

# Embedded Target for Infineon C166<sup>®</sup> Microcontrollers Release Notes

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Chapter 1, “Embedded Target for Infineon C166 Microcontrollers Version 1.2 Release Notes”, describes the changes introduced in the Embedded Target for Infineon C166 Microcontrollers since Version 1.1.1. The following topics are discussed in these Release Notes:

- “New Features” on page 1-2
- “Major Bug Fixes” on page 1-3
- “Known Software and Documentation Problems” on page 1-4

If upgrading from an earlier version, you should also see

- Chapter 2, “Embedded Target for Infineon C166 Microcontrollers Version 1.1.1 Release Notes”
- Chapter 3, “Embedded Target for Infineon C166 Microcontrollers Version 1.1 Release Notes”

For an introduction to this product, see Chapter 4, “Embedded Target for Infineon C166 Microcontrollers Version 1.0 Release Notes”.



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## **New Features**

This section introduces the new features and enhancements added in Version 1.2 of the Embedded Target for Infineon C166 Microcontrollers.

### **Switch Target Configuration Block**

This new block runs a convenience function that configures your model and Target Preferences to one of a set of pre-defined hardware configurations. The function can also be used as a template for setting up your own customized configurations.

### **Fast External Interrupt Block**

This new block generates an asynchronous function-call trigger when an interrupt occurs. You can use this block to execute a function-call triggered subsystem in the context of the service routine for a fast external interrupt.

### **Digital Input/Output Blocks**

You can use the new digital input/output device driver blocks to read and set the logical state of a specified port/pin number.

## Major Bug Fixes

The Embedded Target for Infineon C166 Microcontrollers 1.2 includes several bug fixes made since Version 1.1.1. You can see a list of major Version 1.2 bug fixes on the MathWorks Web site.

If you are viewing these release notes in PDF form on the MathWorks Web site, click the words "bug fixes" in the sentence above to see the notes about major fixes.

If you are upgrading from a version earlier than Version 1.1.1, you should also see Version 1.1.1 "Major Bug Fixes" on page 2-3.

## **Known Software and Documentation Problems**

The MathWorks Web site includes a list of known software and documentation problems in Version 1.2.

If you are viewing these release notes in PDF form on the MathWorks Web site, click the word "problems" in the sentence above to see the notes about known problems.

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## **New Features**

This section introduces the new features and enhancements added in Version 1.1.1 of the Embedded Target for Infineon C166 Microcontrollers.

### **Support for Model Reference**

Model reference is now supported by the Embedded Target for Infineon C166 Microcontrollers.



## Major Bug Fixes

The Embedded Target for Infineon C166 Microcontrollers 1.1.1 includes several bug fixes made since Version 1.1. This section describes the particularly important bug fix.

### **Correct Value for Number of Concurrent Overruns**

In Version 1.1 (Release 14) an incorrect value was used for the maximum allowed number of concurrent base rate overruns. The effective value for this setting was one minus the value actually entered in the dialog under **Tools -> Real-Time Workshop -> Options-> C166 Options(1)**. For example, if a value of 2 is entered for **Maximum number of concurrent base-rate overruns** then the maximum number of concurrent base rate overruns is actually 1. In particular, if a value of 0 is entered the application would fail.

This problem is fixed in Version 1.1.1 (Release 14 Service Pack 1).

### **Overruns No Longer Stop Further Execution of Sub-rates**

Previously, when an overrun occurred in sub-rate 1 the following could happen: consider the case when sub-rate 1 is currently executing and another instance of sub-rate 1 is scheduled to run (i.e. a task overrun has occurred). When the current instance of sub-rate 1 completes, the function does not execute further instances of sub-rate 1. Instead the execution of sub-rate 1 can be delayed and the processor may be idle. The pending instance of sub-rate 1 will only be invoked on completion of the next base rate task.

This problem is fixed in version 1.1.1



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## New Features

This section introduces the new features and enhancements added in version 1.1 of the Embedded Target for Infineon C166 Microcontrollers.

### CAN Support

There are new driver blocks for transmitting and receiving messages using the CAN module on the Infineon C166 microprocessor. There are blocks for packing, unpacking and filtering CAN messages, outputting the bus status or resetting a CAN module. There is also an implementation of the CAN Calibration Protocol (CCP) standard for host-target communication over CAN, so you can use a calibration tool (such as Vector CANape or ATI Vision) for remote signal monitoring and parameter tuning.

### Support for XC16x Processor Variants

There is now support for XC16x variants of the Infineon C166 microprocessor. There is a new sublibrary of TwinCAN blocks providing CAN support (including CCP) for the TwinCAN nodes of XC16x processor variants.

### Task Execution Profiling

This is a new feature that allows execution profiling data to be recorded, uploaded and displayed in the form of a MATLAB graphic and as an HTML report. Execution profiling data can be collected over serial, CAN or TwinCAN. See the demo model `c166_multitasking`.

### Temporary Task Overruns Now Permitted by the Scheduler

It is now possible for task overruns in the base rate or one of the sub-rates to occur without causing a failure. The benefit is that if it occasionally takes longer than the normally allowed time to complete a task, this is now possible without having to increase the sample time. The overrun behaviour is configurable and is illustrated by the new demo model `c166_multitasking`.

## **Use of Real Time Clock as System Timer**

It is now possible to select the Real Time Clock (RTC) for use as the system timer. This allows the timers T2 ... T6 to be used for other purposes. This parameter is found in the C166 Resource Configuration block. Note that the RTC is not available on all hardware variants of the C166; please consult your hardware documentation.



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# Introduction to the Embedded Target for Infineon C166 Microcontrollers

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**Note** The Embedded Target for Infineon C166 Microcontrollers (Version 1.0) was released as part of Release 13+ with Service Pack 1. Version 1.0 is the first release of this product.

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The Embedded Target for Infineon C166 Microcontrollers is an add-on product for use with the Real-Time Workshop Embedded Coder. It provides a set of tools for developing embedded applications for the C166 family of processors. This includes derivatives such as Infineon C167 and ST Microelectronics ST10 ([www.us.st.com](http://www.us.st.com)).

Used in conjunction with Simulink, Stateflow, and the Real-Time Workshop Embedded Coder, the Embedded Target for Infineon C166 Microcontrollers lets you

- Design and model your system and algorithms.
- Compile, download, run and debug generated code on the target hardware, seamlessly integrating with the Tasking compiler toolchain for the Infineon C166 microcontroller.
- Use rapid prototyping techniques to evaluate performance and validate results obtained from generated code running on the target hardware.
- Deploy production code on the target hardware.

## Feature Summary

- Automatic generation of 'main' program including single or multitasking scheduler
- Automated build procedure including starting debugger or download utility
- Support for integer, floating-point or fixed-point code
- Driver blocks for serial transmit and receive
- Examples to show you how to integrate your own driver code



- Fully integrated with Tasking toolchain
- Enhanced HTML report generation provides analysis of RAM/ROM usage; this is in addition to the standard HTML report generation that shows optimization settings and hyperlinks to generated code files