

CodeWarrior™ Development Studio

for Freescale™ 56800/E Digital Signal Controllers, v8.0 Standard Edition

Overview

The comprehensive, award-winning, highly visual CodeWarrior™ development environment lets both 56800 and 56800E designers build and deploy even the most sophisticated DSC systems quickly and easily by integrating support for both architectures into a single integrated solution. Whether your application is targeting motor control, smart appliances, industrial control or

braking/steering by-wire applications, CodeWarrior tools provide you with everything you need to exploit the advanced capabilities of the Freescale™ 56800/E Digital Signal Controllers. CodeWarrior Development Studio for Freescale 56800/E Digital Signal Controllers is uniquely designed to take advantage of the powerful microcontroller capabilities of the 56800/E architectures.



Features

Integrated Development Environment (IDE) 5.6

- > Code formatting
- > Enhanced code completion feature in editor
- > Go to next/previous function
- > Word wrap when printing
- > Support for source-relative #includes
- > Find inside/outside of comments
- > Improved language parser speed and feedback
- > Breakpoint window

Compiler

- > Fast 32-bit division & remainder routines in runtime support are used by code-generator (added MPY+ADD=MAC peephole pattern)
- > Software pipelining
- > Stack Sequence Optimization
- > CRC linker feature - CRC linker feature is designed to allow execution of memory integrity checks at runtime over user defined portions of memory, which can identify unexpected memory writes (caused by coding errors, unexpected writes, etc.)

- > Interprocedural Analysis support- Interprocedural Analysis (IPA) allows the compiler to generate better and/or smaller code by inspecting more than just one function or data object at the same time (this technology is currently mostly used by the inliner).

Libraries

- > MSL version 3.0

Debugger

- > Alternative download sequence allowing breakpoints to work reliably in flash memory
- > Peripheral register views
- > Data visualization allows customers to view data in a graphical format. Similar to breakpoints, "data visualization points" can easily be inserted into the user's application, which allows the data to be captured at these points. All captured data is directed to a display that plots the data graphically

Processor Support

- > Support for all released 56800/E processors
- > Support for new MC56F802x family
- > Support for new MC56F803x family

New Tools

- > QED Lite by Momentum Data Systems: QED is a graphical filter design system used to generate coefficients for digital filters for use in DSC applications
- > CodeWarrior profiler: The CodeWarrior profiler allows for customers to improve performance of their applications by reporting information about where their code is spending most of processors time

RTOS (Real-Time Operating System)

- > Freescale OSEKturbo is a small, fast, reliable, scalable RTOS. Fully compliant to the latest OSEK/VDX™ specifications it works seamlessly with CodeWarrior Development Studio for Freescale 56800/E Digital Signal Controllers MC56F834x series of processors
- > Freescale CodeTEST® Software Analysis Tools comprise a software verification tool set that overcomes complexities of the embedded software environment from early-phase host-based design and development to final-phase test and validation

Documentation

- > Online help
- > Fully integrated and searchable help

The CodeWarrior Advantage

CodeWarrior Compiler, Assembler, Linker and Libraries

- > Optimizing ANSI C compiler
- > GUI based with command-line option
- > Advanced optimization technology generates fast, compact, high-quality code
- > ELF output in compiler/assembler
- > Linker generates both ELF and S-Records
- > MSL supports file IO through debugger interface

Project Manager

The CodeWarrior project manager gives you the tools you need to configure and manage complex projects including:

- > Complete control of source files, libraries and dependencies to reduce project complexity
- > Automatic dependency management to eliminate the need for complicated makefiles
- > Multi-threading support to allow you to work on one project while building another
- > Built-in "stationery" templates help you create new projects faster

Editor and Code Navigation System

The CodeWarrior editor is the ideal tool for creating and modifying your source code. With customizable syntax coloring and styling, the CodeWarrior editor enables you to view your source in way that makes sense to you. In addition, the editor maximizes use of advanced features such as:

- > Pop-up menus for easy project navigation to improve your productivity
- > Built-in drag-and-drop support that makes source code editing a snap
- > Special tools and shortcuts to help you organize your code and set custom markers

Graphical Source-Level Debugger

The CodeWarrior IDE includes a state-of-the-art C source-level debugger with a wide array of sophisticated features that help you debug your DSC application faster than ever. The debugger provides all of the power you need with the simplicity of a Windows®-based point-and-click environment for fast and easy execution. Key capabilities include:

- > Graphical display of complex data structures and expressions to speed run-time analysis

- > Fast, flexible and comprehensive run-control capabilities for complete target control
- > Precise breakpoints help solve sophisticated problems
- > High-performance host-target interfaces for faster downloads available

Flash Programmer

- > Download to internal flash with the click of a button
- > Interactively debug software running in internal flash using hardware breakpoint mechanism

Optional Turbo Downloader

The Turbo Downloader feature in the CodeWarrior Development Studio will allow for faster flash and RAM downloads on the 56800E (no improvement with 56800) devices. This feature is transparently enabled through a license key and, once the capability is unlocked, will enable you to download data 5x faster than your current parallel port connection. The downloader uses high-speed synchronous technology (HSST) to achieve transfer speeds, which will ultimately speed up development time.

Why develop applications with CodeWarrior tools?

- > Leading integrated development environment streamlines system design
- > Highly optimized C compiler ensures smallest code size and fastest execution time
- > Industrial-strength Project Manager eliminates complicated build scripts
- > Integrated source code navigation provides quick and easy access to functions and files
- > Graphical source-level debugging solves complex problems quickly and easily
- > Advanced instruction set simulation enables hardware/software co-design
- > Support for all Freescale 56800/E family processors

UNIS Processor Expert™

UNIS Processor Expert™ provides a rapid application design (RAD) tool that combines easy-to-use component-based software application creation with an expert knowledge system. CPU on-chip peripherals, external peripherals and software functionality is encapsulated into components called Embedded Beans™. Each component's functionality can be tailored to fit your application requirements by modifying the component's properties, methods and events. When you build the project, Processor Expert automatically generates highly optimized C code and places the files into your project.

Processor Expert also makes porting a breeze. Simply select the new 56800 or 56800E processor and Processor Expert maps the software and peripheral components that describe your application's functionality to the resources available on the new processor. All you have to do is resolve any problems flagged by Processor Expert and you're finished.

Bean Wizard™

The Bean Wizard is the tool that allows you to create your own beans to address the specific needs of an application, such as support for using a generic peripheral in a very specific way. This tool is sold separately and not included in the 8K, 32K, 64K or Standard Edition.

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CodeWarrior Development Studio for Freescale 56800/E Digital Signal Controllers Standard Edition

Processor Expert

Features

- > Code generation for low-level driver source
- > Hardware independence reduces application porting time
- > Drag-and-drop components
- > Expert knowledge base constantly checks CPU-dependent settings
- > Automatically generates highly optimized C code within your CodeWarrior project
- > Support for all released 56800/E processors

Processor Expert Beans

- > Memory management
- > Beans (drivers) for all peripherals
- > Digital signal processing and filtering
- > Bit manipulation
- > Vocoders
- > Modems
- > RTOS integration support
- > Comprehensive software, hardware and silicon documentation
- > Software testing and debug utilities
- > Networking
- > Telephony
- > Security

- > Voice recognition
- > Sample applications
- > Processor architecture services

Additional Applications (56F800 and 56F8300 Series)

- > Uninterruptible power supply
- > Motor control primitives and algorithms
- > Motor control applications

Additional Applications (56850 Series only)

- > Feature phone

Check online for the latest list of Processor Expert embedded beans.

Specifications

Languages Supported

- > C
- > 56800/E assembly language

Host Development Platform

- > Windows® XP/2000/98/Windows NT® (Windows NT 4.0 recommended)

Supported Hybrid Processor Families/EVMs

- > 56F80x
- > 56F82x
- > 5685x
- > MC56F83xx
- > 56800E Simulator
- > MC56F81xx
- > MC56F8013/14
- > MC56F802x
- > MC56F803x

Target Connections

- > CodeWarrior USBTAP®
- > Parallel port command converter (deprecating support)

System Requirements

- > 1.0 GHz processor: Intel® Pentium® AMD-K6® or equivalent
- > Windows XP/2000
- > 512 MB RAM
- > 2.0 GB hard disk space
- > CD-ROM drive for installation

Freescale Support Policy

- > On-line help and documentation
- > Free 30-day evaluation license available

Special Edition

Download and evaluate CodeWarrior Development Studio for 56800/E Digital Signal Controllers, Special Edition at no cost.

The Special Edition features include:

- > Sophisticated project manager
- > 8KW code-size limited C compiler
- > 8KW code-size limited C source-level debugger
- > Macro assembler
- > Assembly source-level debugger
- > Processor Expert with components for 56F801/56F802 CPUs and most on-chip
- > Complimentary Special Edition license key included in the installer

Peripherals

- > Flash programming support

CodeWarrior Development Studio for Freescale 56800/E Digital Signal Controllers Standard Edition

CODEWARRIOR DEVELOPMENT STUDIO FOR FREESCALE 56800/E DIGITAL SIGNAL CONTROLLERS PRODUCT PART NUMBERS

Part#	Products
CWS-568-CX	CodeWarrior Development Studio for 56800/E Digital Signal Controllers, Standard Edition
CWS-568-C64K-CX	CodeWarrior Development Studio for 56800/E Digital Signal Controllers, 64K Edition
CWS-568-C32K-CX	CodeWarrior Development Studio for 56800/E Digital Signal Controllers, 32K Edition
CWX-568-SE	CodeWarrior Development Studio for 56800/E Digital Signal Controllers, Special Edition 8K Eval
DSP Development Systems/Hardware	
CWH-568-F803-DX	DSP56F803 Development System
CWH-568-F805-DX	DSP56F805 Development System
CWH-568-F807-DX	DSP56F807 Development System
DSP56F800DEMO-E	56F800 Demonstration kit with U.S. power supply
DSP56F801EVM	Evaluation Kit for the DSP56F801 and DSP56F802 processor (Freescale)
DSP56F803EVM	Evaluation Kit for the DSP56F803 processor (Freescale)
DSP56F805EVM	Evaluation Kit for the DSP56F805 processor (Freescale)
DSP56F807EVM	Evaluation Kit for the DSP56F807 processor (Freescale)
DSP56F826EVM	Evaluation Kit for the DSP56F826 processor (Freescale)
DSP56F827EVM	Evaluation Kit for the DSP56F827 processor
DSP56852EVM	Evaluation Kit for the DSP56852 processor
DSP56858EVM	Evaluation Kit for DSP56858 Embedded Systems
MC56F8300DSK	56F8300 Demonstration Kit with US power supply
MC56F8323EVM	Evaluation Kit for the 56F8322 and 56F8323 processor families (Freescale)
MC56F83567EVM	Evaluation Kit supports the 56F834X and 56F835X, and 56F8357 processor families
DEMO56F8013-(E)*	Evaluation Kit for the 56F8013
DEMO56F8014-(E)*	Evaluation Kit for the 56F8014
CWH-UTP-ONCE HX	CodeWarrior USB host target interface using the OnCE communication protocol
MC56F8037EVM	Evaluation Kit for 56F8037

Note: Please contact sales for the most current list of EVM support.

* Add E to part number for European orders

Learn More: For more information about Freescale products, please visit www.freescale.com/codewarrior