

V-AVAS

ACOUSTIC VEHICLE ALERTING SYSTEM

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 their mobility and orientation.

As part of the V-Series range of electronic products to enhance the safety of buses and coaches, Forman's V-AVAS is designed to warn road users of approaching electric and hybrid buses.

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. Forman offers a selection of sounds, including the TfL-developed sound used in the London area, or the customer 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 vehicle's speed to cover a range of speeds.



Customisable system kit

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

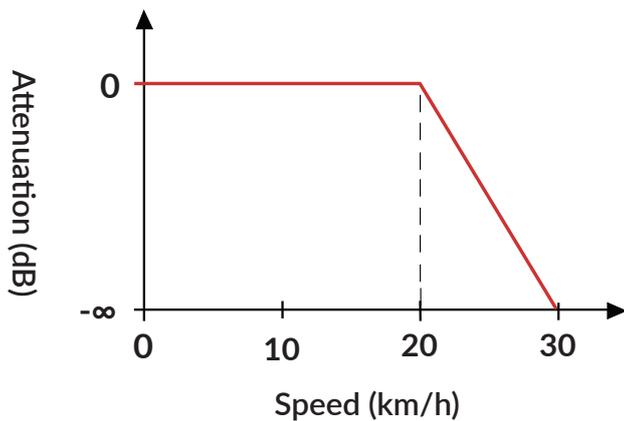


Compliant with safety regulations

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

How Does V-AVAS Work?

Diagram 1 - Attenuation

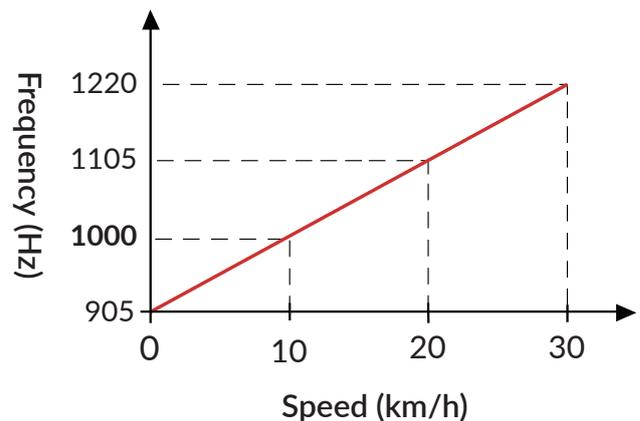


V-AVAS uses an audio recording factory programmed into the system, corresponding to a speed of 10 km/h.

The system reduces or increases its playback speed automatically 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 decays away to nothing.

Diagram 2 - Frequency



A frequency shift is also specified, meaning that the 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 it has the capacity to store multiple recordings.

The above graphs illustrate the output of V-AVAS for 1 kHz tone at 10 km/h.

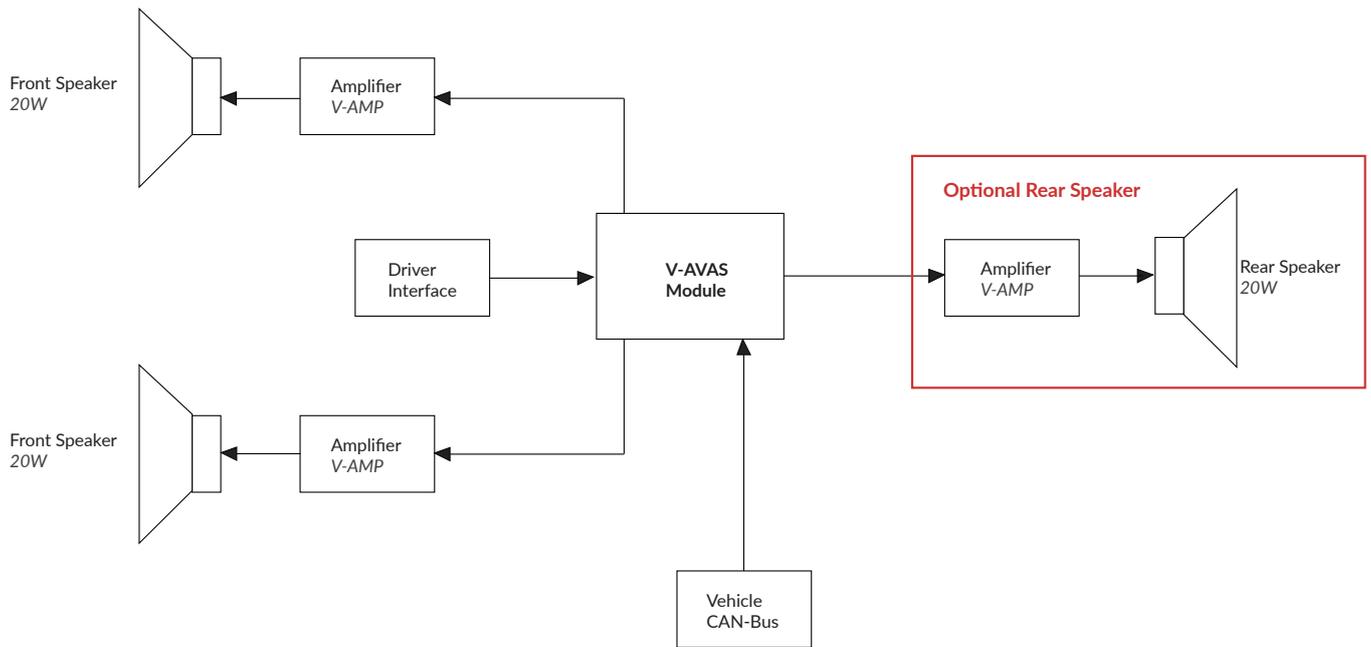
UNECE Regulation No. 138

The Forman V-AVAS hardware and sound 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 AVAS 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.



V-AVAS System Sample Layout



For visual representation only.

Key Features

- **24V Nominal**

V-AVAS is suitable for use on 24V vehicles.

- **CAN-Bus Interface**

V-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**

V-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 V-AVAS has the capacity to store multiple recordings.



Key Technical Specification

V-AVAS 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 contact Forman Vehicle Services.

Developed in Collaboration with:



**To find out how we can help you enhance
the safety of your vehicles, call us on
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