



## Automated Functional Test Synthesis for Volume Production and Debug

**QUICK instruments** is a groundbreaking technology and an automated solution that provides functional test extension driven by test coverage and troubleshooting requirements. The technology is tailored especially for digital electronic assemblies and high-speed interfaces.

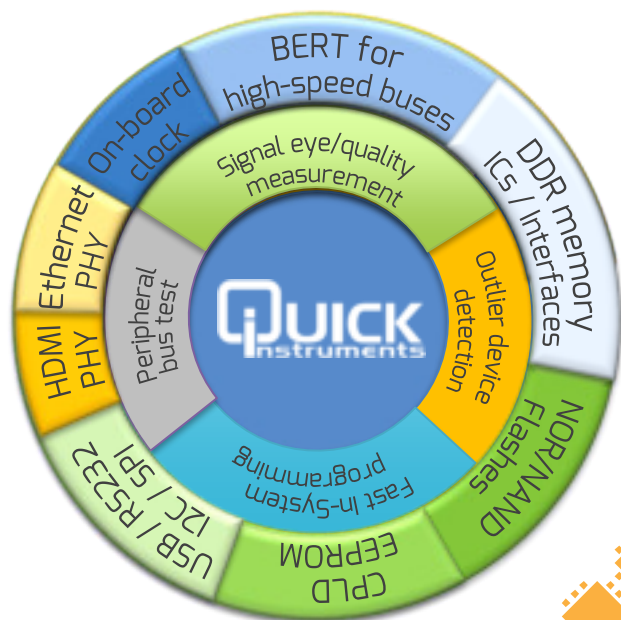
**QUICK instruments** populate existing on-board FPGAs converting them temporarily into a fully-automated on-board embedded tester. No extra FPGA/DFT is needed - the existing device is used. What is more, FPGA design tools or expertise is not required too.

### AT-A-GLANCE

**Customize.** Choose the proper instrument from the library and customize it to the test requirements of your product.

**Automate.** Generate at-speed diagnostic tests for on-board components / connections, perform signal measurements and high-speed flash programming.

**Deploy.** Integrate the technology into your functional test flow and platform (e.g. PXI-based) or use it as a stand-alone solution.



## HOW IT WORKS

**QUICK instruments** are essentially test IP cores that are automatically injected into on-board programmable devices (FPGA) during test phase. The instruments verify on-board components, check communication links, connections and peripheral interfaces. On top of this, the solution can rapidly program board flash and/or EEPROM with functional firmware.



### Instruments library

Growing collection of **QUICK instruments** supports all the modern FPGAs, CPLDs and SoC-FPGAs, including the latest Xilinx, Altera and Lattice families. More than 1000 devices are already supported by the technology.



### Test access layer

Embedded test IP cores are interfaced over JTAG bus (JTAG access is normally available on boards with FPGAs). The technology can re-use general-purpose I/O cards or serial cables to establish JTAG communication.



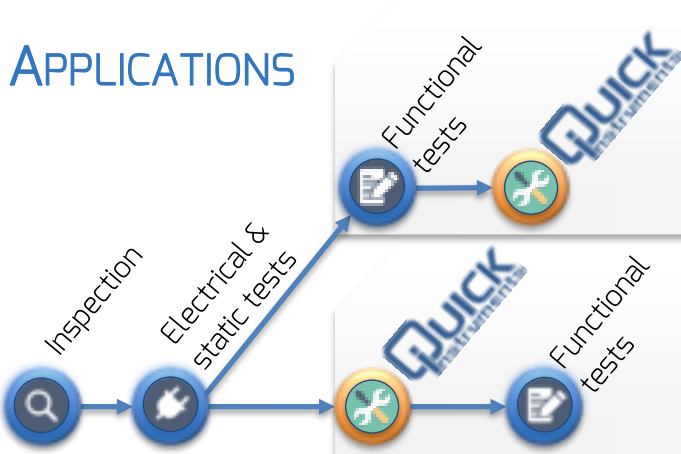
### Run-time

All instruments are controlled by special software running on Windows PC. The software can run in standalone mode (command-line/GUI) as well as a part (DLL) of a third-party test execution suite.



Demo application

## APPLICATIONS



### At Troubleshooting Station

**QUICK instruments** help to narrow down the defect caused functional test to fail, thereby shortening the repair and retest cycle, saving personnel costs, eliminating trial-and-error troubleshooting style and reducing the amount of unreparable boards.

### At Production Line

When applied just prior to the main functional test phase, **QUICK instruments** would screen out defective parts without the need to run long-lasting functional and application tests.

## TECHNOLOGY BENEFITS



### IMPROVES TEST QUALITY

**QUICK instruments** enhance functional test coverage and quality thanks to automatically controlled test synthesis process that guarantees target/maximum coverage level and provides diagnostic data for troubleshooting.



### LOWERS TEST DEVELOPMENT COSTS

Functional Test development effort, time and cost reduction is achieved due to automation provided by the solution. Now, the role of traditional functional test programs can be reduced to a simple fit-for-function proof.



### REDUCES TEST ESCAPE RATE

The technology is targeting quality issues, marginal defects, timing related faults, performs BER/SNR estimations. In volume production environment it helps to quickly identify outliers that may otherwise pass all standard tests.



### EASY INTEGRATION

**QUICK instruments** can be seamlessly integrated into existing test flow (e.g. based on NI TestStand® or other test management software). The technology supports and re-uses third-party T&M hardware (PXI I/O modules, 3rd-party I/O cards and cables) to access the electronic assembly



### FASTER PROTOTYPE BRING-UP

Prototype bring-up becomes faster as the hardware test for defects and specifications can be done in automated way long before the product's firmware is available to the HW design team.

