ESS AUTOMOTIVE PRODUCT PORTFOLIO

ESS’s synergetic Automotive Product Portfolio holistically supports design, development and debugging of High Performing Mission and Safety Critical Automotive Solutions.

AUTOSAR Multicore Development Qualification ToolKits
Computer Vision Functional Safety Driver Monitoring Static Code Analysis
SPC5xxx/NXP MPX5xx NXP S32K EV Test Solutions SafeTPack
Automotive Ethernet ASIL D Solutions AUTOMOTIVE SOLUTIONS CAN/CAN-FD
Model Based Design Tools AUTOMOTIVE SOLUTIONS CAN/CAN-FD

HYPERVERSOR Safety RTOS LV 123, LV 124, LV 148

TriCore Aurix Automotive Stacks JTAG Debuggers
High Speed Data Acquisition MCAL ISO 26262 ADAS
TESTING (MIL, SIL, PIL, HIL)
Multi-Core Multi-Architecture

**COMPILER**
BUILD TOOL

**PXROS-HR**
REAL-TIME OS

**QKIT**
TOOL QUALIFICATION

**B2B**
CONSULTING & SUPPORT

- **Automotive Development Platform**
  - AURIX TC4xx, TC3xx, AURIX TC2xx and TriCore TC1xx Variants, C compilers for HSM, Compilers for GTM/MCS, Assembler for GTM
  - NXP S32Z and S32E Processor Families
  - STMicroelectronics SPC56x, SPC57x, SPC58x Power Architecture
  - NXP Qorivva MPC56xx, MPC57xx, MPC58xx

- **Compiler ASIL D Qualified**
  - Toolkit Qualification ISO26262 ASIL D, IEC 61508 SIL4, EN 50128 SIL4

- **PXROS-HR SIL-3 Certified Micro Kernel RTOS**

- **Advanced Multi-Core C/C++ Compiler with Multi-Architecture Support**

- **Industry Shortest (Compile-Link) Build Times**

- **Commercial standard and math libraries (no open source, no viral GPL implication)**

- **Preferred Design House by Infineon & Preferred Compiler Partner by STMicroelectronics**

  - Infineon and ST AUTOSAR MCAL
  - Infineon SafeTLib for AURIX and SafeTPack for AURIX 2G

- **3rd Party Debugger Support** (Lauterbach Trace32)

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TRACE32® supports technologies like JTAG, SWD, NEXUS or ETM with embedded debuggers and software and hardware trace.

Supports almost 100 cores deployed in over 5000 chip families like ARC, Arm® Cortex®-A/-R/-M, Neoverse and Armv9, RISC-V®, Power Architecture®, TriCore™, RH850, Xtensa® etc.

- Universal Debug and Trace Support
  - ARM - Cortex-A/-R/-X Armv8/Armv9, Neoverse Armv8/Armv9, Cortex-A/-R Armv7, Cortex-M
  - Infineon - TC4xx: TriCore, CSRM (TriCore), SCR (XC800), PPU (ARC), GTM. TC2xx/3xx: TriCore, HSM (Cortex-M), SCR (XC800), GTM
  - Power Architecture - Qoriwa MPC5XXX / SPC5XXX, QoriQ, PowerQUICC
  - Renesas - RH850/U2B, V850. R-CAR

- AUTOSAR Debugging with new ARTI Support
  - Multicore Tracing, Onchip and Off-chip Tracing, Trace Based Code Coverage

- AMP and SMP Debugging
- Debugger for Synopsys Virtualizer
- ISO 26262 Tool Qualification Support-Kit
- Vector Integration: Software Debugging via XCP
- OS & Hypervisor-Awareness Debugging (QNX, Nucleus, VxWorks)
- Test Automation via Scripts & API
- PIL Simulation - Support for Mathworks Simulink
Run. Test. Drive. TPT

**Testing ASCET models**
TPT supports fully automated ASCET model testing for both, physical models and implementation models. Automatic test harness generation for module and integration testing with many features allows very efficient tests, even for large-scale control software.

**Testing Simulink models**
Testing Simulink or TargetLink models with TPT is very easy and powerful. No matter if MIL or SIL. No matter if 2 or 2000 signals. No matter if unit or integration model. No matter if busses, triggered subsystems, model referencing, AUTOSAR,… TPT masters them all.

**Testing C code**
C/C++ code can be tested using TPT on every Windows PC. TPT can handle many C/C++ modules in parallel. It automatically analyses your C/C++ code interfaces, creates function & variable stubs, generates a test harness and much more.

**Requirements based testing**
In TPT, requirements can be linked to test cases and reported along with the tests, including coverage analysis. Seamless traceability and impact analysis assist the tester during the whole development life cycle.

**Test case design and test generation**
TPT was made for testing signal-oriented systems. Test case design with TPT is powerful, easy to handle and easy to maintain. Additionally, TPT comes with smart automatic test generation tools.

**HiL testing**
Use TPT for HiL test automation independently of your HiL vendor. TPT supports many HiL systems off-the-shelf, including dSPACE HiL, Concurrent iHawk, Vector CANoe, NI Veristand, and all ASAM XiL HiL systems.

**Testing safety systems**
Safety standard directives can be satisfied while testing with TPT up to the highest safety level. Relevant standards, such as ISO26262, are supported. The TPT tool qualification is certified by TÜV.

**Pil testing**
TPT has a close integration with TRACE32 (Lauterbach) and UDE (PLS). Automated fine grained control of the underlying debugger allows access to all software variables and functions as well as control flow manipulation.

**Vehicle testing**
During vehicle test drives, TPT assists the driver with automated driving instructions, permanent monitoring of test goals, parameter application, and data recording. With TPT, vehicle testing becomes easy, effective and reproducible.

**Assessment of tests and reporting**
TPT supports fully automated assessment & documentation of test results. It is a really powerful feature of TPT that supports all kinds of assessments, from very simple to highly complex ones.

**Dashboard**
Complex test cases are often hard to understand if you only look at the signals. The TPT dashboard allows intuitive visualization of complex states and data. The tester can also interactively change, validate, and record tests. Its usage is extremely simple.

**Testing AUTOSAR**
TPT simplifies AUTOSAR application software component testing. Test setup is lean and easy with automatic test RTE generation. All common kinds of AUTOSAR interfaces, ports, data types, scheduling can be tested with TPT on every PC.

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BlackBerry QNX eases the challenges of building ISO 26262 compliant automotive systems through its solutions

BLACKBERRY QNX
FUNCTIONAL SAFETY SOLUTIONS

BlackBerry QNX’s safety solutions mitigate risk of non-compliance and reduce development and certification costs.

QNX OFFERS SAFETY-CERTIFIED AND SECURE SOFTWARE SOLUTIONS TO BUILD AUTOMOTIVE SUBSYSTEMS AND ECUS.

ADAS & AUTOMATED DRIVE
BlackBerry QNX powers advanced driver assistance systems (ADAS) with an OS certified to ISO 26262 ASIL D, as well as frameworks and middleware to enable automated drive features.

Products: QNX OS for Safety, QNX Hypervisor for Safety, QNX® Sensor Framework

INSTRUMENT CLUSTERS
BlackBerry QNX offers a reliable, functionally safe solution for digital instrument clusters. Its one-of-a-kind ISO 26262 ASIL B pre-certified graphics solution and ISO 26262 ASIL D pre-certified RTOS

Products: QNX® Graphics for Safety, QNX OS for Safety

DIGITAL COCKPIT
BlackBerry QNX enables digital cockpits that integrate multiple in-car systems while separating safety-critical systems from non-safety critical systems.


INFOTAINMENT
BlackBerry QNX offers market-leading technologies for the development of connected, safe and secure infotainment systems.


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All series come in power form factors of 2U, 3U and 4U

**EA-PSB 10000 2U**
- 1.5 kW and 3 kW
- Up to 750Vdc & up to 120 Adc
- Parallel up to 192 kW

**ELR 10000 4U**
- Power 30 kW
- 0 - 80 V up to 0 - 2000 V
- 0 - 40 A up to 0 - 1000 A

**EA-PSB 10000 4U**
- 15 kW to 30 kW
- Up to 2,000Vdc
- Parallel up to 1.92 MW

**EA Advantages**
- Autoranging
- Power Density
- Battery simulation
- Arbitrary waveform and function generator
- Low EMC
- Output voltage up to 2500V
- Plug and play paralleling up to 2MW
- High efficiency up to 96%
- Battery and fuel cell test functions

**Electric Vehicles Testing Solutions**

**Battery Management Test Solutions**

**Testing On Board Chargers & DC Charging Stations**

**Automotive Test Standards**

- LV 123
- ISO 16750-2
- VW 80300

- Integrated function generator provides the ability to create non-linear voltage and current waveforms in both Source & Sink mode.
- VW 80300 requires high voltage transient testing.
- Transients required to be 20V/msec for 450Vdc based hardware and 40V/msec for 900Vdc based hardware.
- Function generator allows users to program customizable transients.
Test Equipment of Automobile Electrical Parts and Environmental Loads

ASR-2000/ASR-3000 Series
500VA-4KVA AC/DC Power Source

PSU-Series
6kW Programmable Switching D.C. Power Supply

PSW-Series
Wide Range Output DC Power Supply

AEL-5000 Series
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Automotive Test waveforms for ISO16750 & ISO7637 included

Reliability Test

GPT-12000/9000 Series
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GDS-3000A Series
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GDM-906x Dual Measurement Multimeter
Vehicle Temperature Measurement and Monitoring Solution

ISO16750-2 Electric Load Tests

Simulates a Residual Alternating Current on the Direct Current Supply
Simulate Starting Profile
Simulate Short Voltage Dropest
Simulate Slow Decrease and Increase of Supply Voltage
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**Aukua MGA2510**

**Automotive Ethernet**

IEEE 100/1000BASE-T1, 2.5G/5G/10GBASE-T1 and 1000BASE-RH

Network Impairment Emulator

Inline Packet Capture and Protocol Analyzer

Traffic Generator and Analyzer

**APPLICATION HIGHLIGHTS**

**TRAFFIC GENERATION**
- Bit error rate testing (BERT) for integrity validation
- Latency characterization of automotive devices, components, and applications
- Throughput performance testing
- Functional testing
- Media conversion: BASE-T ↔ BASE-T1

**PACKET CAPTURE / PROTOCOL ANALYSIS**
- Layer 1 and Layer 2 visibility with PCS and MAC layer capture (at line rate)
- Layer 1 - Layer 7 protocol filters and triggers
- Latency monitoring of automotive application traffic flows
- Event timing correlation and analysis
- Real-time stats and graphical analysis
- Media conversion: BASE-T ↔ BASE-T1

**DELAY / IMPAIRMENT EMULATION**
- Inject delay and impairments inline
- Real-world performance validation
- Negative and functional testing
- Reproduce production environments for more effective troubleshooting
- Media conversion: BASE-T ↔ BASE-T1

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IEEE 100/1000BASE-T1, 2.5G/5G/10GBASE-T1 and 1000BASE-RH

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**Aukua MGA2510**

**All-In-One Automotive Ethernet Test System**

**ECU** Generate

**Aukua** Impair

**Aukua** Capture

**ECU** Generate

**ECU** Generate

**ECU** Generate

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Inject physical layer fault into LAN cables up to 10GBase-T

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The 2-channel Power Analysis Module
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Quarch supports power analysis from a single IC, all the way to high power 3-phase mains, all with simple automation and powerful analysis tools
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WaveControl Software includes a comprehensive library of waveforms supporting these standardized automotive industry tests:

- Extensive Waveform Libraries for Normative Tests, e.g.  
  - LV 124, LV 148  
  - VDA 320  
  - VW 80000-1  
  - VW 82148  
  - GMW 3172  
  - MBN 10615  
  - ISO 16750-2  
  - BMW GS 95024-2-1  
  - BMW GS 95026

- Import & Export of recorded Data
- Visual Generation of individual Waveforms
- Sequence Controlling and Timing

- Electronic Switch for short interruptions up to 60V / 100A; tr / tf < 500 ns
- 4-Quadrant-Power-Supply up to ± 100 V / ± 40A; > 100 kHz, 320W / 1kW, modularly expandable up to 6,4 kW / 20 kW
- Arbitrary Power Supply up to 100 V / 320 A, AC-superimposition up to 70 kHz, 320 W / 1 kW up to 5.2 kW / 16 kW
- Software to create arbitrary waveforms, an extensive library of normative waveforms included
- All instruments can also be used individually

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Support for Automotive APIs

**CAN/CAN FD/LIN Interfaces**

- Single, dual and six Channels Interfaces for classical CAN/CAN FD/LIN/J1939 etc protocols.
- Complies with CAN specifications 2.0 A/B and FD
- CAN/CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
-LIN interfaces are compliant with all LIN specifications (up to version 2.2) and can be used as a LIN master or slave.

**CAN Analyser: PCAN Explorer6**

- Cost effective, life time tool - no AMC
- Recording and playback of CAN/CAN FD /J1939 traffic
- Create your own database
- Import/Export existing .DBC & .ARXML file formats
- Automation with macros or VBScript
- Plotter, Instruments Panel analysis support for CAN/CAN FD and J1939 protocols

**Diagnostic Tools: PCAN-Diag FD**

- Measurement of CAN bit rate, bus load, termination, voltage level and CAN/CAN FD /J1939 data without PC
- Built in oscilloscope & supports sample rate of 100MHz
- Load .DBC/ARXML file formats
- Built in memory card upto 3GB
- Connectors : USB, HDMI, DB9
- Operated via battery & external power supply

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