



# IAR Embedded Workbench® for ARM

*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 code for ARM devices. 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
- Tool options configurable on global, group of source files, or individual source files level
- Multi-file compilation support for even better code optimization
- Flexible project building via batch build, pre/post-build or custom build with access to external tools in the build process
- Integration with source code control systems

## EXTENSIVE DEVICE SUPPORT

- Core support for ARM7, ARM7E, ARM9, ARM9E, ARM10E, ARM11, SecurCore, Intel® XScale, Cortex-M0, Cortex-M1, Cortex-M3, Cortex-M4, Cortex-R4(F) and Cortex-A5
- Ready-made peripheral register definition files and flash loaders for most devices and evaluation boards
- Over 2400 example projects for evaluation boards from IAR Systems, Analog Devices, Atmel, Energy Micro, Freescale, OKI, NXP, ST, Texas Instruments, Toshiba etc.

## HIGHLY OPTIMIZING C/C++ COMPILER

- Support for C, Embedded C++ and C++
- ARM Embedded Application Binary Interface (EABI) and ARM Cortex Microcontroller Software Interface Standard (CMSIS) compliant, with support for CMSIS SVD files

- Interoperability and binary compatibility with other EABI compliant tools
- Automatic checking of MISRA C rules (MISRA C:2004)
- Language extensions for embedded applications with target-specific support
- Support for ARM, Thumb1 and Thumb-2 processor modes
- Support for the VFP9-S floating-point co-processor
- Support for 4 Gbyte applications in all processor modes
- Support for 64-bit long long
- 32- and 64-bit floating-point types in standard IEEE format
- Reentrant code
- Position Independent Code and Data (PIC/PID)
- 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

## STATE-OF-THE-ART C-SPY® DEBUGGER

- Complex code and data breakpoints
- User selectable breakpoint types (hardware/software)
- Unlimited number of breakpoints in flash via optional license for J-Link
- Runtime stack analysis - stack window to monitor the memory consumption and integrity of the stack
- Call stack visualization
- Variable plotting
- Interrupt visualization
- Complete support for stack unwinding even at high optimization levels
- Profiling and code coverage performance analysis tools
- Smart STL container display in Watch window
- I/O and interrupt simulation
- Debugging several independently built images during one debug session





## POWER DEBUGGING

- Integrated monitoring of power consumption correlated to the source code
- Power profiling on function level
- Power consumption graph in timeline window
- Power log shows sample details

## C-SPY DEBUGGER TARGET SYSTEM SUPPORT

The C-SPY Debugger for the ARM core is available with drivers for the following target systems:

- Simulator
- ETM
  - IAR J-Trace
- JTAG/SWD
  - IAR J-Link probe, JTAG and SWD support, connection via USB or TCP/IP server
  - RDI (Remote Debug Interface), such as Abatron BDI1000 & BDI2000, EPI Majic, Ashling Opella, Aiji OpenICE, Signum JTAGjet, ARM Multi-ICE
  - GDB Server
  - P&E Micro JTAG Probes: Multilink, Cyclone and OS JTAG
  - Stellaris FTDI
  - Macraigor JTAG interfaces: Macraigor mpDemon, usbDemon, usb2Demon and usb2Sprite
  - ST ST-LINK JTAG debug probe
- ROM-monitor
  - IAR ROM-monitor used in evaluation boards from NXP, Analog Devices and OKI
  - Angel debug monitor for boards from Atmel, Cirrus Logic etc.

## RTOS SUPPORT

Built-in plugins:

- IAR PowerPac
- CMX-RTX/Tiny+
- Micrium  $\mu$ C/OS-II
- OSE Epsilon
- OSEK (ORTI)
- Segger embOS
- Express Logic ThreadX
- Freescale MQX
- FreeRTOS/OPENRTOS

Vendor plugins:

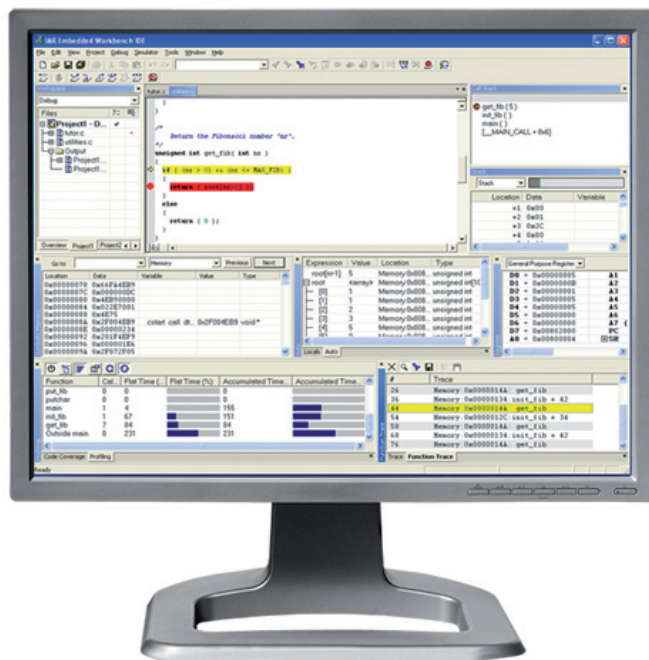
- eSys Tech X Realtime kernel
- NORTi MiSPO
- Micro Digital SMX
- Quadros RTXC
- Unicoi Fusion

## 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 ILINK LINKER

- Complete linking, relocation and format generation to produce FLASH/PROMable code
- Flexible 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
- Comprehensive cross-reference and dependency memory maps
- Link compatibility with object files and libraries generated by other EABI compliant tools

## IAR LIBRARY AND LIBRARY TOOLS

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

## COMPREHENSIVE DOCUMENTATION

- Efficient coding hints for embedded application
- Extensive step-by-step tutorials
- Context sensitive help and hypertext versions of the user documentation available online

## INFORMATION CENTER

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

## FREE EVALUATION SOFTWARE

Free evaluation softwares—32KB KickStart and 30-day evaluation versions are available at <http://www.iar.com/ewarm>

Get the latest info on: [www.iar.com/ewarm](http://www.iar.com/ewarm)!

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