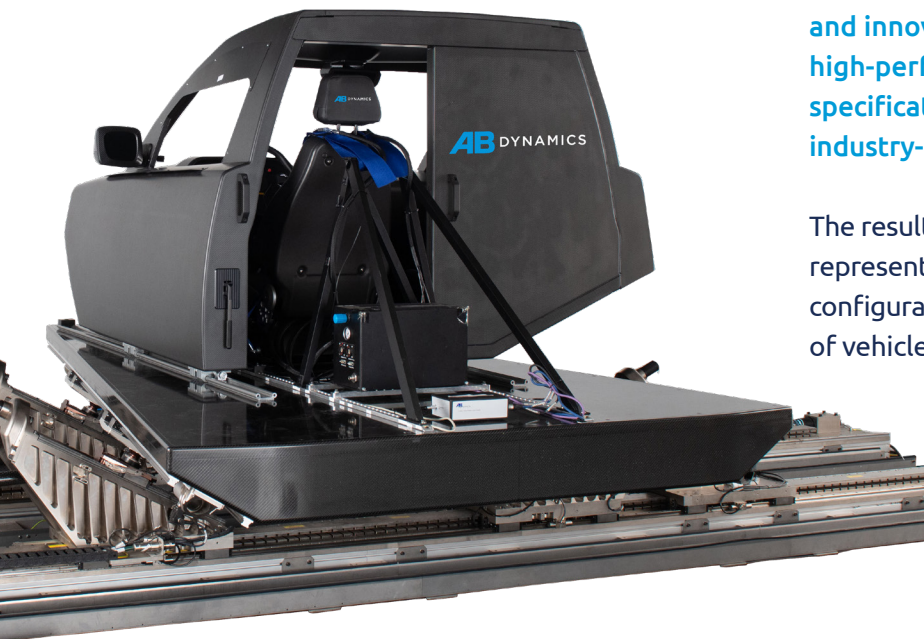


High performance dynamic driving simulator

# Dynamic Driving Simulator (aVDS)



The aVDS Dynamic Driving Simulator is a versatile and innovative driving simulator, combining a high-performance motion platform and high specification audio and visual hardware with industry-leading virtual content from rFpro.

The result is a simulator capable of accurately representing the smallest changes to a vehicle's configuration – an ideal instrument for the future of vehicle development.

The aVDS has been designed to reduce new vehicle development timescales and costs by allowing meaningful testing far earlier in the vehicle development process. It utilises high specification linear actuators to deliver class-leading 6DoF dynamic performance, with up to 50Hz frequency response, providing a tightly harmonised driving experience.

The motion platform can take a variety of payloads up to 500kg, facilitating the installation of real vehicle cabins. The simulator's impressive motion envelope is further enhanced through the use of advanced cueing, which has the effect of extending its excursion.

The unique 'wedge action' design delivers an unparalleled combination of high stiffness, low weight and inertia, and linearity of motion ratio. This delivers extremely low latency and a high frequency response. Incredibly small parameter changes that are statistically significant to the driver can be made due to the consistent response throughout the travel range. The high level of decoupling between degrees of freedom gives an excellent excursion range.

Our aVDS has consistent front-end software and control system hardware as our track testing products, such as driving robots and ADAS platforms, all using our patented Synchro software. This allows multiple validation approaches as the same scenarios can be tested in the lab and validated on the track.

## Driver immersion

Immersion is critical to maintain the authenticity of the driver's experience and reactions; therefore, digital content is provided by industry-leading software supplier rFpro. The experience of driving the aVDS is so involving and detailed that seasoned drivers can detect incremental parameter changes as if they were in the real car.

Thanks to the high road surface fidelity reproduced by the aVDS, simulated results and data correlate closely with those attained by physically driving a real vehicle on a specific road or track. Visual, audio, haptic and vestibular cueing ensures that the driver is fully engaged with senses stimulated for an unmatched level of realism. The platform's motion and visual feed have been precisely synchronised to eliminate the motion sickness often experienced when operating driving simulators.

## Applications

The simulator can be used across a breadth of applications, including ADAS and autonomous systems, NVH, hardware-in-the-loop, software-in-the-loop and driver monitoring. Faithfully recreated vehicle dynamics can be experienced in a variety of common tests, including: lane change, slalom, braking in turn, impulse, sine, step, ramp, swept steer and more.

## Performance

Degree of freedom	Displacement	Frequency response (-3dB)
Surge (X)	±540mm	>15Hz
Sway (Y)	±1250mm	>35Hz
Heave (Z)	±120mm	>50Hz
Roll (Alpha)	±8°	>50Hz
Pitch (Beta)	±9°	>50Hz
Yaw (Gamma)	±30°	>35Hz

## About AB Dynamics

AB Dynamics is a leading global provider of automotive test and verification solutions that facilitate the development of vehicles that are safer, more efficient and sustainable. As part of the AB Dynamics Group of companies we enable customers to develop and test in virtual environments, validate on the track and then evaluate vehicles on public roads.

## Haptic feedback

AB Dynamics is one of the world's most trusted suppliers of automotive test systems having supplied and supported steering robot systems for more than twenty years. This experience has been utilised to design the company's own control loading devices including the motors because this is so critical to simulator performance.

## Motion cueing

Motion cueing is a vital element of any driving simulator. A wide range of algorithms developed over many years are provided as standard with the aVDS, giving users the ability to choose the best option to meet their own requirements.

## Ease of installation

There are no onerous installation requirements relating to seismic mass for the aVDS family of products. Installation locations are not limited to the ground floor of a building and the system setup allows easy upgrade of static simulators to enable motion.

For more information:  
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