times (i.e. from 4ms) are used to test single or multiple frequency tones, including real-time filters.



Selection of audio frequencies and amplitudes taken from the signal spectrum.

Option SR - Expanding the colour search range

Expanding the colour search range is often necessary if colour signalling in the instrument cluster has to be tested simultaneously in different areas. Is the Lane Keeping Assistant displaying the correct information? Was the lane detected and displayed accordingly? These and other challenges are faced by manufacturers and OEMs. AVAD3 enables you to test these systems with high accuracy and precision! This is realised through easy on-site configuration. These search functions can be saved as search profiles for calling up later on.



Signalling occurs when a, b and/or a/b were detected.

Option EK - Combination of several events

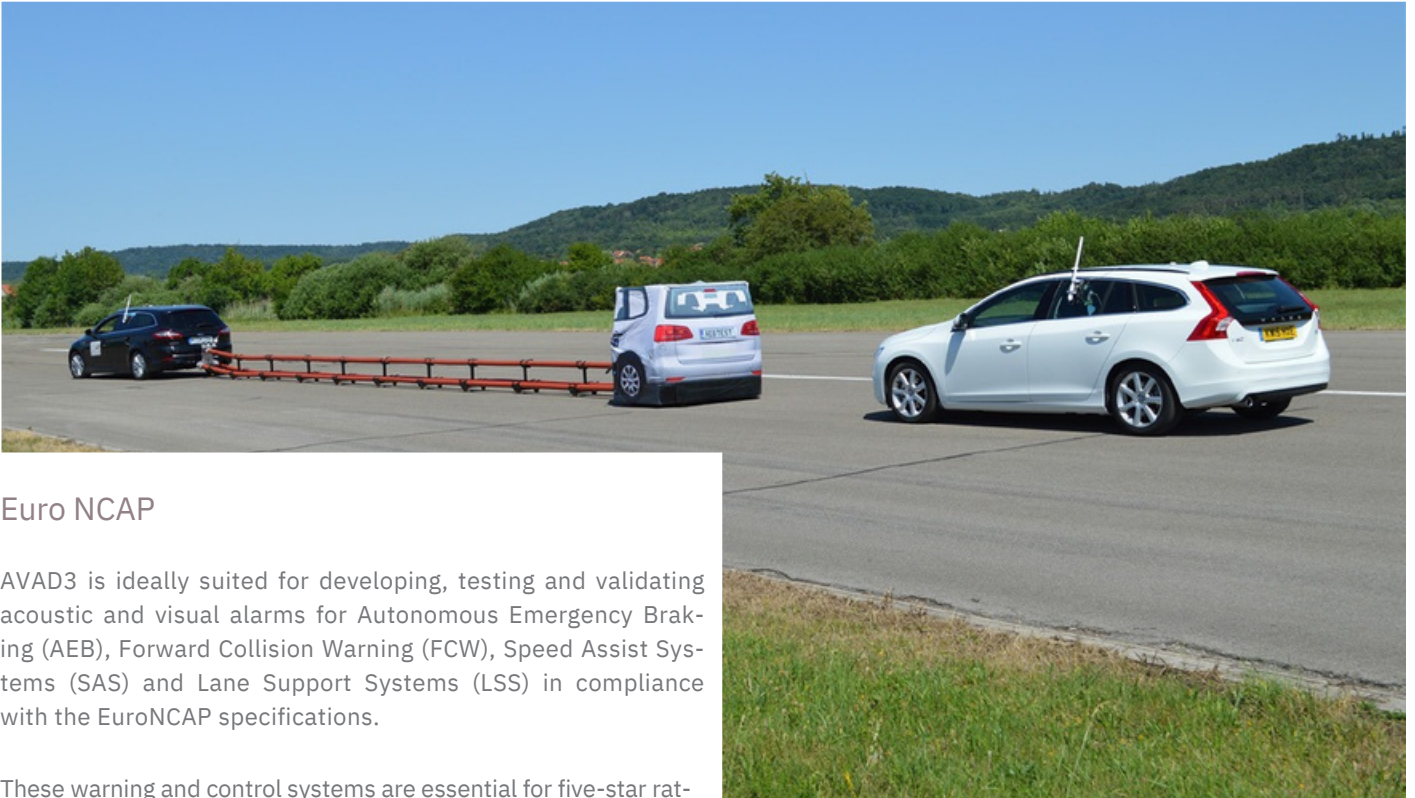
Combine your search and alarm functions freely and interlink them with each other so that the AVAD3 alert is only triggered by a, b, c and/or links.

For example, an alarm should only be triggered if a red warning triangle appears in the instrument cluster. Shape and colour will be searched for and found and the signalling will be triggered accordingly. This saves you having to manually link the separate results in post-processing.

We are looking for a red triangle:



Shape being searched for displayed in green – no hit – no alert. Shape being searched for displayed in red – A hit! – signalling!



Euro NCAP

AVAD3 is ideally suited for developing, testing and validating acoustic and visual alarms for Autonomous Emergency Braking (AEB), Forward Collision Warning (FCW), Speed Assist Systems (SAS) and Lane Support Systems (LSS) in compliance with the EuroNCAP specifications.

These warning and control systems are essential for five-star ratings in the EuroNCAP rating. Their importance will continue to increase in the future.

AVAD3 is extremely fast and easy to use and it is successfully used by most manufacturers, OEMs and test laboratories for developing and validating messages from driver assistance systems.

Application areas:

- Auto Emergency Braking
- Adaptive Cruise Control
- Lane Support Systems
- Blind Spot Detection
- Park Assist Solutions

EuroNCAP test protocol:

- Speed Assist Systems
- Lane Support Systems
- AEB Systems (T AEB , FCW)

References



AVAD3 application areas

- EuroNCAP
- instrument cluster validation
- measures the signalling from the head-up display
- latency measuring between the control unit and the optical/acoustic signalling systems
- test stand applications
- noise measuring for E-vehicles

Specifications

- minimal latency times (i.e. from 4ms)
- 100 Hz frame rate (optional up to 300 Hz)
- CAN-and LAN outputting rate 1 KHz maximum
- the information delay between the alarm signal and the output as TTL, CAN or LAN information is in the range of just a few milliseconds
- status signals can activate the AVAD3 memory function or be used as markers

Features

- detection of patterns and colours as well as measuring dials
- detection of specific frequencies or multiple frequency tones including real time filters
- AVAD3 is unaffected by vibrations inside the car
- configuration via Internet Explorer browser, also via a laptop connected to the same network
- Measurement profiles can be saved at any time and reloaded later on

Optional enhancements

- CAN interface (with extended baud rates) with two channels for vehicle data
- up to 8 patterns, colours and colour search areas
- up to 100 simultaneous tones
- it is possible to use or select up to three measuring cameras simultaneously
- single measuring camera is optional up to 300 Hz
- triggering from bit patterns for ECU messages with latency time calculation
- LAN communications interface, e.g. with driving robots or Ethernet data loggers
- single result combinations logically linkable to an overall result

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