



Cygnal's integrated development environment (IDE) provides all the tools necessary to develop and test your projects. The IDE interfaces with the C8051Fxxx MCU's on-chip JTAG and emulation logic to provide in-system programming and non-intrusive, full speed, in-circuit emulation using the production device installed in the end application.

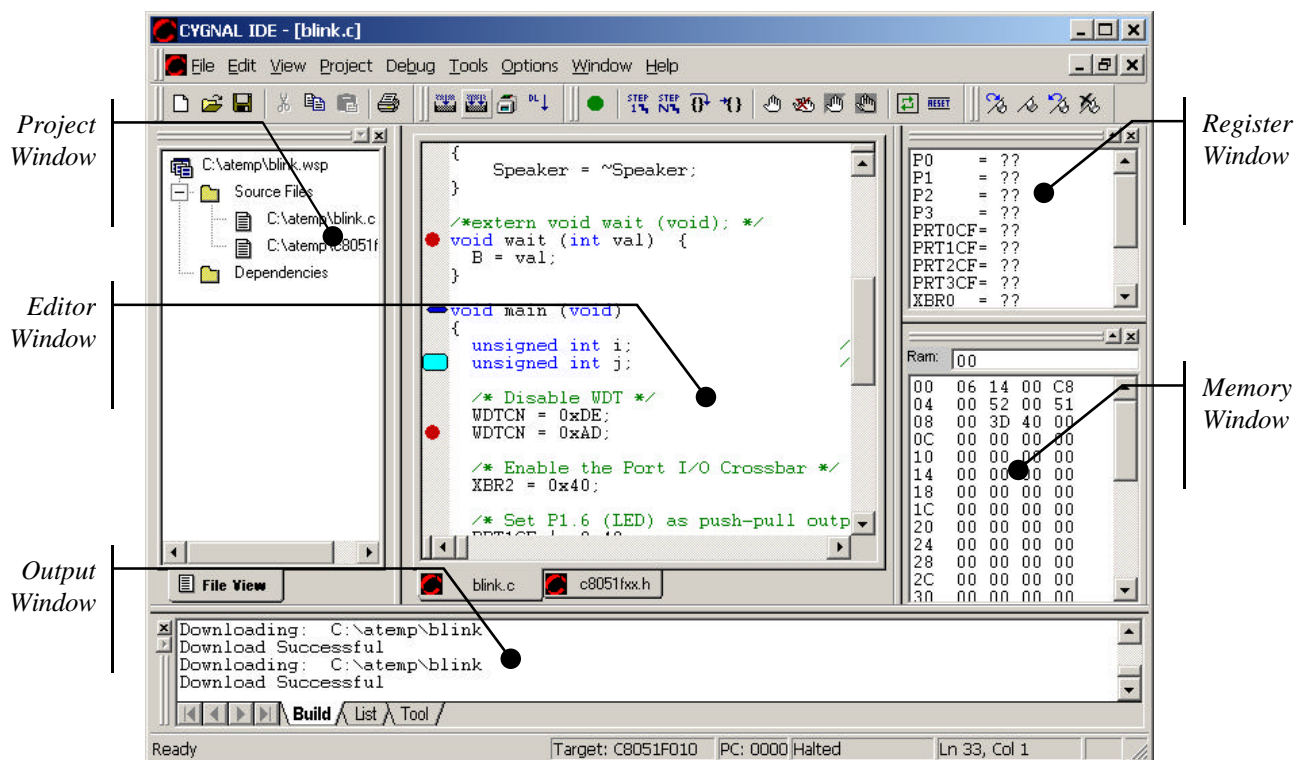
Cygnal's emulation system supports source-level debugging in C and assembly language with single-step execution (including stepping through interrupt service routines), run-to-breakpoint, and the inspection/modification of registers, data memory, and program memory. No additional target RAM, program memory, or communications channels are required. Digital and analog peripherals remain synchronized with program execution while single stepping.

The Cygnal IDE runs under Windows 95/98/Me and Windows NT. The IDE communicates with the target MCU using the PC's serial port. (The required RS232-to-JTAG protocol converter is included in all development kits.)

FEATURES

- **Source Code Editor**
- **Project Manager**
- **Integrated 8051 Macro Assembler**
- **Flash Programmer**
- **Supports Cygnal's Full Speed, Non-intrusive In-Circuit Emulation**
 - Real-time Breakpoints
 - Superior Performance to ICE-Chips, Target Pods, Cables and Sockets
- **Source-level Debug**
 - Memory and Register Inspect/Modify
 - Single-step and Animated Execution Modes
- **Supports Third-Party Development Tools**
- **MCU Configuration Wizard**

Check your IDE and Emulator versions under the Help → About Cygnal IDE menu to ensure you have the latest development tools from Cygnal Integrated Products.



Source Code Editor

The editor includes all standard Windows editor functions including cut, paste, copy, undo/redo, find/replace and bookmarks. Color syntax highlighting is provided for 8051 assembly and C. You can extend the list of highlighted keywords as well as define the colors used. Font, text color and tab settings are also user configurable.

Integrated 8051 Macro Assembler

An 8051 macro-assembler is integrated into the IDE. The assembler accepts Intel MCS-51 compatible source files and creates downloadable Intel hex files. It also generates all debug information necessary to perform assembly language source-level debug.

Flash Programmer

The integrated Flash programmer allows code to be downloaded to the MCU's on-chip Flash program memory immediately after a build without having to leave the IDE, minimizing the time between source-code modification and in-system debug.

Non-Intrusive Emulation

The IDE connects to the MCU's on-chip emulation circuitry allowing full-speed, non-intrusive, in-circuit debug and evaluation of the production version MCU installed in the end application. On-chip emulation is superior to emulation systems using ICE-chips, target pods and noisy cables, providing the signal integrity necessary to evaluate the true analog performance of your mixed-signal design.

Source Level Debug

The source window is also the working debug window. You can view the current program counter location in the source, set and clear breakpoints, and perform single-step execution at the source-code level (C or assembly) while monitoring register and memory contents.

Register and Data Memory Windows

Register and memory windows display register and data memory contents. The windows are updated every time program execution stops and values that have changed since the last stop are highlighted. Register and memory contents can be modified by editing the window displays.

Program Memory Window

A program memory window allows inspection and modification of the on-chip Flash program memory.

Disassembly Window

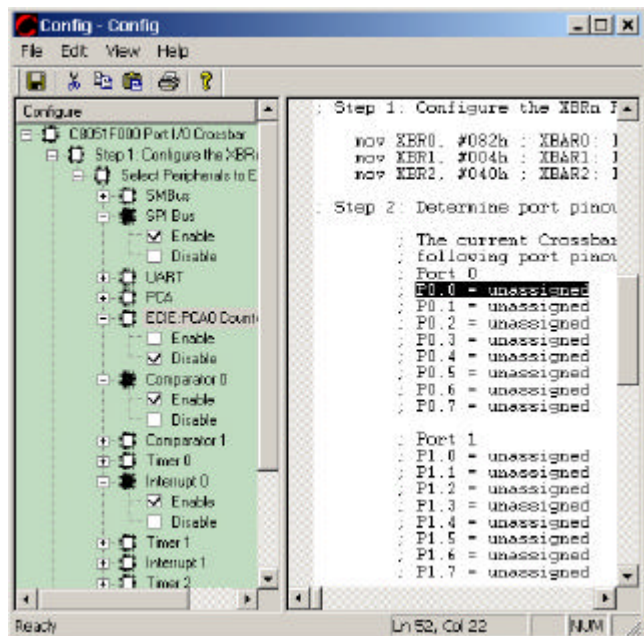
Many machine instructions can be required to perform a single C source statement. A disassembly window shows these instructions in 8051 assembly language as they are executed while single-stepping through C source code.

Breakpoints

Breakpoints can be set in source lines to stop execution immediately before the first instruction of the specified source line is executed. Breakpoints are supported by the MCU's on-chip emulation circuitry and do not affect the real-time execution of the program.

Third-Party Tool Support

Flash programming and source-level debug of Intel OMF-51 absolute object files is fully supported, allowing the use of many third-party tool chains for software development.



Click on checkboxes in the configuration wizard to generate MCU and peripheral initialization code.

Configuration Wizard

A configuration wizard automatically generates MCU and on-chip peripheral initialization code. Clicking on checkboxes and entering values in a scripted dialog generate fully commented assembly language code needed to enable and configure peripherals, assign functions to I/O pins, and specify MCU operation.