Production Test

Brake and Safety Electronics
(ABS, ASR, ESP)

Your task

An increasing number of motor vehicles are being equipped with modern safety systems such as antilock braking systems (ABS), antislip regulation (ASR) and electronic stability programs (ESP). ABS and ASR prevent the wheels from locking and slipping. ESP stabilizes the vehicle in critical situations by applying braking forces to the appropriate wheels. Sensors in the vehicle measure the data of the vehicle dynamics and transmit it as pulses to the electronic control unit (ECU), which analyzes the signals and controls the rotating speed of the individual wheels by means of actuators.

For the function test of an ABS/ASR/ESP ECU, the test system must simulate the sensor signals in normal and critical driving situations to make sure that the response of the control unit at the actuators is correct.

T&M solution

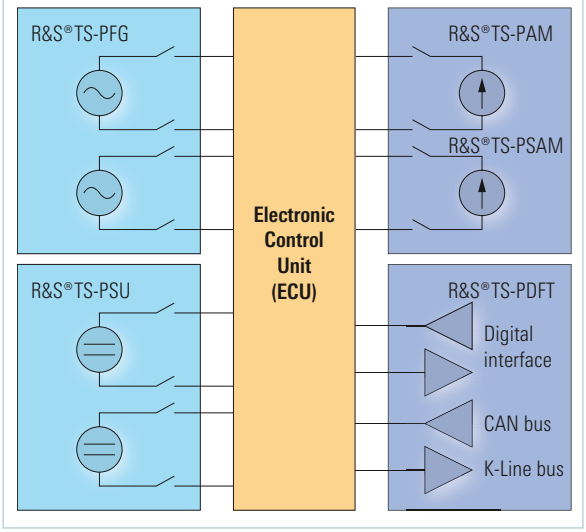
The Open Test Platform R&S®CompactTSVP provides the ideal solution for this task. Based on industrial standards, the R&S®CompactTSVP can be expanded by measurement, stimulus and switching modules from Rohde&Schwarz or by other standard modules, depending on the application. The analog measurement bus of the R&S®CompactTSVP and the optional, wireless adapter interface reduce wiring costs and ensure consistent quality of the measurement and stimulus signals. The self-test capability of all Rohde&Schwarz modules prevents long downtimes of the test system in the event of an error. The application software makes use of the advantages offered by the Generic Test Software Library R&S®GTSL (universal software package).

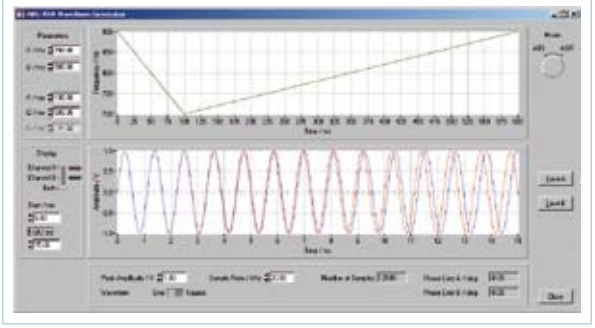
The resulting system solution is compact and therefore especially suitable for manual and fully automatic ECU test stations.

ROHDE&SCHWARZ

Application

The Open Test Platform R&S®CompactTSVP consists of a number of components. The R&S®TS-PCA3 base unit is equipped with the R&S®TS-PSCx system controller, but can also be controlled from an external PC. The basic configuration also includes the R&S®TS-PSU, R&S®TS-PFG, R&S®TS-PSAM, R&S®TS-PAM, R&S®TS-PDFT and R&S®TS-PMB modules. The R&S®TS-PSU supply and load module supplies the ECU, simulates loads and measures the supply currents in normal and standby mode. The R&S®TS-PFG arbitrary function generator module is used for synchronized and floating simulation of sensor signals. The ECU responds to the simulated sensor signals with specific changes on the control outputs. The R&S®TS-PSAM and R&S®TS-PAM measurement modules record these changes. Flashing of the module, simulation of the missing devices on the CAN bus and communication via the CAN or K-Line bus is performed by the R&S®TS-PDFT module. A further system component is the R&S®TS-PMB switch matrix module. If necessary, in-circuit test functionality (R&S®TS-PICT) can be retrofitted.





Technical information

Product designation	Open Test Platform R&S®CompactTSVP
System components (basic configuration)	• Test and Measurement Chassis R&S®TS-PCA3 based on CompactPCI/PXI with System Controller R&S®TS-PSCx • Supply and Load Module R&S®TS-PSU • Function Generator Module R&S®TS-PFG • Analog Source and Measurement Module R&S®TS-PSAM • Signal Analyzer Module R&S®TS-PAM • Digital Functional Test Module R&S®TS-PDFT • Switch Matrix Module R&S®TS-PMB • In-Circuit-Test Expansion Module R&S TS-PICT (optional)
Operating system	Windows 2000, Windows XP or later; Linux 2.4.x, Linux 2.6.x
Software	R&S®GTSL (Generic Test Software Library), R&S®LEGT (optional) R&S®ABS/ASR Waveform Generator

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