

GES AUTOMOTIVE PRODUCT PORTFOLIO

GES'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** Safety RTOS
 Model Based Design Tools LV 123, LV 124, LV 148
HYPERVERSOR CAN/CAN-FD
 TriCore Aurix Automotive Stacks JTAG Debuggers
 High Speed Data Acquisition MCAL ISO 26262 ADAS
 TESTING (MIL, SIL, PIL, HIL)



Elektro-Automatik





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, SPC58xPower 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)

FOUNDATIONAL SOFTWARE SOLUTIONS FOR THE MODERN VEHICLE



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

BLACKBERRY QNX FUNCTIONAL SAFETY SOLUTIONS



OPERATING SYSTEM	VEHICLE INSTRUMENT CLUSTERS	ADVANCED DRIVER ASSISTANCE	HYPERVERSOR	SYSTEM SAFETY DETECTION
Provides a reliable RTOS foundation that is pre-certified to the highest level of ISO 26262 - ASIL D	Delivers an ISO 26262 ASIL B pre-certified graphics solution	Provides a foundation on which to build safe and reliable autonomous driving software	Isolates safety-critical systems from non-safety critical systems	A fault tolerant technique to address hardware and software errors in safety-critical systems

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



DIGITAL COCKPIT

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

Products: QNX Hypervisor, QNX Hypervisor for Safety, QNX[®] Advanced Virtualization Frameworks, QNX[®] Acoustics Management Platform, QNX[®] Sensor Framework, QNX[®] Multimedia Suite, QNX[®] Speech Framework, QNX[®] SDK for Smartphone Connectivity



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



INFOTAINMENT

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

Products: QNX Acoustics Management Platform, QNX Sensor Framework, QNX Multimedia Suite, QNX Speech Framework, QNX SDK for Smartphone Connectivity

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 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.

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.

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.

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.

TPT The best way to test embedded software

TPT test 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.

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.

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.

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 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.

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.

Testwell CTC++ Code Coverage

Code Coverage compliant to highest safety requirements

Testwell CTC++ is a powerful and easy-to-use code coverage analyser proving which structures of your code have been tested. The tool provides all coverage levels required by industrial safety standards



Easy to use

- ▶ Generic build integration
- ▶ Excellent performance
- ▶ Integration in IDEs
- ▶ Modular architecture for full integrability



Language support

- ▶ Native languages: C and C++
- ▶ Add-Ons for Java and C#



Embedded Software

- ▶ Very small memory consumption
- ▶ Testing on every target
- ▶ With any cross-compiler
- ▶ Adaptable runtime



Qualification-Kit

Simplify all certification processes of your projects by using the Qualification Kit for Testwell CTC++. The following standards are supported by the Testwell CTC++ Qualification Kit:

- ▶ DO-178C / ED-12C
Software Considerations in Airborne Systems and Equipment Certification
- ▶ IEC 61508
Functional Safety of Electrical/Electronic Programmable Electronic Safety-related Systems
- ▶ EN 50128
Railway applications - Communication, signaling and processing systems
- ▶ ISO 26262
Road vehicles - Functional safety
- ▶ IEC 60880
Nuclear Power



Coverage Levels

- ▶ Statement Coverage
- ▶ Function Coverage
- ▶ Decision Coverage/Branch Coverage
- ▶ Condition Coverage
- ▶ Modified Condition/Decision Coverage (MC/DC)
- ▶ Multicondition Coverage (MCC)



Desktop Applications

- ▶ Small impact on build performance
- ▶ Scalable for large projects
- ▶ Compiler independent
- ▶ Runtime for Windows, Linux, macOS

Qualification Kit for Standards:

DO-178C - IEC 61508 - EN 50128 - ISO 26262-IEC 60880





MOST COMPREHENSIVE PROGRAMMABLE POWER SOLUTIONS

The EA-10000 series includes more than 180 devices: **programmable DC power supplies EA-PS & EA-PSI, bidirectional DC power supplies EA-PSB, & regenerative electronic DC loads EA-ELR.**

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

EV TESTING SOLUTIONS

EA-PSB 10000 2U	ELR 10000 4U	EA-PSB 10000 4U
<ul style="list-style-type: none"> 1.5 kW and 3 kW Up to 750Vdc & up to 120 Adc Parallel up to 192 kW 	<ul style="list-style-type: none"> Power 30 kW 0 - 80 V up to 0 - 2000 V 0 - 40 A up to 0 - 1000 A 	<ul style="list-style-type: none"> 15 kW to 30 kW Up to 2,000Vdc Parallel up to 1.92 MW



EA Advantages

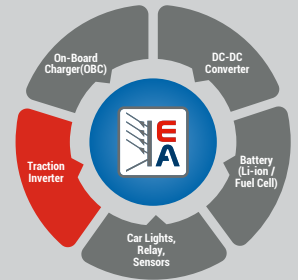
- Autoranging
- Power Density
- Battery simulation
- Arbitrary waveform and function generator
- Low EMC
- Output voltage up to 2000V
- Plug and play paralleling up to 2MW
- High efficiency up to 96%
- Battery and fuel cell test functions



Programmable DC Power Supplies

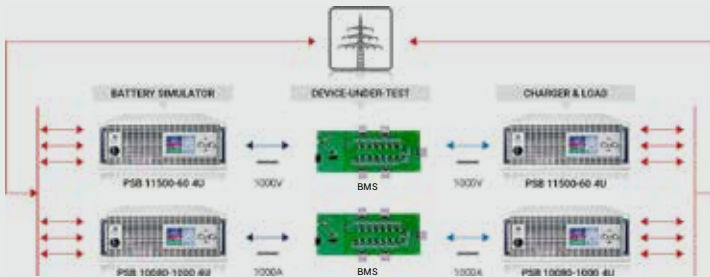


Programmable DC Electronic Loads (Conventional and regenerative)

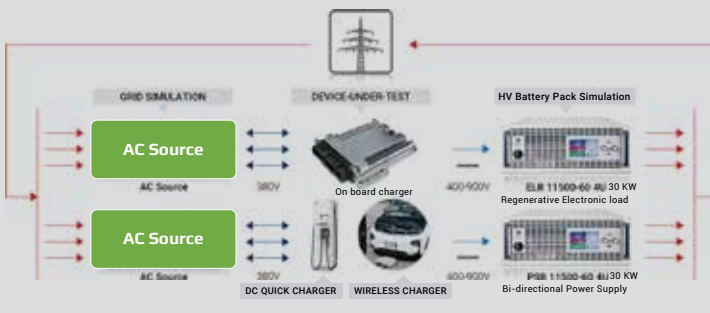


Electric Vehicles Testing Solutions

Battery Management Test Solutions



Testing On Board Chargers & DC Charging Stations

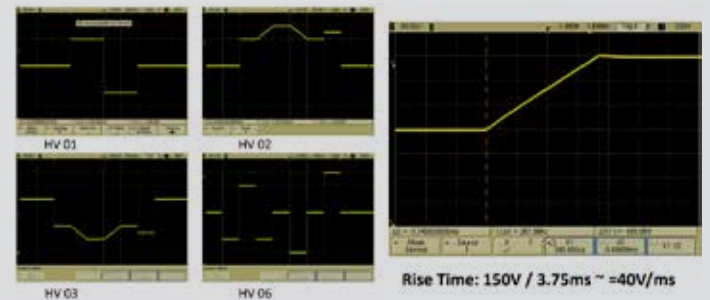


Automotive Test Standards

- 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.



neXt generation in data acquisition and signal conditioning

For analog, digital, optical and MHz signals

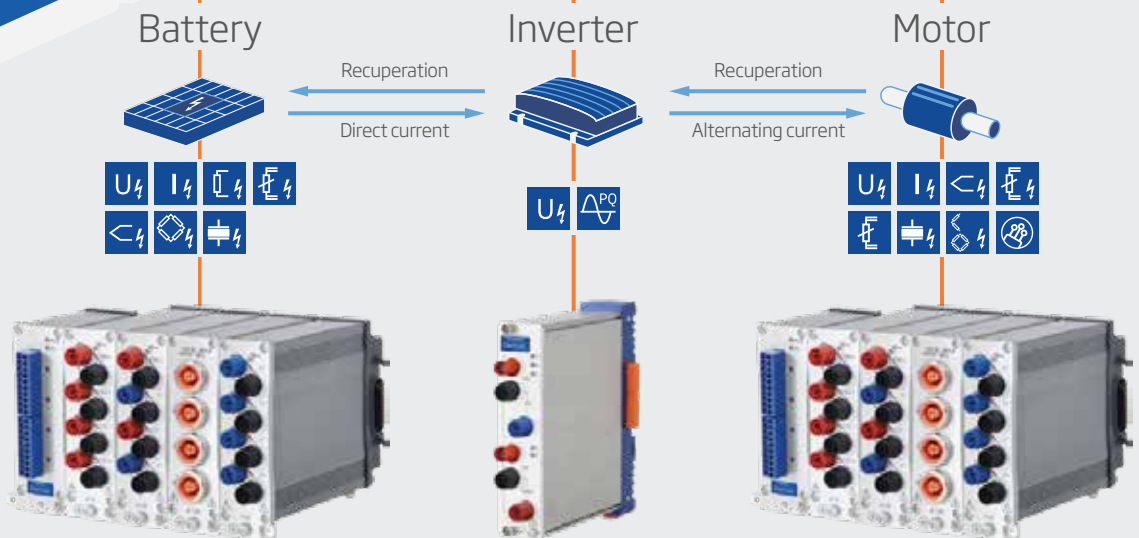
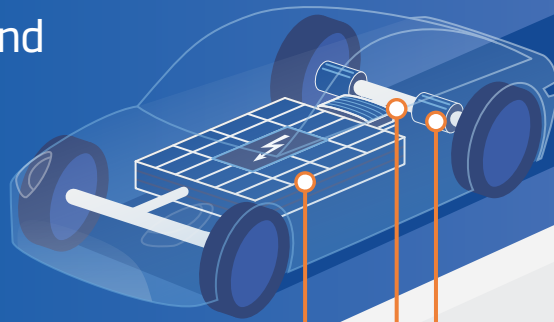
MHz

High isolation I/O modules for electric vehicle testing



1200 VDC continuous isolation

5000 VDC peak



Q.series X
Continuous
1200 VDC isolation

Q.boost
Up to 4 MHz per
channel, triggered
or continuously

Q.series X
Up to 100 kHz
per channel



www.gantner-instruments.com
info@gantner-instruments.com | T +43 5556 77 463-0

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

Aukua MGA2510
All-In-One Automotive Ethernet Test System

Traffic Generator
and Analyzer

APPLICATION HIGHLIGHTS

TRAFFIC GENERATION

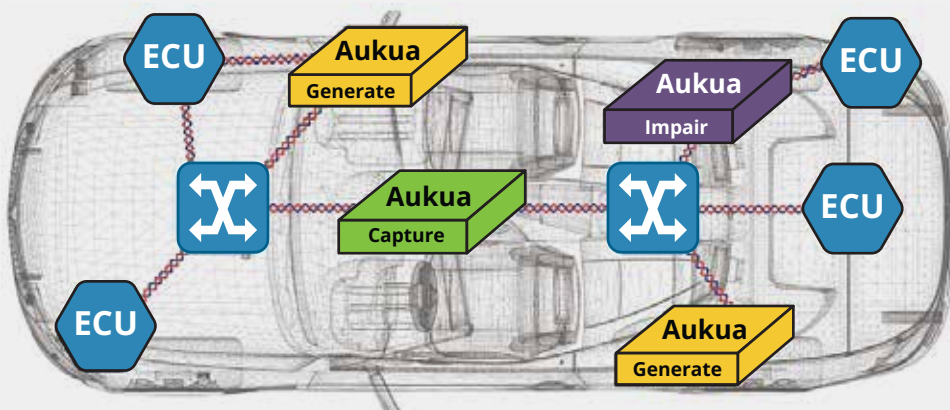
- Bit error rate testing (BERT) for integrity validation
- Latency characterization of automotive devices, components, and applications
- Throughput performance testing
- Functional testing
- Media conversion: BASE-T <--> BASE-T1

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



Aukua is an active member of the OPEN Alliance SIG

Automated testing for safety and efficiency



Automotive Breaker Modules

Automate hot-plug, dual redundancy and fault injection testing for automotive links



The Automotive Multi-Protocol Breaker

A versatile standalone tool, inject faults and view traffic from I2C up to 1000Base-T1 links



RJ-45 CABLE MODULE

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



SFP+ Cable Module

Quarch can provide fault injection modules for the latest SFP28 and PCIe links

Physical Layer Switches

Automatically and remotely configure paths between multiple USB devices. Ideal for qualifying multiple USB devices quickly"



Automotive power analysis

Capture long term high resolution data from across the vehicle



The 2-channel Power Analysis Module

Capture multiple power rails along with digital signals for easy debugging



3-phase Power Analysis Module (PAM)

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

LOOKING TO IMPROVE YOUR FLEET SAFETY?

95% OF ALL CRASHES ARE
CAUSED BY
HUMAN ERROR



**Driver
Monitoring**



**Real-Time
Alerts**



**Fleet Management
Software**



**Facial
Recognition**



**Easy to
Install**

VJDrive

We've got you covered

- ✓ **Prevent road accidents**
- ✓ **Reduce vehicle downtime**
- ✓ **Lower insurance costs**
- ✓ **Maximize fleet productivity**
- ✓ **Save lives**



EDGE COMPUTING

NVIDIA Jetson AGX Xavier

NVIDIA JETSON AGX XAVIER

The AI Platform for Autonomous Machines

TRANSFORMING INDUSTRIES WITH AI



Get your autonomous vehicle application on the road with an integrated NVIDIA Jetson AGX Xavier and GMSL solution



BOARDS
Rogue Carrier + GMSL Expansion Board



MODULE
NVIDIA Jetson AGX Xavier

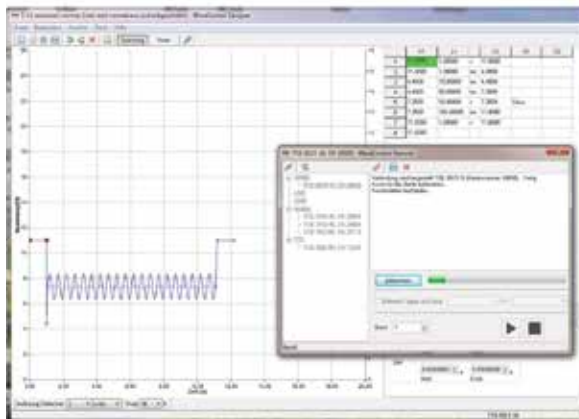


DC and Arbitrary Power Supplies Arbitrary & Function Generators 4-Quadrant and Broadband Amplifiers Special Instruments

Comprehensive Test Bench For Automotive Testing

TOELLNER offers flexible solutions for on-board network simulation and testing of components, e.g. for the automotive and avionics industries. The Software WaveControl provides waveforms and controls the TOELLNER system components at the test station, which can be individually tailored to your requirements. Using a DAQ-Card, any signal waveform can be provided with Arbitrary Power Supplies or 4-Quadrant Amplifiers with outputs from 160 W to 5200 W. For fast interruptions, TOELLNER offers electronic switches with switching times below 500 ns.

WaveControl Software includes a comprehensive library of waveforms supporting these standardized automotive industry tests:



The Software WaveControl provides

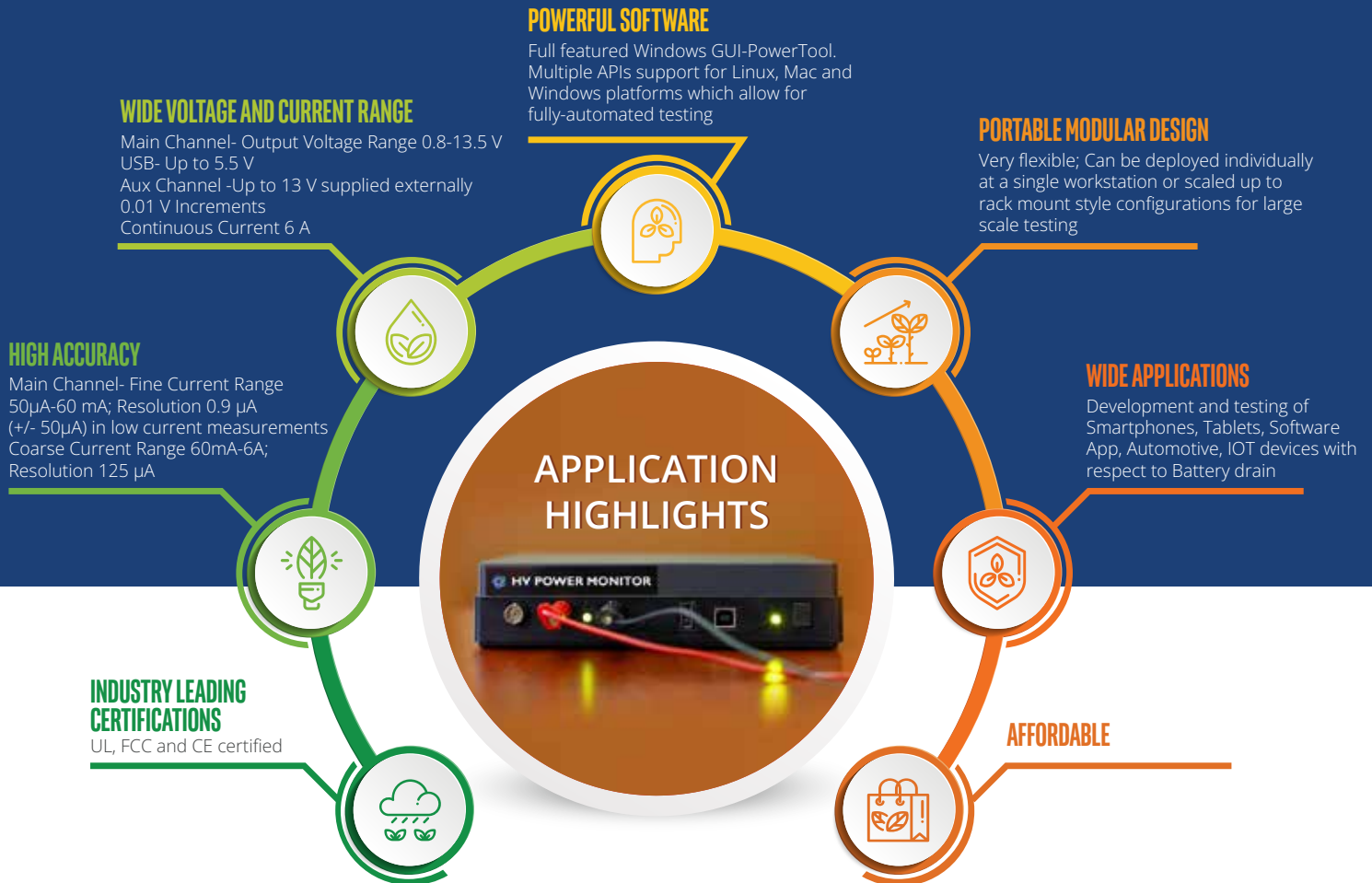
- ✓ Extensive Waveform Libraries for Normative Tests, e.g.
 - LV 124, LV 148
 - VDA 320
 - VW 80000-1
 - VW 82148
 - GMW 3172
 - MBN 10615
 - ISO 16750-2
 - BMW GS 95024-2-1
 - BMW GS 95026
- ✓ Import & Export of recorded Data
- ✓ Visual Generation of individual Waveforms
- ✓ Sequence Controlling and Timing



- Electronic Switch for short interruptions up to 60V / 100A; $t_r / t_f < 500$ ns
- 4-Quadrant-Power-Supply up to ± 100 V / ± 40 A; > 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

THE NEXT GENERATION OF 2-IN-1 HIGH PRECISION POWER MONITORING HARDWARE AND BENCHTOP POWER SUPPLY IS HERE

Eliminate the need to buy a separate power supply and power monitoring device. Save space and test setup cost using the highly scalable solution of Monsoon High Voltage Power Monitor (HVPM).



BRIEF SPECIFICATIONS

- Size: 8 in x 6 in x 2 in (20 cm x 15 cm x 5 cm)
- Weight: 1.1 lb (0.5kg)
- Input power 115V to 240V, 47-63Hz
- Main channel 0.8V to 13.5V range
- USB channel 2.1V to 5.4V
- Aux channel input 0.5V to 13V
- UL, CE, FCC certified

TYPICAL USE CASES

- Smartphones, Tablets or Laptops
- Smartphone Apps
- Internet of Things (IoT) Devices, Medical Devices
- USB Devices
- Automotive Sub-circuits
- Prototype Designs
- Power measurement of Arduinos, Raspberry Pi and Microcontrollers
- Burn in testing

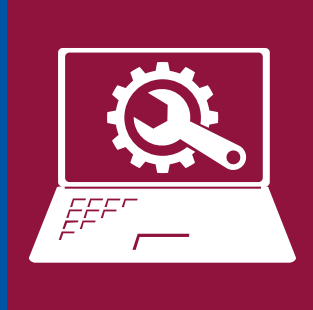
WHAT'S INCLUDED?

- High Voltage Power Monitor (HVPM)
- Power supply
- 2 alligator clips
- 2 USB cables
- Information card with links to PowerTool software and support documentation

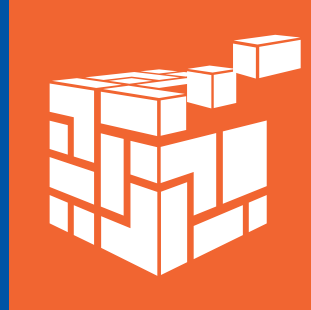
Embedded development tools by SEGGER



Debug & Trace probes



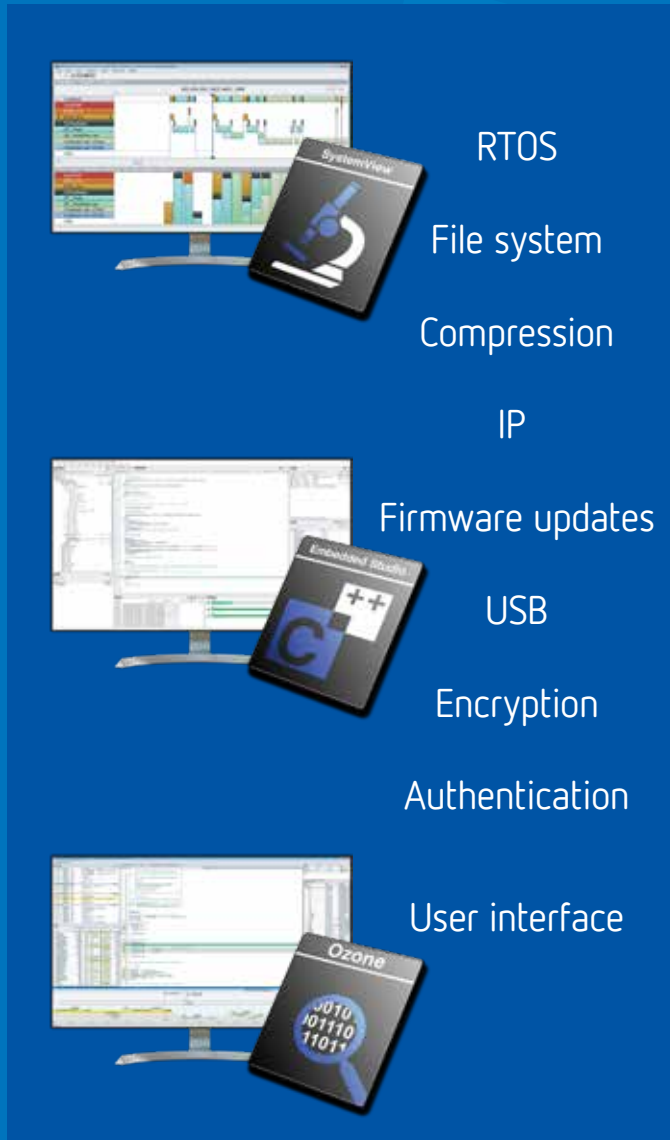
Software Tools



Embedded Software



Production Tools



Empowering Electronics Manufacturers

Whatever the task, whatever the environment.
Everything is faster and with Vision Engineering's
ergonomic microscopes.



Mantis



3D view



Mag range



Ergonomic



Long working distance



Wear glasses



Competitively priced



Optical



Accurate

DRV-Z1



3D view



Mag range



Ergonomic



Long working distance



Wear glasses



Dimension Two Software



Remote Viewing



Industry 4.0

Lynx EVO



3D view



Mag range



Ergonomic



Long working distance



Wear glasses



HD camera



Record video



Dimension One Software

- Streamlined Debugging
- Fully IDE-Integrated
- Simple to Configure & Operate



Multilink Overview

Multilink debug probes allow a PC access to the Background Debug Mode (BDM) or JTAG interface on wide range of ARM Cortex and 8-16-/32-bit devices, in order to halt normal processor execution and use the PC to control the processor. The user can then directly control the target's execution, read/write registers and memory values, debug code on the processor, and program internal or external FLASH memory devices.

Supported manufacturers include NXP, STMicroelectronics, Cypress, Infineon, Silicon Labs, and many others. Multilink connects between a USB port on a Windows machine and the standard debug connector on the target. Microcontrollers are supported via the multiple headers located under a flip lid on the Multilink case. Ribbon cables suitable for a variety of architectures are included.

Standard Features

All Multilink debug probes offer these standard features:

- USB interface from PC to Multilink allows for fast, easy programming and debugging -- with the ease and compatibility of the USB interface.
- Draws power from USB interface-- no separate power supply required (draws less than 1mA from the target).
- Works with target voltage: 1.8V-5.25V
- Supports JTAG daisy chaining of multiple ARM MCUs
- ARM device support includes both the JTAG and SWD protocols
- Includes USB cable, Type A Male to Type B Male, 6-ft.

8/16/32 BIT DEVICES:	
NXP:	S32
	ColdFire V1
	ColdFire V2/V3/V4
	MPC55xx-57xx
	DSC
	S12Z
	HC(S)12(X)
	HCS08, RS08**
	MPC5xx/8xx FX only
	HC16/683xx FX only
Micro:	SPC5

"Universal" Features

MULTILINK UNIVERSAL LC and **MULTILINK UNIVERSAL FX** also include these features:

- Pipelined programming algorithms for some Power Architecture families that dramatically increase programming speed.
- Auto-frequency detection + trimming capabilities for HCS08 devices
- Auto-frequency detection for HC(S)12(X) devices.
- Generates programming voltage on RESET line for RS08 devices.
- Target Frequency: 16Khz-50Mhz (applies to HCS08, RS08, CFV1, S12Z, or HCS12X only)

In-system, stand-alone programmers for internal & external flash.

Versatile programming tools built for reliability on the production line. Rich feature sets offer terrific value. Support for ARM Cortex, AURIX TriCore, Renesas, PowerPC and 8-/16-/32-bit architectures.



Cyclone LC Programmer Features

Program with one touch, with or without a PC, after configuring a programming image. Programming can also be fully automated with the included Cyclone Control Suite.

- Simple To Configure & Operate
- Extensive Device Support
- Reliable & Feature Rich
- Easily Automated

Cyclone FX Advanced Features

The Cyclone FX programmer adds a tremendous boost in speed and storage size, allows expandable memory via the SD card slot, ProCryption Security, advanced automation & useful control port features.

- ProCryption Security (AES/RSA Encryption)
- WiFi Control, High-Speed Programming
- Massive Internal & Expandable Storage
- Advanced Automation & Gang Programming

EASY SETUP & POWERFUL FEATURES SAVE VALUABLE TIME

**SIMPLE SETUP/
PC-BASED**

**STAND-ALONE
MODE**

**CONTROL MULTIPLE UNITS
w/ CYCLONE FX or Advanced License**

Device Support

NXP: kinetis/S32, LPC, i.MX, HC08, HCS08, HC(S)12(X), S12Z, ColdFire V2/V3/V4, RSO8, Power MPC5xx/8xx, DSC, CPU3xx, QORIVVA MPC5xxx, 68HC16
STM: SPC5, STM8, STM32
Renesas: H8 and H8s/Tiny, MC16C and M16C80, M32C, R8C, RH850, RL78, RX600
Infineon TriCore: AUDDO TC1xx, AURIX TC2xx/TC3xx
Legacy Devices: HC05, HC11, MAC7xxx, MCORE

Leading provider of hardware, software, and services for automotive and industrial communication with emphasis on the fieldbuses CAN & LIN.
Support for Automotive APIs

PCAN-Router Pro FD



PCAN-Router FD



PCAN-Diag FD



PCAN-MicroMod FD ECU



PCAN-USB FD



PCAN-USB



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



GOPALAM EMBEDDED SYSTEMS
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