



## BRIEF INFORMATION

### Acoustic Vehicle Alerting System (AVAS)

- For all-electric vehicles (PEV), hybrid electric vehicles (HEV) and fuel cell vehicles (FCV) with a silent engine for the purpose of improving road user safety
- Simulates simple engine noise
- Space-saving and compact loudspeaker
- Low power consumption

## PRODUCT FEATURES

### Customer benefits

Vehicles can normally be recognized acoustically in road traffic by the sound of their engines. However, electrically powered vehicles emit more or less no sound. This makes them dangerous for pedestrians, blind people, cyclists and other road users. Our acoustic alerting system has therefore been developed for e-vehicles and generates a sound that is oriented towards that of the internal combustion engine.

### Application

The installation of an acoustic alerting system has been mandatory for all newly developed electric and hybrid cars in the European Union since July 2019. And from July 2021, all newly registered electric models must be equipped with an acoustic vehicle alerting system. The sound limit for vehicles in the EU has been set at 20 km/h. In the USA, the threshold is 30km/h. Below that, the cars must produce sounds that resemble an internal combustion engine. When driving faster, the rolling noise produced by the tyres on the road is sufficient for the vehicle to be perceived by other road users.

# DESIGN AND FUNCTION

The AVAS pedestrian warning system essentially consists of a signalling device (beeper) and electronics. Communication between the AVAS pedestrian alerting system and the vehicle is via CAN bus. The AVAS system receives information from the vehicle about the vehicle speed and the gear position. As a result, the tone frequency and volume of the simulated engine noise is ramped up with increasing speed (when starting) and is reduced accordingly with decreasing speed. The simulated engine noise is generated when the vehicle is driving forwards and backwards. From a speed of 20 or 30 km/h (country-specific), the rolling noise of the tyres drown out the actual engine sound with the result that the function of the AVAS becomes disabled.

## TECHNICAL DETAILS

| Technical data              |   |
|-----------------------------|---|
| Operating voltage           | 9–16 V  |
| Current consumption         | 150 mA (normal condition),<br>quiescent current 100 µA  |
| Weight                      | 350 g   |
| Operating temperature       | - 40° C to + 85° C  |
| CAN                         | Diagnostics (based on UDS standard)   |
| Loudspeaker                 | 2 inch (impedance 4 Ω)  |
| Mute function               | Support for On/Off status via CAN   |
| Frequency range             | 160 Hz–5 kHz  |
| Sound pressure level        | 65 ± 5 dB in 1 m<br>Generation 0 km/h - 30 km/h (TBD)<br>Minimum frequency change speed: 0.8%<br>(km/h) |
| Vehicle operating speed     | 2 to 20 km/h  |
| Protection class            | IP 6K9K   |
| Digital amplifier           | 32 bit at a sampling rate of max. 96 kHz  |
| Housing volume              | 0.4 l   |
| Housing material            | PBT-GF15  |
| Thermal overload protection | Yes   |
| Connector                   | TYCO 114-18063-126  |
| Mating connector            | TYCO 1-967616-1   |

| Technical data CAN BUS interface* |                           |
|-----------------------------------|---------------------------|
| CAN specification                 | High speed automotive CAN |
| CAN baud rate                     | 500kbps                   |
| Diagnostics                       | according to UDS standard |

\* The HELLA AVAS has CAN communication as standard. A DBC file can be provided. Customer-specific adaptations can be implemented on a project-specific basis in consultation with HELLA. Compatibility to higher level protocols such as SAE J1939 on request.

**Technical drawing**

**Pin assignment**

|   |           |
|---|-----------|
| 1 | V_BAT     |
| 2 | IGN       |
| 3 | CAN_bus_L |
| 4 | N.A.      |
| 5 | GND       |
| 6 | CAN_bus_H |

# PROGRAMME OVERVIEW



## AVAS

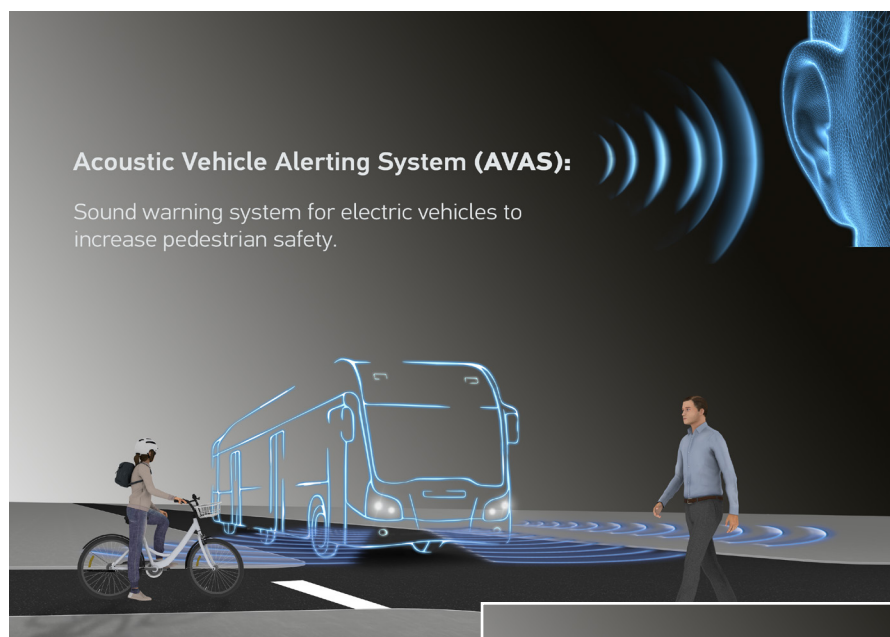
AVAS pedestrian alerting system with high-speed CAN communication and standard sound\*

3SL 015 329-001 (1 unit)

3SL 015 329-007 (30 pieces)

\*Customised tones available on request

# APPLICATION EXAMPLE



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Subject to technical and price modifications.