

## Everything from one source

Kendrion Kuhnke Automotive combines its expertise with electronics, mechanics and sound design into an effective complete package.

**Your advantage:** everything from one source and always individual.

### Everything flexible:

our own development departments for hardware and software also enable us to make samples and prototypes at short notice for specific customers.

### Everything is certified:

our qualitative and environmental management is certified according to ISO TS 16949 and ISO 14001.

### Everything reliable:

Kendrion is a Dutch group with over 2,700 employees and a turnover of € 430,000,000. Its factories are located in the USA, China and Eastern Europe, among other countries.

## We make you audible

Electric and hybrid vehicles generate hardly any travelling noises even at low speeds and therefore they become a danger in road traffic. Apart from that, they lose their own individual sound, which also represents a real feature that differentiates them from the competition.

Therefore, we have developed our sound system: it combines electronic control, a sound actuator and software which imbue your vehicle with its own sound in this way and produce a high-quality travelling noise for enhancing your vehicle's presence and ensuring safety.

### Your advantages at a glance:

- Assisting your decision to purchase
- Features that differentiate you from the competition
- Greater safety in traffic



WE MAGNETISE THE WORLD



WE MAGNETISE THE WORLD

Kendrion Kuhnke Automotive GmbH  
Lütjenburger Strasse 101  
23714 Malente  
Germany  
Tel: +49 4523 402-0  
Fax: +49 4523 40258-359

[sales-pc@kendrion.com](mailto:sales-pc@kendrion.com)  
[www.kendrion.com](http://www.kendrion.com)



# MAKING YOUR CAR SOUND

HAB 126

Kendrion Passenger Cars external sound system  
for electric and hybrid vehicles

PASSENGER CARS



KUHNKE

PASSENGER CARS



KUHNKE

## Control unit Everything under control

The electronic control unit scans the vehicle's data and transmits it to the software, which generates the suitable output signal.



- Tested for years in series
- Extremely robust
- Dustproof and waterproof
- Resistant to temperature
- External sound and internal sound are possible
- Individually configurable
- Conforms to the EMV

### Technical data

Rated voltage	12 V
Operating voltage	9 V to 17 V
Controls	CAN bus
Channels	1 or 2
Ambient temperature	-40 °C to 70 °C
Protective class	IP6K9K
Miscellaneous	low loss of power

## HAB 126: external sound Real sound: real added value

A sound actuator drives two membranes in the HAB 126, unlike conventional loudspeakers. The patented construction makes it possible to create an essentially realistic sound even at low frequencies of about 125 Hz.



- The design can be arranged individually
- A broad radiating characteristic of up to 7 kHz
- Low volume of noise
- Similar weight to a conventional loudspeaker
- The sound is 'warmer' down to 125 Hz
- The sealed casing is dustproof and waterproof
- Extremely robust against mechanical shock
- The sound is decoupled from the bodywork
- Protective class: IP6K9K

### Technical data

Frequency range	from 125 Hz to 7,000 Hz
Maximum sound level	93 dB at 1 m distance
Impedance	4 Ω
Casing's volume	1.5 litres
Ambient temperature	-40 °C to 80 °C
Protective class	IP6K9K

## Sound actuator: internal sound Perfect sound: also in the driver's cabin

Naturally, the system can also be enlarged by a secondsound actuator for the passenger compartment. It radiates an unlocatable travelling noise in the vehicle's cabin by means of structure-borne sound. Not only the driver but also the passengers can experience the same, high-quality, acoustic experience by means of combining both devices. Naturally, both of the sound generators are available separately and they function independently of each other.



- The installed position can be chosen freely
- Acoustic echo of the driving handling
- Reduction of tiredness
- Increase of awareness
- Brand image with acoustic recognition
- Intuitive driving
- Increased well-being
- Pleasantly noisy ambience

### Technical data

Overall size	62 mm x 34 mm
Weight	150 g
Frequency range	from 50 Hz to 8,000 Hz
Rated impedance	8 Ω
Temperature range	-40 °C to 70 °C

## Sound design As individual as your car

There are two possibilities and one individual result. We will supply you either with a sound profile that is tailored to you, or we will set the parameters for it with the graphic interface in order to provide your individual sound. You profit from our CAN bus while doing so: it records all of the desired data about the vehicle like the engine's revs, speed and load or the position of the accelerator. We also cover a particularly wide frequency spectrum with the sampling rate.



The CAN bus simulation in the Kendrion Automotive Sound Design software



The new AVAS EU guidelines (Acoustic Vehicle Alerting System) will apply from 2019: there will be a duty to provide external sound for all electric and hybrid vehicles!