



CROSSWARE[®]

Tools for Embedded Development

SiLabs Development Suite

Compiler Wizards Simulator Debugger Environment Variants

The Crossware SiLabs Development Suite is a sophisticated environment that facilitates the rapid development of software for the 8051 based microcontrollers from Silicon Laboratories. It includes:

- An advanced optimizing ANSI C compiler and libraries
- Code creation wizards to create configuration code, outline interrupt handlers for on-chip peripherals and peripheral specific application code
- A source level simulator to simulate the 8051 core and the on-chip peripherals allowing debugging without hardware
- An interface that allows the simulator to be extended, facilitating complete target system simulation
- A source level debugger to allow debugging on the target hardware
- A multi-threaded, multi-target integrated development environment in which to write, edit and debug code, browse high level source code, access electronic copies of the manuals and much more



C Compiler

- Optimizing ANSI C compiler with extensions for embedded development
- 8051 specific extensions enable you to access all of the resources of the 8051 and its variants from C
- Smart pointers which can work out for themselves which memory area they are pointing to. Avoids inefficient 3 byte pointers with ANSI C compatible code
- Generates fast in-line code with a minimum of library calls for high speed performance. Optional code compression for when code size is an issue
- Full type checking across modules traps programming errors and ensures that your C variables, function arguments, structure members, etc are consistent across your source files and with the appropriate libraries
- Pre-written library routines including high speed 32-bit and 64-bit floating point arithmetic
- Register bank independent code.
- Easy to use C interrupt support with optional register bank switching.
- Comprehensive source level debug output
- Data output for Embedded Development Studio source code browser

Code Creation Wizards

The Code Creation Wizards simplify and accelerate the creation of C source code for the on-chip peripherals of a SiLabs variant.

The Wizards are able to create configuration code to configure the peripheral, application code to operate the peripheral, code to configure the interrupt controller for the peripheral and outline interrupt handlers for the peripheral.

The Wizards take two forms:

- GUI Wizards which present a point and click graphical interface to the user
- Context Wizards which present a point and click interface to a list of named registers and named bits

Context Wizards are provided for all on-chip peripherals.

SiLabs Development Suite Details

Compiler

Wizards

Simulator

Debugger

Environment

Variants

Simulator/Debugger

The simulator creates a virtual 8051 chip that runs on your PC. It allows 8051 programs to be run without any hardware.

The debugger downloads and runs your program on a SiLabs target board.

The simulator and debugger share a common user interface.

Both the simulator and debugger provide:

- Source and assembly level debugging
- Multiple memory views and watch windows
- Multiple register views with register tooltips
- Disassembly view
- Complex hierarchical source level drag-and-drop breakpoints
- Machine level breakpoints
- Call stack view
- Variable tooltips
- Multiple application debugging

The simulator provides:

- Simulation of the 8051 instruction set
- Simulation of on-chip peripherals
- Interface to allow the simulator to be extended
- State capture
- Source code profiling
- Code and data coverage
- Multiple cycle counters

The debugger provides:

- Downloading into on-chip flash memory
- Hardware breakpoints in flash memory
- Hardware data watchpoints

Debugger Interface

The debugger requires a C2 or JTAG connection to the target board. The SiLabs EC1, EC2 serial port interfaces and the SiLabs USB interfaces are all supported.



Embedded Development Studio IDE

The Embedded Development Studio is the integrated development environment application at the heart of the SiLabs Development Suite.

It links together the simulator, debugger, code creation wizards and extension DLLs and also drives the compiler tool chain. (Note that the compiler tool chain can also be driven from the command line.)

The Embedded Development Studio also provides other facilities including:

- Creates new projects with an initial set of default files
- Allows the organisation of multiple projects into workspaces
- Context coloured editing of compiler and assembler source code
- Context coloured views of compiler/assembler listings
- Drag-and-drop linker scripting
- Scans the project source code to generate dependency information
- Uses the browse records generated by the compiler to accelerate source code navigation
- Text file searching
- Find and Find and Replace in source views
- Provides access to the electronic manuals including full search capability
- Automatic generation of a build script which can be used to build your project from the command-line or from within another application.
- Integrated terminal emulator facilities
- Customisable commands allowing the launch of other executables
- Generation of GUIDs
- Conversion of bitmaps to C structures
- Supports multiple Crossware suites and tool chains and third party tool chains

Tutorials

Video tutorials are available on the Crossware web site illustrating the use of the SiLabs Development Suite.

Variant Support

For details of support for specific SiLabs variants, please check the Crossware website.

System Requirements

Runs on Windows 2000, Windows XP and Windows Vista