

IAR Embedded Workbench[®] for ARM

The IAR Embedded Workbench is a set of highly sophisticated and easy-to-use development tools for programming embedded applications. It integrates the IAR C/C++ compiler, assembler, linker, librarian, text editor, project manager and C-SPY™ debugger in one integrated development environment (IDE). With its built-in chip-specific optimizer, the IAR Embedded Workbench for ARM generates very efficient and reliable FLASH/PROMable code for the ARM7™, ARM9™, ARM9E™, ARM10™ and Intel® XScale™ families. C-SPY—IAR Systems' state-of-the-art high-level language debugger—supports the ARM Multi-ICE JTAG interface and other RDI-based JTAG interfaces, the EPI Jeeni JTAG interface, Macraigor's mpDemon Raven and Wiggler JTAG interfaces as well as ARM Angel. It also includes plug-in modules for CMX-RTX RTOS and ThreadX RTOS. In addition to solid technology, IAR also provides professional world-wide technical support.

HIGHLIGHTS

- Source browser
- Dockable windows and multiple views
- Generic flash downloader
- STL container awareness in C-SPY Watch windows
- ETM support for EPI MAJIC-PLUS
- IAR/Segger JLink USB-driven JTAG interface for ARM cores
- Support for 4 Gbyte applications in ARM and Thumb mode
- Customizable C/EC++ library
- Generic intrinsics enable usage of co-processor instructions from C
- Ready-made project templates

INTEGRATED DEVELOPMENT ENVIRONMENT (IDE)

- A modular and extensible IDE running under Windows 98/ME/NT4/2000/XP
- Support for ARM7™, ARM9™, ARM9E™, ARM10™, and Intel® XScale™.
- Ready-made peripheral register definition files for chips from ARM, Atmel, Cirrus Logic, Intel, Motorola, OKI, Philips, Samsung and Sharp; for detailed information about the supported chips, see www.iar.com
- Create projects, edit files, compile, assemble, link and debug your applications within the seamlessly integrated environment
- Tool options configurable on global, group of source files, or individual source files level
- Multiple projects in the same workspace
- Hierarchical project representation shows all different source and output files and gives an overview of their settings
- XML-based project files
- Easy to integrate external tools in the build process
- Multi-byte editor
- Sample projects included



COMPILER

- ISO/ANSI standard C and C++ Compiler
- Extended support for Embedded C++ including templates, namespaces, mutable specifier, static cast, reinterpret cast and const cast
- Each function can be compiled in ARM or Thumb mode
- Multiple levels of optimizations for code size and execution speed
- Extended ARM-specific keywords
- Built-in advanced ARM-specific optimizer
- Reentrant code
- Support for 64-bit long long
- Support for the VFP9-S floating-point co-processor
- Easy and fast interrupt handling directly in C/C++, including nested interrupts
- Mixed C/C++ and assembler listings
- Multibyte character support

IAR C-SPY DEBUGGER

- Complex code and data breakpoints
- C/EC++ call stack with parameters
- Complete support for stack unwinding even at high optimization levels
- I/O and interrupt simulation
- Versatile monitoring of registers, structures, call chain, locals, global variables and peripheral registers
- Fine-grain single stepping
- Profiling and code coverage
- Target access to host file system via file I/O
- Continuous tracing and logging of arbitrary C-SPY expressions such as variables and register values
- ARM Angel debug monitor support
- CMX-RTX RTOS plug-in module included
- ThreadX RTOS plug-in module included
- Compatibility with the RTXC Quadros RTOS; plug-in module available from Quadros Systems
- Compatibility with the µC/OS-II RTOS; plug-in module available from Micrium
- Compatibility with the Fusion RTOS; plug-in module available from Unicoi Systems

IAR C-SPY JTAG INTERFACE

- Real-time execution
- ARM Multi-ICE JTAG interface and other RDI-based JTAG interfaces; verified with EPI MAJIC, MAJIX-MX, MAJIC-PLUS, Abatron BDI1000/BDI2000, Aiji OPENice32-A900, Ashling OPELLA and Signum JTAGjet-ARM
- IAR/Segger J-Link USB-driven JTAG interface for ARM cores

Different Architectures. One Solution

- Macraigor mpDemon, Raven and Wiggler JTAG interfaces
- EPI Jeeni JTAG interface, with support for Ethernet connectivity

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

- Complete linking, relocation and format generation to produce FLASH/PROMable code
- Flexible segment commands allowing detailed control of code and data placement
- Support for a wide range of industry-standard symbolic formats including ELF/DWARF version 2, compatible with most popular emulators
- Links only functions/variables needed by the application
- Generates checksum of code for run-time checking
- Comprehensive memory map list files
- Easy-to-use graphical linker configuration tool

IAR XLIB and XAR LIBRARY TOOLS

- For creating and maintaining library projects, libraries and library modules
- Listings of entry points and symbolic information

ISO/ANSI C and EMBEDDED C++ LIBRARIES

- All required ISO/ANSI C libraries included (character handling, input/output, general utilities, string handling, math and trigonometric, low-level routines, etc)
- Extended EC++ library (100+ functions) with math and floating-point support including STL (Standard Template Libraries)

TYPE	KEYWORD	DESCRIPTION
Function	__arm __thumb __irq, __fiq __swi __interwork __ramfunc	Declares an ARM function. Declares a Thumb function. Declare interrupt functions. Declares a software interrupt function. Declares a function callable from both ARM and Thumb Functions. Declares a function that should execute in RAM.
Variable	__no_init __root	Declares that the variable should not be initialized at program startup. Prevents the data object from being removed during link optimization.
Intrinsic	__disable_interrupt __enable_interrupt __no_instruction __require __sfb __sfe __sfs	Disables interrupts. Enables interrupts. Inserts a dummy MOV instruction. Inserts a REQUIRE directive for the specified public symbol. Returns start address of segment. Returns last address of segment. Returns size of segment.

Examples of ARM-specific extensions in the IAR Embedded Workbench.

- Reentrant code
- All library routines provided in full source code for user customization

PROFESSIONAL EDITION

IAR Embedded Workbench Professional for ARM includes efficient graphical tools for system design, test and documentation:

- Graphical representation of any complex system with UML-based state charts, a very suitable format for real-time systems with many concurrent and interrelated processes or execution threads
- Detailed diagrams give an overview of the system structure and makes it easier to discuss the system design with others—both engineers and non-engineers

- Advanced testing and simulation facilities detect errors at an early stage of the software development process
- Automatic generation of well-structured system documentation in Rich Text Format or HTML saves valuable time and energy

COMPREHENSIVE DOCUMENTATION

- Perfect-bound user guides with detailed information
- Extensive step-by-step tutorials
- Context-sensitive help and hypertext versions of the user documentation available online

FREE EVALUATION SOFTWARE

For more product information and free evaluation software, visit our website: www.iar.com

OTHER IAR TOOLS

The following tools are also sold by IAR. They are not included in the IAR Embedded Workbench toolkit.

IAR visualSTATE® for ARM

IAR visualSTATE for ARM is a suite of fully integrated tools for the early phases of the embedded software development process. It includes a UML-compliant graphical design environment, advanced verification and validation tools, and a very powerful code generator. When developing with visualSTATE the entire application is based on the design, and due to the unique

technology it is possible to perform exhaustive testing and to generate reliable and production-ready C code—in just a few seconds. The generated code is absolutely consistent with the design; it executes deterministically and can even be more compact than handwritten code. Together with the IAR Embedded Workbench, IAR visualSTATE forms a complete set of development tools for ARM, supporting you through the entire development process — **From Idea to Target!**

IAR MakeApp®*

IAR MakeApp is a family of visual development tools that helps you design and

implement peripheral device drivers more quickly and easily than ever before. With IAR MakeApp it becomes easy to master the complexity of even the most advanced microcontrollers on the market.

Bluetooth™ products from IAR Systems

IAR Systems is a pro-active player in the Bluetooth arena. We can offer very compact Bluetooth Protocol Stacks, Bluetooth Starter Kits, Bluetooth test and verification tools and USB drivers for Bluetooth modules as well as expert services in Bluetooth development.

*Check for availability

Sweden
IAR Systems AB
P.O. Box 23051
Strandbodgatan 1
SE-750 23 Uppsala
Phone: +46 18 16 78 00
Fax: +46 18 16 78 38
Email: info@iar.se

United States
IAR Systems
(US HQ – West Coast)
Century Plaza
1065 E. Hillsdale Blvd
Foster City, CA 94404
Phone: +1 650 287 4250
Fax: +1 650 287 4253
Email: info@iar.com

United States
IAR Systems
(East Coast)
2 Mount Royal
Marlborough, MA 01752
Phone: +1 508 485 2692
Fax: +1 508 485 9126
E-mail: info@iar.com

Germany
IAR Systems AG
Posthalterring 5
DE-85599 Parsdorf
Phone: +49 89 88 98 90 80
Fax: +49 89 88 98 90 81
Email: info@iar.de

United Kingdom
IAR Systems Ltd.
Gainsborough Business Centre
Hamilton House,
Mabledon Place, Euston
London, WC1H 9BB
Phone: +44 207 554 85 85
Fax: +44 207 554 85 86
Email: info@iarsys.co.uk

Denmark
IAR Systems A/S
Lykkesholms Allé 100
DK-8260 Viby J
Phone: +45 8734 1100
Fax: +45 8734 1190
E-mail: info@iar.dk

Japan
IAR Systems K.K.
1-22-17 Fuji-building 26
Hyakunin-cho, Shinjuku-ku
Tokyo 169-0073
Phone: +81 3 5337 6436
Fax: +81 3 5337 6130
E-mail: info@iarsys.co.jp

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