

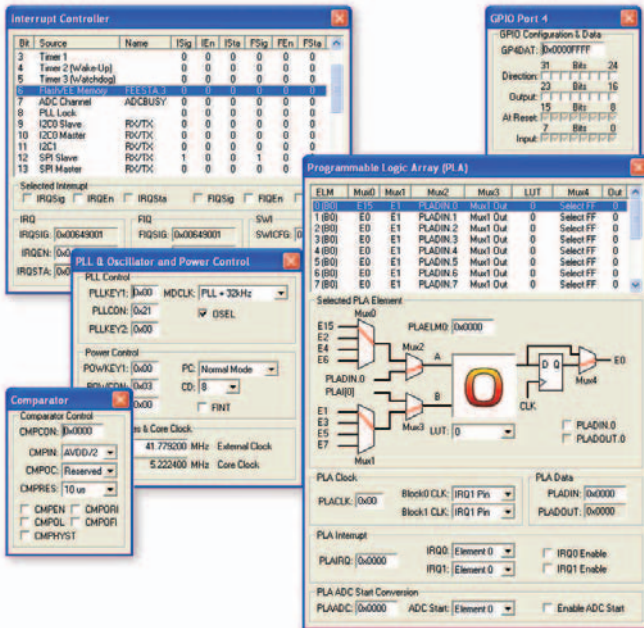
# RealView® Microcontroller Development Kit

The RealView® **Microcontroller Development Kit (MDK)** shortens development cycles by reducing time spent configuring, testing, and debugging embedded applications. The RealView MDK combines the ARM RealView compilation tools with the Keil µVision® Integrated Development Environment (IDE), providing developers with a feature-rich environment optimized for ARM Powered® microcontrollers.

The Keil µVision IDE includes:

- Project Management and Device & Tool Configuration.
- Source Code Editor Optimized for Embedded Systems.
- Target Debugging and Flash Programming.
- Accurate Device Simulation (CPU and Peripheral).

ARM technology-based projects created under µVision are automatically compiled and linked using the RealView compilation tools.



The built-in microcontroller simulator models more than 50 ARM Powered® devices including the ARM instruction set, the on-chip peripherals, and the external signals used to manipulate them.

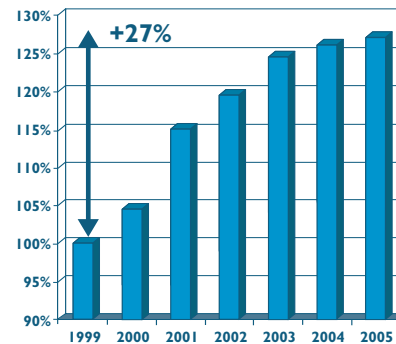
**Supports ARM7™, ARM9™,  
Cortex™-M3 based devices**

**RealView Compilation Tools  
with C and C++ Support**

**Easy-to-use IDE Supports  
Complete Development Cycle**

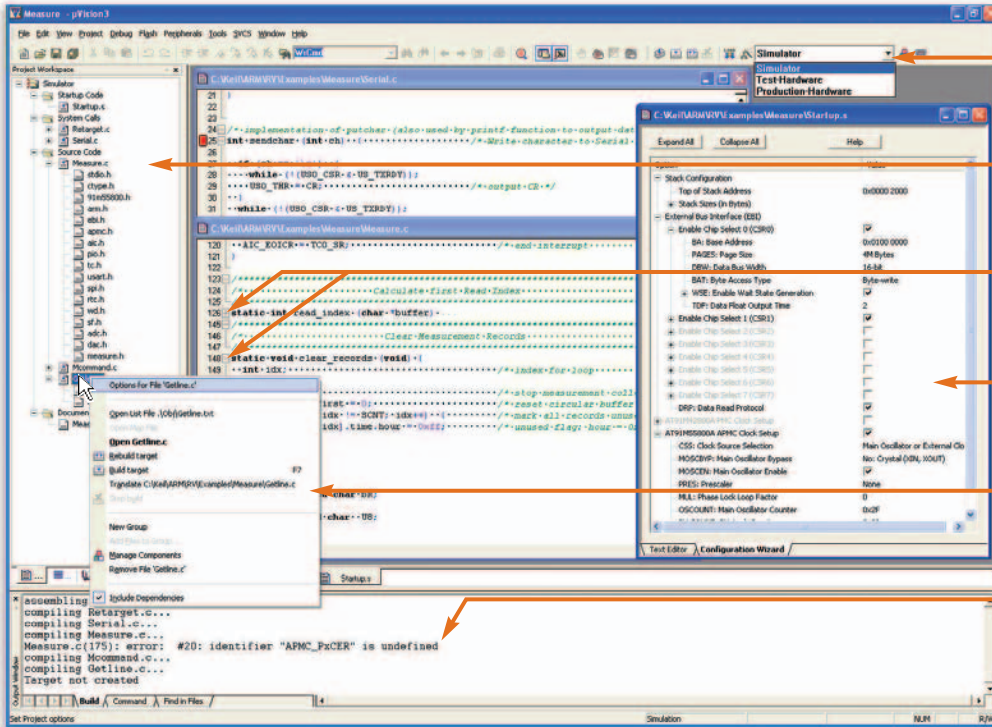
**Complete Device Support  
Including Peripheral Simulation**

**RealView Compilation Tools  
Performance Increase**



ARM RealView compilation tools are recognized by the industry as providing the best performance of all available ARM technology-targeted compilers. Developed and tuned to deliver the tightest code density, the compiler produces the smallest code size which leads to significant product cost savings. The compiler generates optimized code for both the 32-bit ARM and 16-bit Thumb® instruction sets while supporting full ISO standard C and C++.

# µVision Project Management



Each project may contain multiple target configurations

The project workspace lists source and header files and helps organize your project

Document outlining gives you a better overview of your source code

The configuration wizard simplifies editing setup files

Context menus provide flexible configuration of all aspects of your project

Double-click on messages to locate the erroneous line in the source code

## Project Configuration

The µVision IDE incorporates a Device Database of supported ARM Powered microcontrollers. In µVision projects, required options are set automatically when you select the device from the Device Database.

µVision displays only those options that are relevant to the selected device and prevents you from selecting incompatible directives. Only a few dialogs are required to completely configure all the tools (assembler, compiler, linker, debugger, and flash download utilities) and memory map for your application.

## Project Management

File Groups allow you to group associated files together. They may be used to separate files into functional blocks or to identify engineers in your software team.

Project Targets allow you to create several programs from a single project. You may require one target for testing and another target for a release version of your application. Each target allows individual tool settings within the same project file.

## Editor

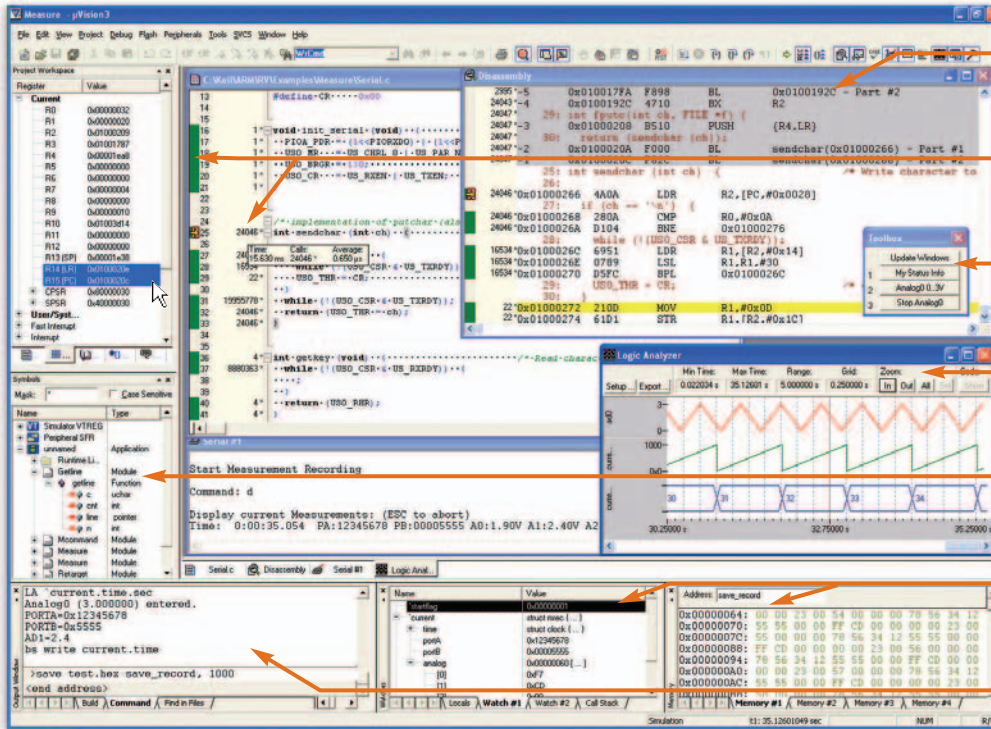
The µVision Editor includes all the standard features you expect in a professional editor. Color syntax highlighting and text indentation are optimized for editing C source files while document outlining allows you to collapse function blocks in your source code. Most Editor functions are quickly accessed from the toolbars. While debugging, the Editor is available so you can easily make changes to your source code.

## Debugger

The µVision Editor enables you to set simple breakpoints (using the context menu or Editor Toolbar) while creating your C or assembler source. Breakpoints you set while editing are activated when you start the µVision Debugger.

In addition to simple breakpoints, the µVision Debugger supports complex breakpoints (with conditional or logical expressions) and memory access breakpoints (with read/write access from an address or range).

The Debugger also displays code coverage and execution profiling information in the Editor windows.



The disassembly window shows trace intermixed with source code

Code coverage and profiling information display in the source window

The toolbox contains buttons you define to run commands or debug functions

The logic analyzer shows changes to variables and signals over time

You may drag and drop symbol names to other debugger windows

Memory and watch windows display important program variables

Enter debug commands into the command tab of the output window

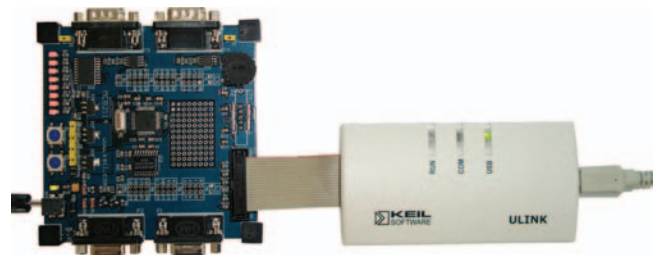
## Accurate Device Simulation

The µVision Debugger simulates a complete ARM Powered microcontroller including the instruction set and on-chip peripherals. These powerful simulation capabilities provide serious benefits and promote rapid, reliable embedded software development.

- Simulation allows software testing on your desktop with no hardware environment.
- Early software debugging on a functional basis improves overall software reliability.
- Simulation allows breakpoints that are not possible with hardware debuggers.
- Simulation allows for optimal input signals (hardware debuggers add extra noise).
- Signal functions are easily programmed to reproduce complex, real-world input signals.
- Single-stepping through signal processing algorithms is possible. External signals stop when the CPU halts.
- It is easy to test failure scenarios that would destroy real hardware peripherals.

## Target Debugging

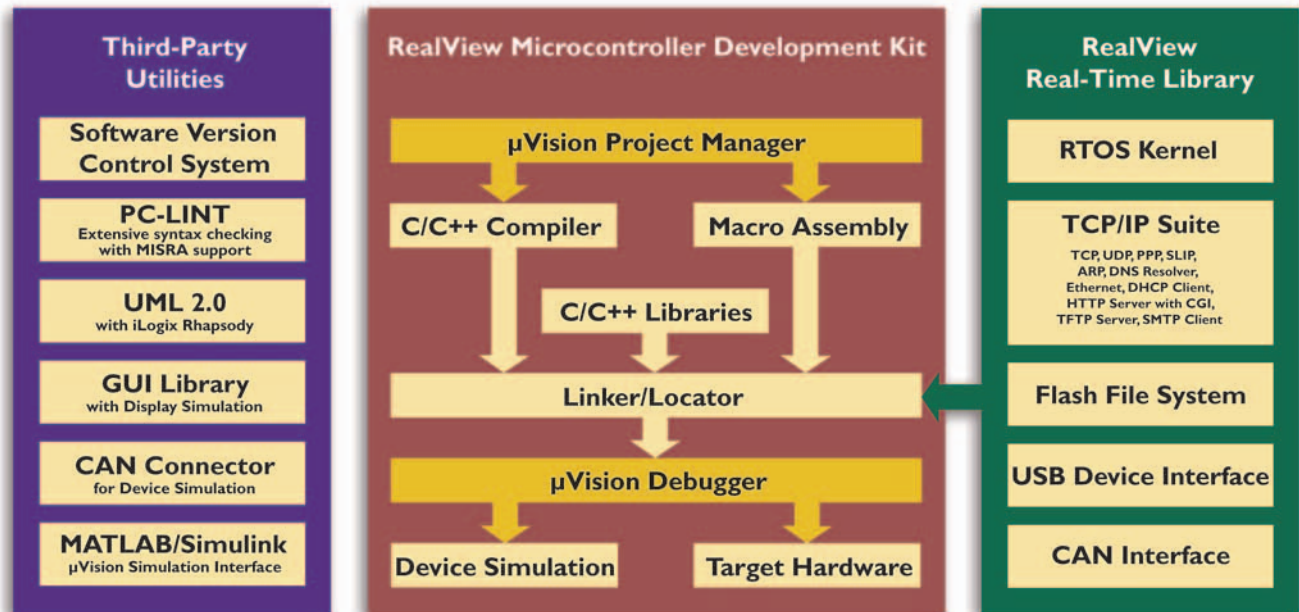
The Keil ULINK™ Adapter connects the USB port of your PC to the JTAG port of your target board. When used with µVision, ULINK enables you to download programs to on-chip and external Flash, set breakpoints, view memory contents, and single-step through your program.



## Evaluation Hardware

Keil provides a wide range of evaluation boards you may use to jump-start your product development and rapidly evaluate the performance of ARM microcontrollers. For more information, refer to [www.keil.com/boards](http://www.keil.com/boards).

# RealView Microcontroller Development Kit



**Third-Party Utilities** that extend the functionality of  $\mu$ Vision are available from a wide variety of different vendors. You may even create your own interface and simulation drivers to expand the capabilities of  $\mu$ Vision. For more information about  $\mu$ Vision extensions, refer to [www.keil.com/appnotes](http://www.keil.com/appnotes).

The **RealView Microcontroller Development Kit** is a complete software development environment for ARM7, ARM9, and Cortex-M3 processor based microcontrollers. It includes the tools you need to create, translate, and debug C, C++, and assembly source files. Like all tools that Keil provides, this toolkit is easy to learn and use, yet powerful enough for the most demanding embedded ARM applications. The integrated Device Database<sup>®</sup> configures the tools options for each specific ARM Powered microcontroller. For a complete list of supported devices, refer to [www.keil.com/dd](http://www.keil.com/dd).

The **Real-Time Library** is based on a real-time kernel that simplifies the design and implementation of complex, time-critical applications. A flash file system, TCP/IP networking suite, and other communication protocols are included. For more information, refer to [www.keil.com/armrtl](http://www.keil.com/armrtl).

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