



# CodeWarrior™ Development Studio for Freescale™ HC9S12X/XGATE Microcontrollers

### Overview

The comprehensive, highly visual CodeWarrior™ Development Studio for Freescale™ HC9S12X/ XGATE Microcontrollers enables engineers to build and deploy HC9S12X/ XGATE based systems quickly and easily.

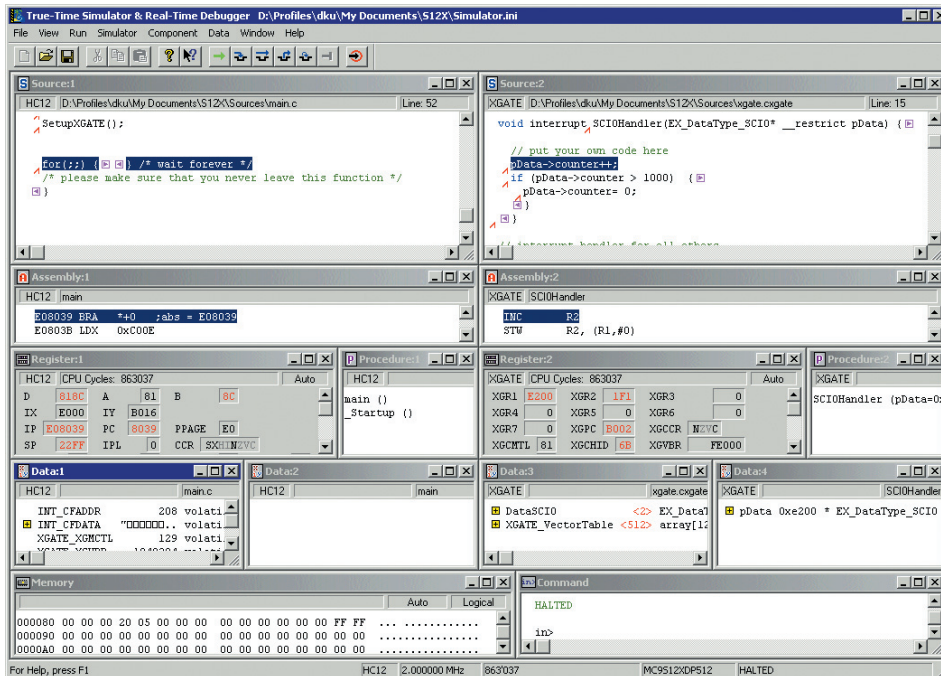
This tool suite provides the capabilities required by every engineer in the development cycle: from board bring-up—to firmware development—to final application development. With a common, project-based, development environment, reuse becomes a natural by-product as each team builds on the work already completed by the previous team.

Whether the application is targeted at consumer white goods, industrial control or automotive body controllers, the CodeWarrior environment provides you everything you need to exploit the capabilities of the HCS12X/XGATE architecture.

The award-winning CodeWarrior IDE goes well beyond basic code generation and debugging, streamlining applications design from the moment you open the box. It features an intuitive, state-of-the-art project manager and build system; a highly optimized compiler; a graphical, source-level debugger; integrated profiling capabilities, a cycle-accurate, instruction-set simulator; and more.

### Features

- > Sophisticated project manager
- > Build system with optimizing C/C++/cC++/EC++ compilers supporting HCS12X CPU and XGATE module
- > Macro-assembler (absolute and relocatable) supporting HCS12X CPU and XGATE module
- > Linker to link HCS12X CPU code and XGATE module code
- > Graphical, source-level debugger support for HCS12X CPU and XGATE module concurrently
- > Support for new Background Debug Module
- > XGATE module code copy run-time support
- > Flash programming support
- > Cycle-accurate simulator
- > Code coverage, profile analysis
- > Data visualization
- > C source code encryption support
- > Support for new HCS12X architecture features
- > Interrupt Module support to switch quickly between interrupt vector tables
- > Extended condition code register
- > New global addressing modes
- > Extended Instruction Set
- > RPAGE, EPAGE, GPAGE and PPAGE





## **The CodeWarrior Advantage**

### **Project Manager**

The CodeWarrior project manager gives you everything 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

### **Edit and Code Navigation System**

The editor in CodeWarrior development studio 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 a way that makes sense to you. In addition, the editor maximizes the use of advanced features:

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

### **Build System**

Develop applications with the smallest code size and fastest execution time.

### **Features include:**

- > Industry-leading ANSI C/C++ and compact C++ compilers, which support EC++ guidelines for embedded C++ development and generate ELF/DWARF files for execution and debugging
- > More than 60 optimization strategies
- > Compiler optimization menu that allows you to easily define the optimization level with sliders for code density, execution speed, complexity, compilation time, and information
- > Macro assembler
- > Linker dead strips unused code

### **Graphical Source-Level Debugger**

The CodeWarrior IDE includes a state-of-art source-level debugger with a wide array of sophisticated features that help you troubleshoot and repair your application faster. The debugger provides 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

### **Target Support:**

HC9S12X families: DP, DT

### **Board Support:**

- > Axiom MC9S12XDT512 Demo Board
- > SofTec MC9S12XDP512 Evaluation Board

### **Host Target Interfaces:**

- > USB Multilink 12
- > Cyclone Pro
- > SofTec BDM12

### **Specifications**

- > IDE Version: 5.7
- > Host Platforms: Windows® 98/2000/XP/NT
- > Language Support: Assembly, C/C++, cC++, EC++
- > Build Tools Output Formats: ELF/DWARF 2.0, Hiware, Freescale S-Record, Intel hex, Binary

### **Metrowerks Support Policy**

- > Online help and documentation
- > 12-month maintenance contract
- > Additional 12-month maintenance contracts available
- > Free 30-day evaluation license available

### **System Requirements**

- > 200 MHz Pentium® II processor or AMD-K6® class processor,
- > Microsoft Windows 98/2000/XP
- > 128 MB of RAM, and CD-ROM drive
- > Depending on host-target connection: Parallel Port, 9-pin Serial Port, or USB Port



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*...provides the capabilities required by every engineer in the development cycle:  
from board bring-up—to firmware development—to final application development.*

Feature	Benefit	Special Edition	Standard Edition	Professional Edition
<b>IDE</b>				
Project Wizard	Gets you up and programming fast.	Yes	Yes	Yes
Program Manager > Projects > Sub Projects	Eliminates confusing and often complex make files with visual preference panels.	Up to 32 files No	Unlimited Yes	Unlimited Yes
<b>Build Tools</b>				
Macro Assembler	For specific optimizations only you can provide.	Yes	Yes	Yes
Optimizing Compiler	Reduces code size and maximizes the capabilities of the microcontroller to achieve top performance.	HCS12X: C – 32K XGATE: C – 512 bytes	HCS12X: C – Unlimited XGATE: C – Unlimited	HCS12X: C – Unlimited HCS12X: C++ – Unlimited XGATE: C – Unlimited
Libmaker	Allows reuse and maintenance of code through libraries.		Yes	Yes
<b>Debug Tools</b>				
Source-level Debugger	Speeds debug cycles by viewing the source code as it executes.	HCS12X: ASM – Unlimited XGATE: ASM – Unlimited HCS12X: C – 32K XGATE: C – 512 bytes	HCS12X: ASM – Unlimited XGATE: ASM – Unlimited HCS12X: C – Unlimited XGATE: C – Unlimited	HCS12X: ASM – Unlimited XGATE: ASM – Unlimited HCS12X: C – Unlimited HCS12X: C++ – Unlimited XGATE: C – Unlimited
Flash Programming	Fully integrated flash programming improves the build-debug cycle because it automates your downloads.	Yes	Yes	Yes
Simulator	Reduces costs and eliminates possible hardware issues during development.	Yes	Yes	Yes
Data Visualization & I/O Stimulation	Let's you see how your program effects peripherals and responds to outside input.	1 components/ 3 elements	Unlimited	Unlimited
Decoder	Allows you create listings of ELF files.		Yes	Yes
OSEK awareness	Ready to work with OSEK, for RTOS aware debug capabilities.			Yes
Session Record & Play	Automates repetitive debug cycles during program validation.			Yes
<b>Advanced Tools</b>				
Profile Analysis & Code Coverage	Gives you visibility into your running program to allow fine tuning and better quality metrics.			Yes
PC-lint Plug-in	Ensures compliance with MISRA and other code quality and style guidelines.			Yes



## Part Numbers

Products	Part#
CodeWarrior for HCS12X, Special Edition	CWX-H12-X00SE-EX
CodeWarrior for HCS12X, Standard Edition	CWS-H12-X0STD-CX
CodeWarrior for HCS12X, Professional Edition	CWS-H12-X0PRO-CX
<b>Upgrades</b>	
HCS12X 64K C Compiler Upgrade	CWS-H12-XC64K-CX
HC12 C++/cC++/EC++ Compiler Only Edition	CWS-H12-X00CC-CX
HCS12X Upgrade to Professional Edition	CWS-H12-X0PRO-UX
<b>Add-on options for Standard Edition</b>	
HC12 Enhanced Compiler Option	CWX-H12-ENHNC-KX
Code Coverage Option	CWX-HXX-CODEC-KX
Profile Analysis Option	CWX-HXX-PROFL-KX
HC12 Encryption Option	CWX-H12-ENCRY-KX

**Learn More:** For more information about Freescale products, please visit [www.freescale.com](http://www.freescale.com).

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