



Real-Time Unit Test Tool All on Object Code 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 unit test tool (testIDEA)** integrated in iSYSTEM's development environment (**winIDEA**) that allows **execution of test cases without code instrumentation!**

Characteristics

- Object Code Level
- No test driver
- Integrated in winIDEA

Requirements

- To include Code Coverage analysis while testing a micro controller supporting trace is a must
- The target application should already run on the target
- Some stack space is needed
- Compilers should be EABI* (Embedded Application Binary Interface) compliant

Benefits

- Quick turn-around times
- No additional compile, link and download cycle while testing
- Flexibility in use
- Combine trace, performance analysis, code coverage and I/O stimuli with test runs
- Technology may be used for unit, integration and system test
- Test environment corresponds as closely as possible to the target environment

iSYSTEM AG
Carl-Zeiss-Str. 1
85247 Schwabhausen - Germany

Tel. +49 (8138) 6971 - 0
www.isystem.com



embedded.typepad.com



* specifies standard conventions for file formats, data types, register usage, stack frame organization, and function parameter passing

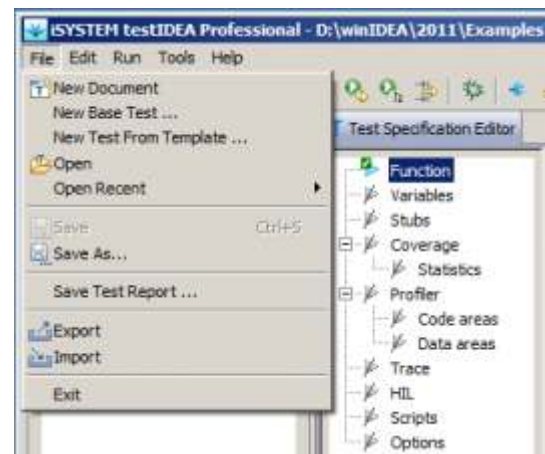
Development & Test Tools

testIDEA

testIDEA uses the isystem.connect programming interface (see below) which is a free and open API set that is 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
- ❑ Enhancement to isystem.connect



isystem.connect

The isystem.connect API enables external applications to remotely control iSYSTEM software and 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, ...

For Embedded Software & Hardware Engineers

Test Specification

Test Specificaton

```
func: [min_int, [3, 5], rv]
```

Interface

testIDEA



SCRIPT

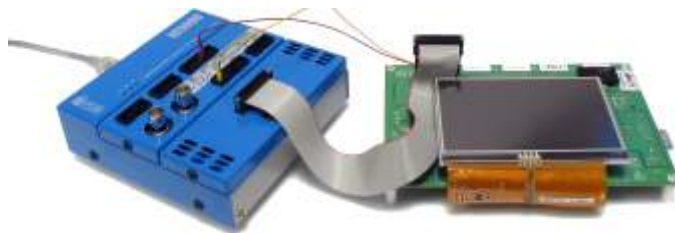
```
tester.loadTestSpec(testSpecFile)  
tester.runTests(rootTestSpec)  
testResults = tester.getTestResults()
```

iSYSTEM API



```
isystem.connect  
isystem.test  
API
```



Test Execution



Free testIDEA Standard vs. Professional

	 Standard	 Professional
Basic Test		
Descriptive Tooltips	●	●
Auto-Completion	●	●
Test Case ID	●	●
Test Case Tags	●	●
Test Case Description	●	●
Local Test Case Variables	●	●
Stubs	●	●
Derived/Sub Test Case creation	●	●
Copy/Paste to/from Scripts	●	●
Execution of Tests Cases generated with standard version	●	●
Debugging Test Cases	●	●
Advanced Test		
Wizard for Test Case generation		●
Templates		●
I/O Module + HIL Support		●
Code Coverage		●
Profiler/Performance Analysis		●
Trace		●
Excel/CSV Import and Export		●
Test Specification in C/C++ Sources		●
Dry Run		●
Validation of test specification		●
Sequence Tags		●
Breakpoint Support		●
Rename (functions or variables)		●
Execution of Tests generated with Professional Version		●
Test points and fault injection		●
Scripting		
Python Script Generation by mouse click		●
Script Execution before/after test run		●
Integration		
Integration to third party test tools		●
Integration to third party requirement management tools		●
Reporting		
Report Generation		●
XML Style Sheet Templates		●
Excel Export of reports, trace & profiler data		●