

Volcano TELLUS. All-in-one Test system for in-vehicle networks

Vehicle Network Design

D A T A S H E E T



The Volcano Tellus combines multiple test tools into a single unit providing a range of advanced testing capabilities and configurable interfaces for 2 CAN, 2 LIN, 1 MOST, and 8 digital I/O.

Volcano TELLUS

Volcano TELLUS is the next generation of vehicle communication test tools coming from Mentor Graphics redefining the test and validation of networked systems. With a highly versatile hardware interface combined with unique and powerful software features, TELLUS creates a testing environment loaded with functionality needed for validating networked system behavior. Especially useful for identifying network communication failure points associated with complex gateway timing analysis, digital to multiplex and multiplex to digital signal measurements, and also verification of node level communication requirements. TELLUS provides a complete and comprehensive solution that will prove invaluable to those with networked system test and validation needs.

Network Timing Checker

Network system integrators have a need to validate the network behavior with respect to frame timing, gateway timing, and signal interaction timing. Using TELLUS for network analysis simplifies this task significantly by identifying the communication timing requirements that are not met. Most solutions available today offer network monitoring, but leave the difficult task to the user of finding the anomalies that actually cause the problems. TELLUS offers not only the standard network monitor, but also helps the user to identify failure points within the communication system by performing a signature analysis or a “Volcano Aware” analysis on the networks.

Signature Analysis

The Signature Recorder is a unique feature that can significantly reduce time spent on the debugging of complex in-vehicle networks. Often the functionality

Features

- Gateway Analysis and Test Environment
- Network Timing Checker
- Signal Chain Analyzer
- Data Logger
- Built-in Digital I/O
- Software selectable transceivers
- 2 CAN, 2 LIN, 1 MOST in one product

Increased Productivity

- Only one product required to analyze multiple networks
- Single Click Emulation
- Advanced Node-level Emulation
- Synchronized time- stamping across all networks
- Verify complete network timing
- Fully Programmable

Technical Specifications

- 2 LIN, 2 CAN, 1 MOST interfaces
- 1 μ s time stamping resolution for all buses
- 8 configurable digital I/O channels
- 100Mbps Ethernet link to PC
- Stand-alone capability
- Low-Power Mode for long term analysis
- Loss-less data acquisition

of a vehicle under development is unstable, and determining the link between a functional problem and a communication problem, application software error, or other type of errors is a time consuming and error prone task when performed with commonly used traditional tools. The Signature Analyzer simplifies the network testing and validation process by profiling a well-working reference network and comparing this profile with the network under test. Instead of needing to analyze all network communication, TELLUS will indicate exactly which network timing characteristics are deviating from the requirements specified in the network profiles.

Volcano Aware Analysis

When data from the Volcano Network Architect is available, the "Volcano Aware" functionality of TELLUS simplifies the analysis process further. Since all communication data regarding gateway delays, publisher latency, subscriber latency, frame periods, and worst case latency is available; the "Volcano Aware" uses this information to validate the operation of the entire networking system. All timing parameters are monitored and verified with exact indications as to which problems exist associated with the related Electronic Control Unit(s). This feature can be utilized for non-Volcano conforming nodes as well when the user specifies the timing data for those parameters which are to be verified.

Signal Chain Analyzer

The Signal Chain Analyzer identifies those timing parameters within related chains of events that have deviated beyond the required specified limits. The Signal Chain Analyzer is uniquely effective at verifying complex sequential signal chain times often associated with gateway and node response timing, as well as system data with synchronized timing requirements.

The Signal Chain Analyzer of TELLUS allows the user to automatically verify properties such as:

- Total timing from physical I/O change until actuator effect
- Overall timing for a signal chain from first transmission of a signal, over multiple gateways and protocols until actuator effect
- Timing from digital I/O event until signal value on the network is changed
- Gateway delays - The time from input signal change to output signal change

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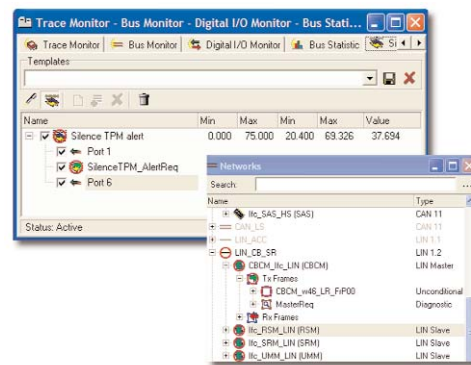
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Built-in features like the signal chain analyzer and the network timing checker help to quickly identify complex timing problems and failure points within networks.

- Synchronization of physical outputs including doorlocks and lighting.

Data Logger

The Volcano Tellus 5400 hardware unit is equipped with an internal 1 GB memory card enabling it also as a standalone data logger, useful for those measurements when field data must be acquired and bringing a laptop into the test environment is cumbersome. Tellus is also available in data logger specific models where the hardware unit is packaged in a ruggedized mountable box that provides direct access to the flash memory card for removal. An 8 GB flash card provides enough memory to store all communication data simultaneously for all active network channels (2 CAN, 2 LIN, 1 MOST control channel) operating at 100% bus utilization for a period of 6 hours. Configurable hardware filters are provided to filter out unwanted data and significantly increase logging duration capabilities. Data can be loaded into the Tellus software or third party applications for additional filtering and analysis.

Configuration through Standards

Tellus is configured through "Measurement Configuration Files" (.mcf) which contain the detailed system information which is required to perform network emulation, gateway data, use signals with engineering units or state encoded values, set active schedule tables for LIN, and select operable interface modes. Measurement configuration files can be directly created from the Volcano Network Architect tool, through the import of CAN Database Files (.dbc), LIN Descriptor Files (.ldf), and MOST Function Block Catalogues, or created manually using the MCF editor.



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