



TÜV

SUPPORT PACKAGE

ABOUT THE TÜV APPROVAL PROCESS

In order for autonomous vehicle developers to obtain a registration to drive on public German roads, the vehicle must be deemed to be a safe system. The first step in that process is to employ one of the TÜV bodies to perform a safety analysis.

For vehicles using a Drive-By-Wire interface, such as the Dataspeed DBW Kit, the extent of the TÜV analysis encompasses this DBW interface and the safety driver. The AI stack is not part of this approval process. The vehicle developer is free to alter their AI stack at will, without having to regain TÜV approval.

With this safety analysis approach, it is then critical that the aftermarket DBW interface contain key safeguards for imposing limits on the commands it can issue to the vehicle's main control systems, such as brake and accelerator pedal emulation, steering wheel angle and rate, and gear shifting. The Dataspeed DBW Interface Kit has such limitations incorporated internally, thereby meeting this requirement. The most important safety-related command limitations lie with the steering wheel control. Dataspeed's limits on steering wheel maximum angle and angular rate are based on the physics and kinematics of the steering system, and are therefore vehicle-speed dependent.

Additionally, TÜV will require a review of the formal safety analysis for this interface. For the DBW Kit installations already approved by TÜV SÜD, Dataspeed has previously ran and provided detailed SFMEA's which have met TÜV SÜD approval.

Since adherence to ISO 26262 is not required, a key part of this approval process is vehicle validation through testing. The TÜV SÜD safety examiner for AV's is heavily reliant on documented validation procedures and test results. Dataspeed provides a detailed Post-Installation Test Procedure to ensure and document that their DBW Interface is behaving as intended and meets all TÜV safety requirements.

DEDICATED SUPPORT

Our Experience

With years of research under our belt, combined with various fields of engineering concentrations such as mechanical, electrical, systems, and software, our engineers have the proven expertise for every phase of an AV project. We have assisted state and federal government agencies in setting safety guidelines for testing autonomous vehicles on public roadways (including NHTSA, MDOT, CDMV, and TRB).

Our Commitment

Each project is assigned an in-house Dataspeed PhD Safety Certified Specialist to assist with direct communications throughout the TÜV process.



INCLUDED DOCUMENTATION

For Submittal to TÜV

● SFMEA

The System Failure Modes and Effects Analysis includes functional block diagrams of the Dataspeed By-Wire Kit full system and subsystems including throttle, braking, and steering modules.

● Safety Plan Summary

This overview outlines Dataspeed's design methodology and measures with regards to prioritizing safety and performance. It highlights the safety goals of each module control.

● Post-Installation Validation Procedure

The verification document includes testing protocol for by-wire control enabling, calibrations, command imposed limits, and watchdog timers.