IAR Embedded Workbench® for MSP430

IAR Embedded Workbench® is a set of highly sophisticated and easy-to-use development tools for embedded applications. It integrates the IAR C/C++ Compiler™, assembler, linker, librarian, text editor, project manager, and C-SPY® Debugger in an integrated development environment (IDE). With its built-in chip-specific code optimizer, IAR Embedded Workbench generates very efficient and reliable FLASH/PROMable code for the MSP430 microcontroller. In addition to this solid technology, IAR Systems also provides professional worldwide technical support.

MODULAR AND EXTENSIBLE IDE

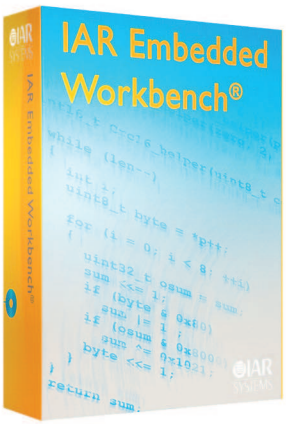
- A seamlessly integrated environment for building and debugging embedded applications
- Powerful project management allowing multiple projects in one workspace
- Build integration with IAR visualSTATE
- Hierarchical project representation
- Dockable and floating windows management
- Smart source browser
- Feature-rich editor with code templates and multi-byte support
- Tool options configurable on global, group of source files, or individual source files level
- Flexible project building via batch build, pre/post-build or custom build with access to external tools in the build process.
- Integration with Subversion and other source code control systems
- Extensive device support with ready-made header files, device description files and linker command files
- Ready-made code and project examples
- RTOS integration

HIGHLY OPTIMIZING C/C++ COMPILER

- Support for C, EC++ and extended EC++ including templates, namespace, STL, multiple inheritance etc.
- Support for the C99 standard
- Automatic checking of MISRA C rules
- Support for all MSP430 devices
- Language extensions for embedded applications with target-specific support,
  - Extended keywords for data/functions defining and declaring with memory/type attributers
  - Pragma directives for controlling compiler's behavior, such as how it allocates memory
  - Intrinsic functions for direct access in C source to low-level processor operations, such as MSP430 powerdown modes
- Support for the hardware multiplier peripheral module
- Position-independent code (PIC)
- 32- and 64-bit floating-point types in standard IEEE format
- Multiple levels of optimizations on code size and execution speed allowing different transformations enabled, such as function inlining, loop unrolling etc.
- Advanced global and target-specific optimizer generating the most compact and stable code
- Multi-file compilation support
- Automatic selection of smallest printf/scanf formatter

STATE-OF-THE-ART C-SPY® DEBUGGER

- Complex code and data breakpoints
- Very fine granularity execution control (function call-level stepping)
- Stack window to monitor the memory consumption and integrity of the stack
- Complete support for stack unwinding even at high optimization levels
- Profiling and code coverage performance analysis tools
- Trace simulation utility with expressions to examine execution history
- Versatile monitoring of registers, structures, call chain, locals, global variables and peripheral registers
- Smart STL container display in Watch window
- Symbolic memory window, Symbols window and Statics window
- I/O and interrupt simulation
- Timeline window in the simulator allows correlated visualization of call stack, interrupt log, and data log values plotted against time



IAR SYSTEMS

- True editing-while-debugging
- Drag and drop model
- RTOS-aware debugging with built-in plugins for
  - OSEK Run Time Interface (ORTI)
  - Segger embOS
  - Micrium µC/OS-II
- FET debugger support for all TI FET modules
  - Connection via parallel or USB port, such as J-Link and TI USB FET
  - Support for Spy-Bi-Wire (2-Wire) and 4-wire JTAG protocols

MSP430 USB DEBUG INTERFACE—OPTIONAL

- Supports both JTAG and Spy-Bi-Wire (2-wire JTAG) debug protocols, fully compatible with IAR Embedded Workbench for MSP430
- A USB cable and a 14-conductor target cable included
- Full documentation on CD ROM
- Technical specifications:
  - Software Configurable supply voltage between 1.8 and 5 volts at 100mA.
  - Can burn JTAG Security Fuse.
  - Backward compatible with existing FET tools and JTAG boards

IAR ASSEMBLER

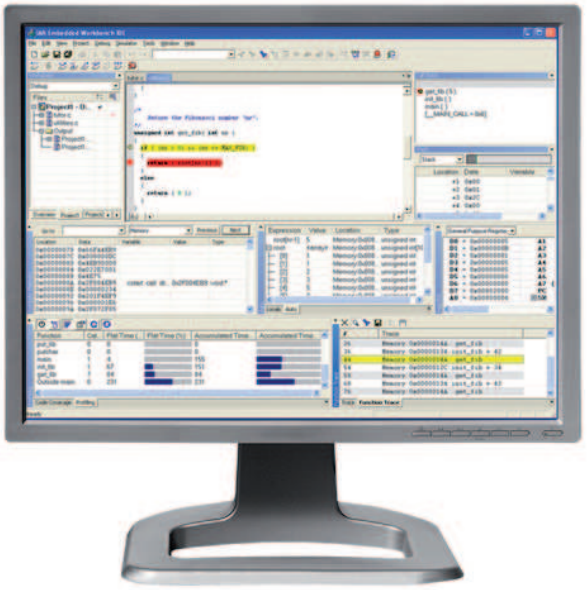
- A powerful relocating macro assembler with a versatile set of directives and operators
- Built-in C language preprocessor, accepting all C macro definitions

IAR XLINK LINKER

- Complete linking, relocation and format generation to produce FLASH/PROMable code
- Flexible segment commands allowing detailed control of code and data placement
- Optimized linking removing unused code and data
- Direct linking of raw binary images, for instance multimedia files
- Optional code checksum generation for runtime checking
- Comprehensive cross-reference and dependency memory maps
- Support for over 30 industry-standard output formats including TI msp430-txt, compatible with most popular debuggers and emulators

IAR LIBRARY AND LIBRARY TOOLS

- All required ISO/ANSI C and C++ libraries included



- All low-level routines such as writechar and readchar provided in full source code
- Lightweight runtime library, user-configurable to match the needs of the application; full source included
- Library tools for creating and maintaining library projects, libraries and library modules
- Listings of entry points and symbolic information

IAR INFORMATION CENTER

Web based navigation system that gives easy access to tutorials, product documentation, and example projects.

COMPREHENSIVE DOCUMENTATION

- PDF user guides with detailed usage and reference information
- Efficient coding hints for embedded application
- Extensive step-by-step tutorials
- Context sensitive help and hypertext versions of the user documentation available online
- RTOS context sensitive help

FREE EVALUATION SOFTWARE

Free 30-day evaluation version and 4K Kickstart edition available are available at www.iar.com/ew430

IAR visualSTATE®

IAR visualSTATE is a suite of graphical design automation tools for embedded systems.

- Design an embedded application by drawing objects, events, actions etc in a flowchart-like manner
- Perform extensive tests before committing to hardware: validation of the application behavior, regression testing, verification of the run-time model and simulation on-chip
- Automatically generate micro-tight C/C++ code that is 100% consistent with your design as well as complete design documentation

Together with IAR Embedded Workbench, visualSTATE forms a complete set of development tools for the MSP430 microcontrollers, supporting you through the entire development process.

www.iar.com

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