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VCIs for the entire vehicle lifecycle

VCIs (Vehicle Communication Interfaces) in a number of variations are used throughout the entire vehicle lifecycle so a test system can communicate with the vehicle.

(Photo: Softing)

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The developed VCIs of the VIN-ING product family from Softing take the specific requirements of engineering, manufacturing, and after-sales service into account. Hardware and software components make it possible to integrate the entire diagnostic system on the VCI. This means the VCIs are equipped for the various scenarios of remotely accessing a vehicle. The use cases along the process chain derive a number of very different requirements for VCIs. In engineering, onboard communication over the various bus systems CAN, LIN, Flexray, and BroadR-Reach is required, alongside diagnostic and calibration functions.

Interfaces for reading in data formats such as Autosar and Fibex to describe bus communication have to be provided. In test scenarios, such as road tests, or at test benches, VCIs are used with functions for data-logging, bus analysis, and the simulation of ECUs. To ensure these various demands are met, the optimal solution is for the VCIs to have a modular hardware and software concept.

The requirements made of a VCI in manufacturing are performance, performance, and more performance. This is true both of the effectively parallel communication with lots of ECUs and of the flash programming of ECUs. Fast availability in a WLAN network with good roaming characteristics continues to be essential. State-of-the-art encryption and authentication methods as well as taking the individual demands of the IT infrastructure into demand are obligatory. In after-sales service the vehicle interfaces are mainly limited to the signals applied at the OBD connector for ISO 1941, CAN, and Ethernet.

Various legacy protocols still have to be supported for servicing older vehicles. The VCI also has to be equipped for powerful and secure remote access. This is the basis for current and future diagnostic concepts as well as for software updates without the vehicle having to be taken to the repair shop (Sota). VIN-ING 1000 was designed as a compact, low-cost VCI for after-

VIN-ING 1000 - Compact VCI for simple service diagnostics (Photo: Softing)

market applications. With one to two CAN interfaces as well as K- and L-line, the VCI can be adapted with different diagnostic connectors using cables.

Thanks to the sturdy aluminum housing with protective caps as well as a lockable USB cable, the product is equipped for the tough conditions in the repair shop environment. Communication with the workstation takes place over USB or optionally over Bluetooth. Data pre-processing and protocol handling in the interface ensure fast response times and reliable real-time behavior regardless of the system environment. Manufacturing and after-sales service VIN-ING 2000 was developed in response to new demands in the vehicle industry. It is the successor to the tried and tested HSC diagnostic interface and features extensive modifications.

With a compact design and WLAN and USB as interfaces to the host system as well as CAN FD, K-line, and Ethernet to the vehicle, the VCI is particularly well suited for future-proof manufacturing and after-sales service applications. Highly integrated, powerful components, and a modular software architecture are the prerequisite for running an MVCI diagnostic server on the VCI and processing stored ODX data. This enables vehicles to be accessed remotely from one tester system in a whole range of mobile applications. With OTX sequences being run on the VCI, entire diagnostic tasks can be processed independently and without a connection to a host system. This makes it possible to realize applications, such as independent programming solutions, actuator diagnostics, and other control tasks, simply and at an acceptable price.

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