We set the standard in safety

Acoustic vehicle alerting system

Warn road users of approaching electric and hybrid buses

Ardent®

Previously known as **Forman**

When travelling at low speeds, electric and hybrid buses are almost silent. This factor increases the risk of incidents with pedestrians and other road users. The visually impaired in particular usually rely on audible environmental cues to assist with mobility and orientation.

As part of Ardent's range of electronic products to enhance the safety of buses and coaches, our acoustic vehicle alerting system is designed to warn road users of approaching electric and hybrid buses.

What does our acoustic vehicle alerting system do?

This acoustic vehicle alerting system plays a sound to warn pedestrians and road users of nearby vehicles, providing distinct indications of the vehicle's location, direction, and speed. It offers a selection of sounds, including the TfL-developed sound used in the London area, or the user can supply their own sound to be programmed into the system.

Distinct pedestrian audio warning
The speed of the audio recording automatically varies in proportion to the vehicle's speed to cover a range of speeds.

Customisable system kit
The system can be supplied with Ardent's V-AMP Power Amplifiers, speakers and wiring harness, as per customer requirements.

Compliant with safety regulations
Designed in accordance with UNECE Regulation No. 138 for Quiet Road Transport Vehicles with regard to their reduced audibility.

How does it work?

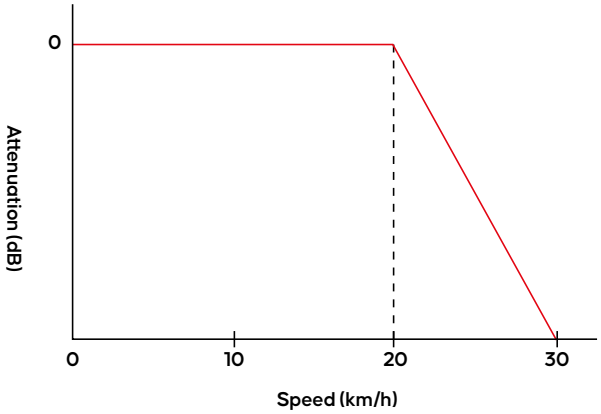


Diagram 1 - Attenuation

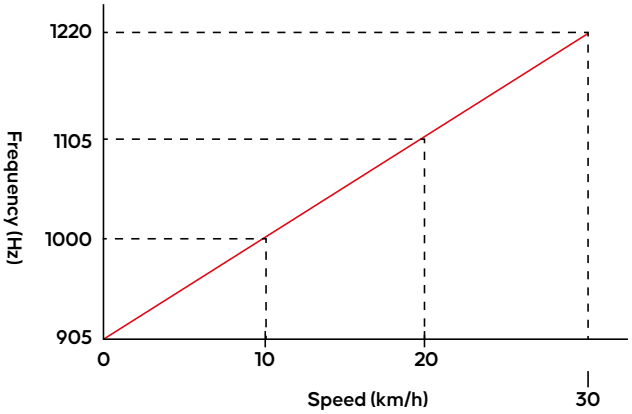


Diagram 2 - Frequency

Ardent acoustic vehicle alerting system uses an audio recording factory programmed into the system, corresponding to a speed of 10 km/h.

The system automatically reduces or increases its playback speed in proportion to the vehicle's speed, at a rate of 0.8% per km/h.

The sound level remains constant from 0 km/h to the specified speed, then fades to nothing.

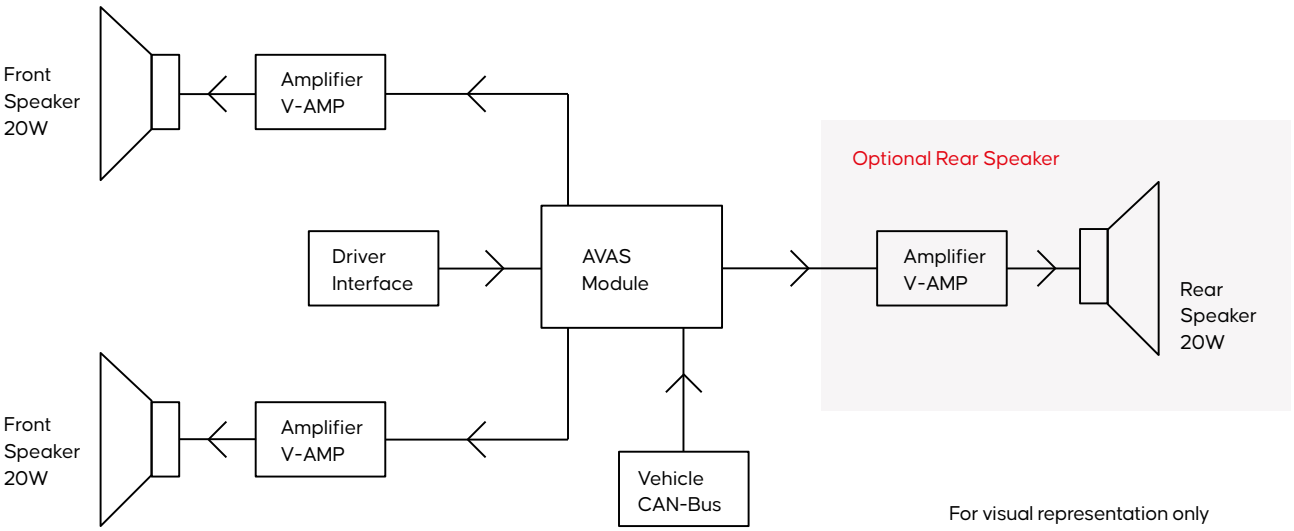
A frequency shift is also specified, meaning tonality of the sound changes with vehicle speed. This simulates a change in sound during acceleration or deceleration. The system can play one recording at a time, but has the capacity to store multiple recordings.

The above graphs illustrate the output of the acoustic vehicle alerting system for 1 kHz tone at 10 km/h.

Compliant with UNECE: Regulation No. 138
The Ardent acoustic vehicle alerting system hardware and sounds are compliant with Regulation No. 138 of the Economic Commission for Europe of the United Nations (UNECE) - uniform provisions concerning the approval of Quiet Road Transport Vehicles with regard to their reduced audibility.

In line with this regulation, all manufacturers must install an acoustic vehicle alerting system in new types of quiet electric and hybrid electric vehicles from July 2019, and to all quiet electric and hybrid vehicles registered from July 2021.

Sample layout



For visual representation only

Key features

24V nominal
The Ardent AVAS is suitable for use on 24V vehicles.

CAN-Bus interface
Ardent's AVAS links directly with the CAN-Bus interface to determine the vehicle state and speed.

Optional rear speakers
If rear speakers are fitted, audio can be directed towards front or rear speakers, in response to vehicle direction.

TfL-developed sound
Our AVAS systems can be fitted with the sound developed by Transport for London.

Driver switches
The driver of the vehicle can be offered switches to enable the control of AVAS behaviour.

Auxiliary messages
The AVAS has the capacity to store multiple recordings to suit a range of requirements.

Key technical specification

Acoustic Vehicle Alerting System

Power supply voltage	24Vdc nominal, 20Vdc to 30 Vdc range
Power supply current	~150 mA
Audio bandwidth	14 kHz
Compliances	Regulation No. 138 of the Economic Commission for Europe of the United Nations (UNECE)

V-AMP Power Amplifier

Power supply voltage	24Vdc nominal, 20Vdc to 30 Vdc range
Power supply current	3A peak, 800 mA average
Speaker output	20W peak

For the complete technical specification and operating instructions, please get in touch.

Developed in collaboration with:

ALEXANDER DENNIS

TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS

We set the standard in safety

To find out more or to explore how we can help you enhance the safety of your vehicles, contact our sales team on +44 (0) 1423 326 740

Ardent®

Ardent UK
Unit 3, Becklands Close,
North Yorkshire, YO51 9NR

+44 (0) 1423 326 740
info@ardent-uk.com
ardent-uk.com