PAVAS- Progressive Audible Vehicle Alarm Speed

PAVAS is designed to improve car rallying performance. It does this by helping the competitors manage their speed by using a variety of audio tones, via an internal helmet mounted speaker. Audio tones allow the driver to maintain visual focus on the driving task by applying the under utilized sense of hearing. It is particularly applicable in tarmac rallies.

Does it work? Do you want to win?

See results table on other side

What does it sound like?

There are multiple videos on the web site at jci.net.au/PAVAS-Video-Links.html

Alarm Speed Demonstration https://youtu.be/sw2K6jmVOro

Targa Tasmania 2019 Poatina Stage https://youtu.be/KOejp9IMPaA

Speed Limited Rally Events

Many rally events are determined by the time to complete an event. However, given the power and ultimate speed of modern vehicles, many events have adopted a maximum speed limit . The trade off is, that the event tests the skill of the driver and navigator was well as reliability and performance of the vehicle. The advantage to the competitors is that they can enter a vehicle of modest performance and cost but yet, still be competitive against more powerful machines. This also reduces the required resources and effort and opens events up to a larger number of potential competitors.

PAVAS Key Points

- Simple tone formats to advise the driver of speed conditions.
- Multiple modes for Speed Monitoring, TSD, Targa Florio and Reliability Events.
- Indicates proximity to alarm conditions
- Unique speed guidance techniques
- Simple controls and configuration
- Operation with multiple remote joysticks
- Accurate speed and distance measurements.
- Fast parameter updates.
- Auxiliary visual guidance for the navigator.
- Rotating message displays with manual override.
- Integrated operator help messages.
- Multiple calibration techniques.
- Launch and default start up modes.
- Easy fitting to any vehicle.
- Magnetic distance probe for harsh conditions.
- Automatic TSD stage and Reliability lap results log.
- Data Logging.

PAVAS Advantages and Benefits

The other significant point is that the events can be executed at lower speed which dramatically increase the chance of survival in the case of an accident. This can be simply demonstrated by considering the physics of a moving vehicle. The kinetic energy of an object proportional to its mass and the square of the velocity. Given that the mass remains constant, if the speed it doubled, then the kinetic energy is four times greater. The worst case to consider is, if the object is brought to a complete stop; then that kinetic energy is dissipated by doing work which in this case would be deforming the vehicle vehd the occupants. So, it is simple to see, how vehicle speed severely affects vehicles and occupants, in the case of an accident.

Event timing becomes crucial to producing the best performance in speed limited events. There are a number of systems on the market to aid drivers and navigators to compete in a rally event. However most of the feedback is visual and hence is directed at the navigator who then has to inform the driver of the situation. There are many disadvantages to this approach; firstly it distracts the driver's concentration from accessing the vehicle's current situation related to speed and position on the road. Secondly, there is a communications delay, while

the navigator accesses, interprets and conveys the information to the driver. This may seem trivial but given that time is crucial in these events, any communications delay is costly, in terms of event performance. In addition, it distracts the navigator from the prime mission of tracking the vehicle's location.

Some systems use an audible beep to indicate just one speed alarm. Though beneficial, they don't allow a driver to continuously manage his speed.

The prime role of the navigator is describe upcoming road conditions as well as to monitor the speed. PAVAS reduces this burden by audibly providing speed information by a separate speaker system. This allows the driver to instantly access his speed and adjust it, so that he is within the limits and on target to complete the events in the required time. His eye focus and direction are not impacted and so he can economically execute his mission which is to drive.

The audible signal used in PAVAS is complex and filled with cues to indicate performance and speed limits. PAVAS has multiple operating modes and can be utilized in many types of timed and speed limited events. All the event parameters can be stored before hand and the event data is simply recalled at the start of a stage. PAVAS is also beneficial when operating on transport stages which reduces the possibility of traffic fines, event penalties or exclusion. PAVAS can automatically start at a predetermined menu, saving keystrokes and setup time.

PAVAS is designed with a emphasis to simplify the operations and foster quick learning by making all menus consistent and similar. PAVAS contains demonstration modes for training, familiarization, troubleshooting and testing scenarios. PAVAS contains configuration, calibration and systems menus to compliment the tasks. PAVAS does not use GPS measurements which are subject displacement errors but uses direct wheel rotation distance.

PAVAS's main mission is to use audible tones to guide the driver. The web site provides information on PAVAS operations. The PAVAS Menus shows all the menus used in order of frequency. There is a map of the web site that shows the controls, how to edit values, sound generation, troubleshooting, results and videos.

The following table lists results from PAVAS equipped vehicles

Event	Driver - Navigator	Vehicle	Position	Margin
Targa Tasmania 2018 T Trophy	Waldron Gregory	Mitsubishi Sigma 1981	1 st	Six minutes 0 seconds
Targa High Country 2018 T Trophy	Waldron Gregory	Mitsubishi Sigma 1981	1 st	11 minutes 9 seconds
Targa North West 2019 T Trophy	Waldron Gregory	Mitsubishi Sigma 1981	1 st	Two minutes 41 seconds
Targa Tasmania 2019 T Trophy	Waldron Gregory	Mitsubishi Sigma 1981	DNF Diff Failure	Seven minutes 44 seconds
Targa High Country 2019 T Trophy	Waldron Gregory	Mitsubishi Sigma 1981	1 st	14 minutes 49 seconds
Targa Tasmania 2021 T Trophy	Waldron Mitchell/Gregory	Mitsubishi Sigma 1981	1 st	12 minutes 25 seconds

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