



## Debug and Test Tools - All under One Umbrella

iSYSTEM specializes in embedded development and test tools.

We provide **debugger and analyzer solutions** for more than 50 CPU architectures and their derivatives (**2500+ 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!**

To **qualify iSYSTEM's tool functionality** we make our development and test process transparent to customers. In addition we provide access to our **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.



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# Development & Test Tools

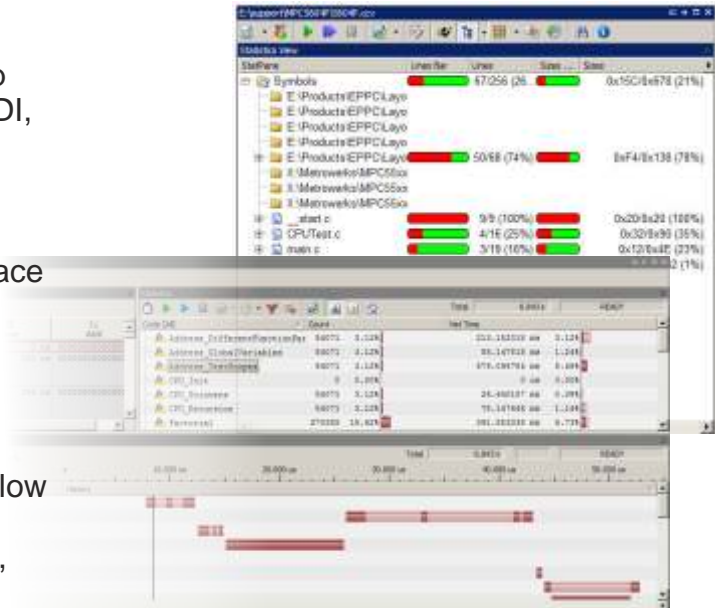
The majority of iSYSTEM products represent a link between the embedded system and the host PC. Depending on the target CPU architecture different tool configurations are available: on-chip debugger, on-chip debugger with trace and in-circuit emulator. The modular design allows to further use iSYSTEM products in new configurations. iSYSTEM tools support more than 50 different CPU architectures, 2500+ 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
- Coverage = code coverage analysis according to standards



## Supported Microcontrollers

**ARM** Cortex-R Cortex-A  
 ARM7/ARM9 **Cortex-M** FM3  
 Qorivva 5xxx MC9S08 FCR4  
**Freescale** QorIQ **Fujitsu** SH2/4  
 MC9S12(x) S12Z 78K0R R8C/3x  
 i.MX  
**Energy Micro** V850 **Renesas** RH850  
 XMC4000 EFM32 RL78 TMS570  
 XC800 Kinetis TMS470  
**Infineon** **Texas Instruments**  
 AURIX™ TriCore™ OMAP MSP430 Stellaris  
 XC2000/166 STM8 **STMicroelectronic** SPC56xx  
 and many more...

## 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

# For Embedded Software & Hardware Engineers

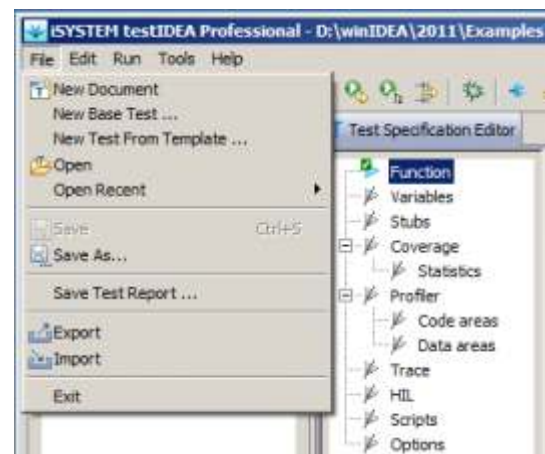
## testIDEA

iSYSTEM testIDEA offers **Real-Time Testing** by execution of test cases and test vectors on the real customer 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. 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.

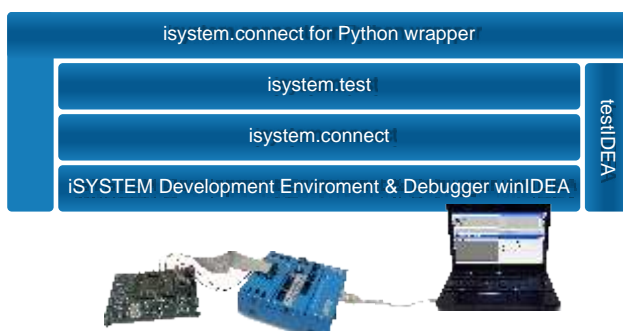
- ❑ GUI and script based test case creation with parameter import/export from/to Excel
- ❑ Test case execution on real hardware without code instrumentation
- ❑ Test report generation (XML, YAML)
- ❑ Regression test support
- ❑ Combine tests with trace, profiler and code coverage analysis
- ❑ Combine tests with I/O module
- ❑ All major compilers supported



## 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



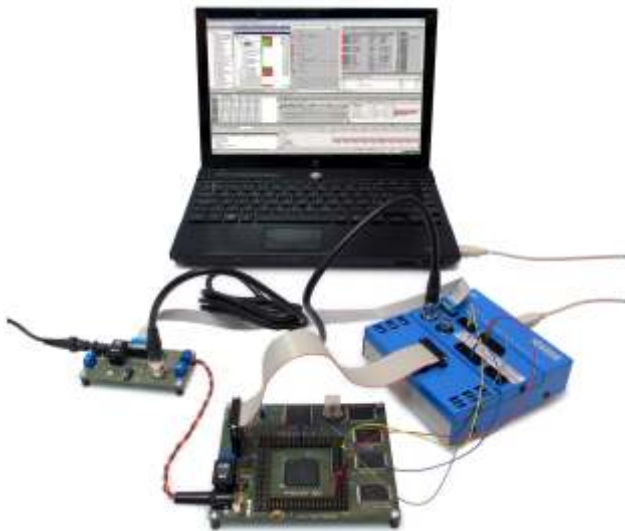
- ❑ “Remote Control” debug and test environment
- ❑ Transfer data automatically to/from other applications
- ❑ Support of many scripting and programming languages, e.g. Python, Perl, TCL, C/C++, C#, Java, ...

# 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

## fitIDEA - Tool Qualification

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 ...

