



## 1 What's New

Freescale's CodeWarrior for Microcontrollers v10.6 integrates the development tools for the ColdFire®, ColdFire+, DSC, Kinetis, Qorivva, PX, RS08, S08 and S12Z architectures into a single product based on the Eclipse open development platform. Eclipse offers an excellent framework for building software development environments and is a standard framework used by many embedded software vendors.

CodeWarrior for Microcontrollers v10.6 Update 1.0.0 addresses a number of defects and new features.

New device support:

- Kinetis K Series: MK65FX1M0, MK65FN2M0, MK66FX1M0, MK66FN2M0
- S08: FXTH87xx00
- S12Z: MC9S12ZVHL32, MC9S12ZVHL64
- DSC: MWCT1000, MWCT1001, MWCT1003, MWCT1101, MWCT1200

Updated support for silicon revisions:

- S08: MC13237C, MC13234C

### 1.1 General

#### 1.1.1 Bug Fixes

- ENGR00312169 – Fixed performance issue that occurred when building projects with many files and build targets..
- ENGR00316156 - Fixed Processor Expert optional graphical view to allow date and time values to be updated.
- ENGR00313814 - Fixed timing issues with Processor Expert SPIMaster\_LDD component by ensuring the values are initialized correctly
- ENGR00313240 - PDD2 static initialization source files (content of the Static\_Code\Peripherals project folder) are no longer added automatically to projects created with the New Project Wizard.. The files are only added when the corresponding initialization component is added to the project.
- ENGR00314198 - Processor Expert TSS component updated, so it does not report compilation errors after it is removed from project.
- ENGR00313237 - Fixed an error in Processor Expert ADC component so it is no longer limited to maximum of 20 channels.

### 1.2 ColdFire/ColdFire+

#### 1.2.1 Bug Fixes

- ENGR00308390 - Fixed licensing to allow unlimited assembly code for the projects containing ONLY assembly code (if the project contains anything other than assembly, regular licensing will be used).

### 1.3 Digital Signal Controller (DSC)

#### 1.3.1 New features

- Improved inline assembly support
- Added Simulator support for 56800EX devices.





## 2 System Requirements

### 2.1 Recommended Configuration

- 2.6GHz Pentium® compatible processor or better
- 4GB RAM
- 20GB (When installing full product or updates for all architectures)
- 400MB on Windows system disk
- DVD drive for installation
- USB port for communications with target hardware
- Ethernet port for communications with target hardware (optional)

### 2.2 Operational Minimum Configuration

- 1.8GHz Pentium® compatible processor or better
- 2GB RAM
- 20GB (When installing full product or updates for all architectures)
- 400MB on Windows system disk
- DVD drive for installation
- USB port for communications with target hardware

### 2.3 Host Operating System Support

- Microsoft® Windows XP 32-bit and 64-bit (Professional Edition)
- Microsoft Windows 7 32-bit and 64-bit (Home Premium Edition and Professional Edition)
- Microsoft Windows 8 32-bit and 64-bit (Home Premium Edition and Professional Edition)

## 3 Product WEB page

CodeWarrior Development Studio for Microcontrollers v10.6 is available for download at <http://www.freescale.com/cwmcu10>.

## 4 Installation and Licensing

To install CodeWarrior Development Studio for Microcontrollers v10.6, choose the download option that meets your needs.

The online installer package contains the CW MCU v10.6 core tools and an installer, which assumes your computer has internet access. During the installation process the core tools will be installed and you will be asked to select the Freescale architecture support you want installed. The installer will automatically access the internet, download the necessary archives and install them in your CodeWarrior directory.

The offline installer package contains the complete CW MCU v10.6 tool suite and an installer, which assumes your computer does NOT have internet access. All data needed by the installer will be downloaded and no other download will be performed. Double-click the installation package and a wizard will guide you through the installation process.

An Evaluation license is automatically installed with your product and you do not need to register it. This license allows you to develop projects as Professional Edition during the evaluation period. After 30 days, the license works as a Special Edition license (free, permanent, but feature limited) which supports unlimited assembly code, up to 64KB of C code for S08/RS08, V1 ColdFire/ColdFire+, Kinetis L Series derivatives; up to 128KB of C code for V2-V4 ColdFire and Kinetis K Series derivatives; and up to 512KB of C code for Qorivva derivatives.

New functionality including support for new devices and other FSL architectures can be added to CodeWarrior Development Studio for Microcontrollers v10.6 (CW MCU v10.6) with archives, service packs, updates and patches. Archives add support for other FSL architectures. Service packs add specific support for new devices. Updates and patches correct software defects and add general functionality affecting more than one device family.

New support can be added directly from the Internet or from a downloaded archive. If your computer is connected to the Internet, select Install New Software in the Help Menu and all available updates will be displayed. If your computer does not have Internet access, you can download the archive that contains the service pack, update or patch you need from [CW MCU v10.6 Update & Patches](#) and follow the Service Pack Updater procedure posted on the site.

**Note:** Before installing archives, updates, service packs or patches, select Restart in the File menu to perform a CodeWarrior restart. This will ensure all processes (e.g. debugger shell) are closed. CodeWarrior should NOT be used during the installation process.

## 5 Technical Support

All CodeWarrior issues are tracked through Freescale's normal Service Request Process. To report feature requests (enhancements) or defects for CodeWarrior Development Studio for Microcontrollers v10.6, please submit a Service Request.

1. Go to <http://www.freescale.com/support>
2. Log in.
3. On the resulting MyFreescale page, click Enter a Service Request
4. Choose category Software Product Support
5. Choose topic CodeWarrior
6. Click Next.
7. Provide the required information. You may attach a file up to 10 MB in size to the SR. You may also specify email addresses of people you would like to keep notified on the progress of the SR. Separate multiple email addresses with commas. Depending on the nature of the issue (defects require more information) you may need to provide some or all of the information listed below.
  - **Type:** pick from Question, Defect Report, Feature Request
  - **Subject:** be short and descriptive
  - **Description:** details your question, defect or feature request
  - **Severity:** choose from Medium, High, or Critical
  - **Target:** specify the hardware microcontroller/microprocessor family involved
  - **Reproducibility:** choose from Always, Rarely, Sometimes, Unknown
  - **Steps to Reproduce:** be precise so we can reproduce the problem
  - **Expected Result:** what you expected to happen



**Appendix A: Known issues and Workarounds**

Issue ID	Description
<b>General</b>	
ENGR00265598	<b>Description:</b> When using "call by return" mechanism for calling functions in Performance View, a function will appear as if it has no children, and all its children will appear to be called from the function's parent. <b>Workaround:</b> None
ENGR00285343	<b>Description:</b> Duplicate global variables are shown in the Variable View. <b>Workaround:</b> Use "Remove Global Variables" command to clean the Variable View and then add the required global variable(s) again.
ENGR00300203	<b>Description:</b> Disassembly View is empty when a breakpoint is set in Outline View and the Disassembly View is not active when the breakpoint is hit. <b>Workaround:</b> Use the "Link with Active Debug Context" button to refresh the Disassembly View. Uncheck it and then check it again. The Disassembly View will be refreshed.
ENGR00319187	<b>Description:</b> When "Customize linker input order" option is enabled the project build might finish with exception. <b>Workaround:</b> Disable "Customize linker input order" in Linker settings .
<b>ColdFire/ColdFire+</b>	
ENGR00258435	<b>Description:</b> Target Task flash programmer fails to calculate the correct number of sectors to erase before programming a MCF54418 external NAND flash. <b>Workaround:</b> Modify the Target Task to erase the correct number of sectors.
ENGR00277322	<b>Description:</b> If the "reset" button is selected during a ColdFire debug session using a USB TAP (as opposed to "terminating" the debug session), CodeWarrior will hang. <b>Workaround:</b> Terminate the DE.EXE program in the task manager.
<b>DSC</b>	
ENGR00282103	<b>Description:</b> CW MCU v10.4 DSC project using -largeAddrInSdm option will not build. <b>Workaround:</b> There is no support for -largeAddrInSdm option in project settings. The option can be specified on the "C/C++ Build->Settings->Tool Settings" panel of the "DSC Compiler/Language" page in the field "Other Flags".
ENGR00282103	<b>Description:</b> CW MCU v10.4 DSC project using -largeAddrInSdm option will not build. <b>Workaround:</b> There is no support for -largeAddrInSdm option in project settings. The option can be specified on the "C/C++ Build->Settings->Tool Settings" panel of the "DSC Compiler/Language" page in the field "Other Flags".
ENGR00287718	<b>Description:</b> Processor Expert validation rejects valid configurations of DSC peripheral cross bar. <b>Workaround:</b> Use PESL macros instead of init components (Init_ENC and Init_AOI) or use ConnectPin method instead of high level and init components (QuadratureEncoder and Init_AOI). QuadratureEncoder must be configured for pin sharing.
ENGR00299457	<b>Description:</b> Problem with breakpoints when debugging with USBTAP. <b>Workaround:</b> The issue occurs when a short watchdog period is specified. The watchdog should be disabled during debugging.
ENGR00299753	<b>Description:</b> Unable to fill the DSC unused memory space with data 0x00. <b>Workaround:</b> None. INITVAL representing the link-time initialization value to be used for watermarking a memory segment in a linker command file does not work for zero input.



Kineticis	
ENGR00311177	<b>Description:</b> . Wrong default Flash Configuration File is selected and displayed in the "Flash File To Target" dialog for the MKL02Z32 <b>Workaround:</b> . Select correct file from the dropdown list
ENGR00251403	<b>Description:</b> Timestamps greater than zero are reported in Trace Data View when Timestamps are disabled for ITM trace. The development platform is a Tracelink connected to a K21DN512 board. <b>Workaround:</b> None. When timestamps are disabled, the timestamps in the Trace Data View should be zero.
ENGR00284177	<b>Description:</b> When an MQX project is edited to debug out of DDR on a TWR-K70 board, the debugger does not download the code to the external DDR memory. <b>Workaround:</b> None available.
ENGR00291252	<b>Description:</b> Fail to get trace data when using Tracelink after reset. The trace data shows "Trigger packet - ETB" with no other data showing. <b>Workaround:</b> Move trace viewer scroll bar up and down to refresh table content.
ENGR00313818	<b>Description:</b> FRDM-K64F FPU status corrupted in MQX-Lite when low priority task is interrupted and restored. <b>Workaround:</b> None available.
ENGR00319132	<b>Description:</b> IO_Map.h linked file cannot be found in include paths for Processor Expert and MQX project. <b>Workaround:</b> Add manually the compiler search path "\${ProcessorExpertPath}/lib/Kineticis/iofiles" to the project setting.
ENGR00319602	<b>Description:</b> gcc ewl __copy_longs_aligned function copied fewer elements than required. <b>Workaround:</b> Use memcpy function
Qorivva	
ENGR318367	<b>Description:</b> Compiler may generate wrong code for ternary nested operation expression like ((J1==1?0:((J1==2?0:0)))) when peephole optimization is enabled in optimization level 2 or higher.. <b>Workaround:</b> Disable peephole optimization
ENGR00260637, ENGR00274574	<b>Description:</b> Software breakpoints do not work correctly on multi-core MPC56xx devices when a software breakpoint is set on one core while the other core is running. Due to software breakpoint corruption, the breakpoint on the running core is never activated. This only occurs when trying to debug two cores concurrently. <b>Workaround:</b> Use hardware breakpoints, which work without limitations, when debugging two cores concurrently. Use software breakpoints when debugging a single MPC56xx core.
ENGR00284202	<b>Description:</b> The PXMMU configurator plugin is unavailable for MPC567xK. The MMU configurator view does not show the MMU entries and complains that the MCU is not in the devices list. <b>Workaround:</b> None.
ENGR00288114	<b>Description:</b> Debugger stops at a breakpoint on a line that has already executed.  Use Case: This issue may occur on E200 devices when the debugger is halted manually by the user at an assembly line just in front of the software breakpoint. During software breakpoint handling the PC is changed by an offset of 2 which is especially problematic if a software breakpoint is set within a tight loop. <b>Workaround:</b> Use hardware breakpoints which work without limitations.

ENGR00316711	<b>Description:</b> There are no bit fields and description for register in the NZ0C2 OnCE Nexus Registers for MPC56xxB/C/D <b>Workaround:</b> None
<b>S12Z</b>	
ENGR00296204	<b>Description:</b> Debugger Register View missing CPMUCOP (@0x0006cc) under Clock, Reset and Power Management Unit (CPMU). <b>Workaround:</b> The register CPMUCOP is displayed under "Computer Operating Properly Watchdog (COP)" group.
ENGR00297274	<b>Description:</b> FLASH task does not program FLASH security register to secure S12Z device. <b>Workaround:</b> None. By default the FLASH programming task unsecures FLASH.
ENGR00319870	<b>Description:</b> Unable to compile complex code with bitfield accesses if optimization level = 3 and speed optimization is on. <b>Workaround:</b> Set the bitfields as volatile or reduce opt. level to <3.
<b>S08</b>	
ENGR00286342	<b>Description:</b> The Target Task (Flash file to Target) does not program S19 files into MC13237. <b>Workaround:</b> The default "Flash File to Target" task can be modified to remove restricted areas. The following actions are required: <ul style="list-style-type: none"> <li>• Select "Save as Target Task" in the "Flash File to Target" dialog</li> <li>• Specify task name</li> <li>• Perform Erase and Program</li> <li>• In the dialog "Save Resource" specify the path</li> <li>• Open the Target Tasks tab</li> <li>• Select the saved task</li> <li>• Select "Edit task Configuration" from local menu</li> <li>• Double click on Erase and Program operations in the list of Flash Programmer actions</li> <li>• "Add Program/Verify Action" dialog will open</li> <li>• Uncheck "Restrict to Addresses in this Range"</li> <li>• Close dialog with "Update Program Action" button.</li> </ul> Now use this task to flash the S19 files into MC13237.

## Appendix B: Performance Considerations

CodeWarrior Development Studio for Microcontrollers v10.6 is a powerful tool chain. The following suggestions will help keep the CodeWarrior tools running at a respectable performance level.

- 1 To maximize performance, the CodeWarrior tools should be installed on a computer with the recommended system configuration. While the tools will operate on a computer with the minimum configuration, the limited hardware will restrict its ability to function at desired performance levels.
- 2 Close unused projects. Eclipse caches files for all open projects in the workspace. If you need multiple projects open, try to limit the number of projects to no more than 10.
- 3 The Eclipse IDE provides several options that provide user assistance tools. These options, however, use memory and cpu bandwidth. If performance is slow and you do not need these options, turn them off.
  - Scalability options configure how eclipse deals with large source files.
    - Scalability options
      - Editor live parsing: impacts parsing while typing, Outline view, semantic highlighting, folding, etc.
      - Semantic highlighting: C/C++ identifiers are colored
      - Syntax coloring: coloring of keywords, comments and literals
      - Parsing-based content assist proposals: content assist proposals which require parsing the file
      - Content assist auto activation: content assist activated automatically on trigger sequences, like '.', '::' or '->'.
    - To disable:
      - Click menu 'Windows' -> 'Preference'
      - Expand 'C/C++' -> 'Editor' -> 'Scalability'
      - Uncheck 'enable scalability options'
  - Content Assist Auto Activation can reduce the number of keystrokes a developer must type to create code. The Content Assist plug-in consists of components that predict what a developer will type, based on the current context, scope and prefix.
    - To disable:
      - Click menu 'Windows' -> 'Preference'
      - Expand 'C/C++' -> 'Editor' -> 'Content Assist'
      - Uncheck all the options for 'Auto Activation'

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