



Debugging + Automated Test & Verification = Blue Box

iSYSTEM provides **debugger and analyzer solutions** for more than 50 CPU architectures and their derivatives (**3000+ microcontrollers**). The Windows and/or Eclipse based development environment (winIDEA) is **easy to learn and use**. The flexible integration and application of iSYSTEM solutions within the entire development process is enabled by **open and public interfaces (APIs)**.

iSYSTEM's new fully software configurable iC5000 platform adapts to a multifunctional analyzer, development and test tool **for many different processors and controllers**. An optional I/O module adds the capability to **generate, monitor and trace digital as well as analog signals**. Additionally, iC5000 can **measure the power and current consumption** on target level.

Testing in general and especially **according to functional safety standards** is gaining more and more importance in the embedded world. iSYSTEM provides a **real-time test tool (testIDEA)** integrated in iSYSTEM's development environment winIDEA that allows **execution of test cases without code instrumentation!**

iSYSTEM's development and test process is transparent to customers. In addition they have access to iSYSTEM's **regression test tool suite**. This enables users to validate iSYSTEM tools operate properly in the context of a safety project as required by a standard and any additional requirements of the users project (**Tool Qualification**).

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Development & Test Tools

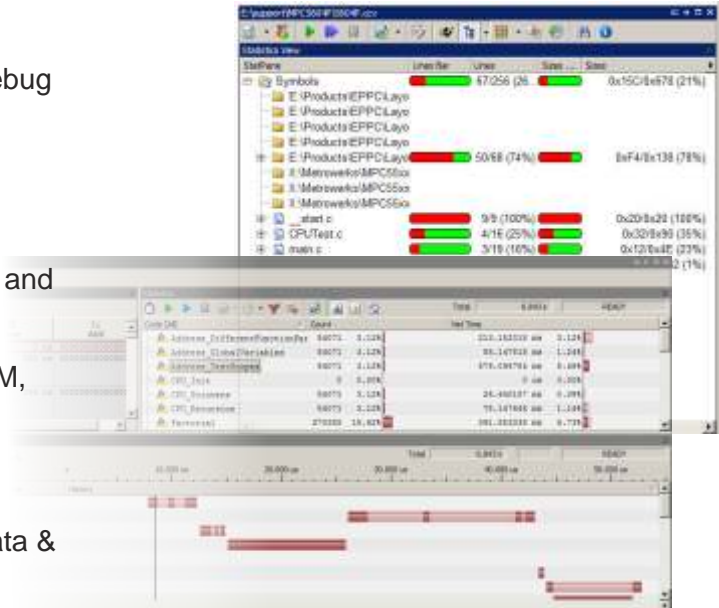
The majority of iSYSTEM products represent a link between the embedded system and the host PC. Depending on the target CPU architecture, different tool configurations are available: on-chip debugger, on-chip debugger with trace and in-circuit emulator. The modular design allows to further use iSYSTEM products in new configurations. iSYSTEM tools support more than 50 different CPU architectures, 3000+ microcontrollers and more than 150 compilers.

Debugger

- Application debug & test over on-chip debug interfaces e.g. JTAG, BDM, SDI, OnCE, SWD, N-Wire, DAP, ...

Analyzer

- Application debug & test, real-time trace and analysis of program execution
- Trace port connections e.g. NEXUS, ETM, AURORA, ...
- Trace = record of program and data flow
- Profiler = performance measurement, data & function profiling, statistics
- Code coverage = statement, decision, MC/DC, function and call coverage



winIDEA

winIDEA is an integrated development environment (IDE) that complements all iSYSTEM hardware.

- Editor, project and build manager, high level debugger
- Tools to analyze program and data flow, performance measurement tools (with accuracy down to functional level), code coverage analysis, ...
- Display of significant data/events, e.g. special function registers, external signals (digital/analog), task switches, IRQs, power consumption, ...
- Multicore support
- Eclipse integration
- Version control system support

Supported Architectures

ARM	Cortex-R	Cortex-A
ARM7/ARM9	Cortex-M	FM3
Qorivva 5xxx	MC9S08	FCR4
Vybrid	QorIQ	Fujitsu
Freescale	S12Z	SH2/4
MC9S12(x)	i.MX	78K0R
LPC4xx	V850	R8C/3x
NXP	LPC1xx	Renesas
XMC4000	RL78	RH850
XMC1000	XC800	TMS570
Infineon	Kinetis	TMS470
AURIX™	TriCore™	Texas Instruments
XC2000/166	OMAP	Stellaris
XILINX	STM8	MSP430
ZynQ	STM32	SPC56xx
		and many more...

For Embedded Software & Hardware Engineers

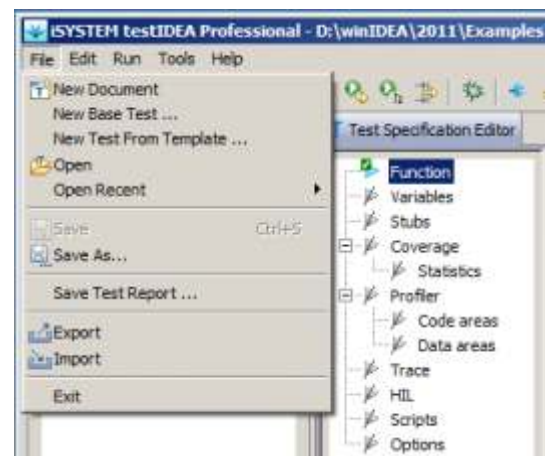
testIDEA

iSYSTEM testIDEA offers **Real-Time Testing** by execution of test cases and test vectors on the final hardware **without code instrumentation**.

testIDEA uses the isystem.connect programming interface (see below) which is an open API set completely integrated in winIDEA. Using isystem.connect one can **write test applications/cases and also automatically execute them** on the hardware connected by iSYSTEM tools or 3rd party debuggers supported by winIDEA. Test applications and test cases can be written in many different **programming and scripting languages (Python, Java, C/C++, C#, Perl, TCL...)**.

For an easy to use approach, **testIDEA includes a GUI** that simplifies **creation and execution of test cases and report generation**. All test cases can be reused in scripts. A tight association with Excel allows parameter import and export.

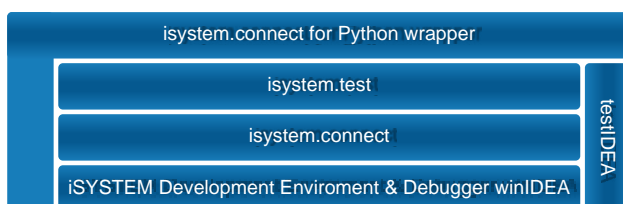
- ❑ GUI and script based test case creation with parameter import/export from/to Excel, CSV, CTE XL Professional and others
- ❑ Test case execution on the final hardware without code instrumentation
- ❑ Test report generation (XML, YAML, CSV, Excel, DOORS)
- ❑ Regression test support
- ❑ Combine tests with trace, profiler and code coverage analysis
- ❑ Combine tests with iSYSTEM I/O modules
- ❑ Wide range of supported compilers



isystem.connect

The isystem.connect API enables external applications to remotely control iSYSTEM software/hardware and to record data from the target system while the application is running.

Remote Control and Test API Architecture



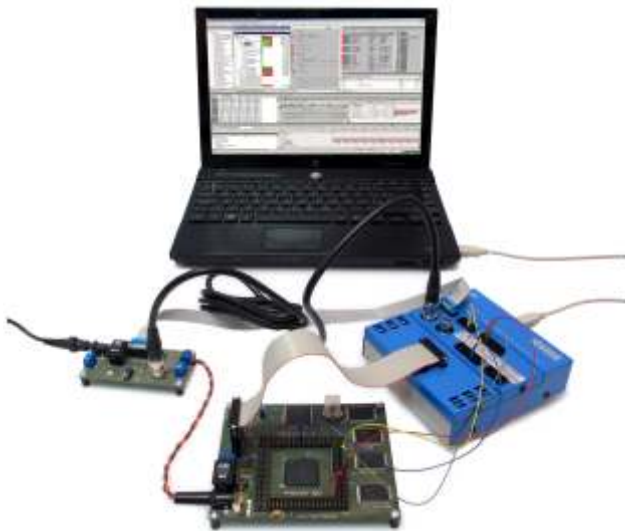
- ❑ “Remote Control“ debug and test environment
- ❑ Transfer data automatically to/from other applications
- ❑ Support of many scripting and programming languages, e.g. Python, Perl, TCL, C/C++, C#, Java, ...

iC5000 Test Platform and Tool Qualification

iC5000 Test Platform

The iC5000 is a **single hardware and software platform** that adapts **through software updates** to a multifunctional debugger, development and test tool **for many different processors and controllers**.

The optional **I/O module** adds the capability to **generate, monitor and trace analog as well as digital signals**. It also allows to **measure the voltage, current and power consumption** of a target hardware that winIDEA can show with an accuracy down to function level.



Available I/O Modules

- ❑ **IOM2:**
8 digital in, 8 digital out, 2 analog in, 2 analog out, system port
- ❑ **IOM2-D:**
24 digital in, 8 digital out, 2 analog out, system port
- ❑ Custom I/O Modul on request

fitIDEA - Automated Test Tool Suite

Standards for functional safety, such as **ISO26262** in automotive, describe provisions that must be fulfilled by an embedded systems manufacturer. This minimizes the risk that a software tool might insert failures or might not detect errors in the final product.

iSYSTEM provides a **Tool Pre-Qualification Environment** that consists of following parts:

- ❑ Reference hardware for different microcontrollers
- ❑ Test cases for functionality test of an on-chip debugger and trace tool, e.g. test cases for
 - ❑ Standard debugging
 - ❑ IDE functionality
 - ❑ Trace and profiling
 - ❑ Code coverage and unit testing
 - ❑ API testing
 - ❑ And more ...

