Embedded IDE Link™ TS Release Notes

Contents

Summary by Version

This table provides quick access to what's new in each version. For clarification, see "Using Release Notes" on page 1.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Latest Version V1.3 (R2008a)	Yes Details	Yes Summary	Bug Reports	Printable Release Notes: PDF Current product documentation
V1.2 (R2007b)	Yes Details	Yes Summary	Bug Reports	No
V1.1 (R2007a)	Yes Details	Yes Summary	Bug Reports	No
V1.0.1 (R2006b)	No	Yes Summary	Bug Reports	No
V1.0 (R2006a+)	Yes Details	Yes Summary	Bug Reports at Web site	No

Using Release Notes

Use release notes when upgrading to a newer version to learn about:

- New features

- Changes

- Potential impact on your existing files and practices

Review the release notes for other MathWorks™ products required for this product (for example, MATLAB® or Simulink®) for enhancements, bugs, and compatibility considerations that also might impact you.

If you are upgrading from a software version other than the most recent one, review the release notes for all interim versions, not just for the version you

are installing. For example, when upgrading from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

What's in the Release Notes

New Features and Changes

- New functionality
- Changes to existing functionality

Version Compatibility Considerations

When a new feature or change introduces a reported incompatibility between versions, the **Compatibility Considerations** subsection explains the impact.

Compatibility issues reported after the product is released appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so you should also review the fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

The MathWorks offers a user-searchable Bug Reports database so you can view Bug Reports. The development team updates this database at release time and as more information becomes available. This includes provisions for any known workarounds or file replacements. Information is available for bugs existing in or fixed in Release 14SP2 or later. Information is not available for all bugs in earlier releases.

Access Bug Reports using your MathWorks Account.

Version 1.3 (R2008a) Embedded IDE Link™ TS Product

This table summarizes what's new in Version 1.3 (R2008a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes — Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports	Printable Release Notes: PDF Current product documentation

Infineon® TriCore® Optimized Code: Support for ISO/IEC 9899:1999 Math Library

A new target function library `Infineon TriCore (ISO)` uses the TASKING® ISO/IEC 9899:1999 Math Library to implement floating-point mathematical function blocks (e.g. trigonometric functions, log functions). Using these target optimizations improves the performance of applications performing floating-point mathematical operations.

When using these target optimizations, the regular Real-Time Workshop® implementation for many ANSI floating-point mathematical operations is replaced by the ISO equivalent. These functions behave identically to the regular Real-Time Workshop implementation and can be verified using processor-in-the-loop cosimulation.

The existing target function library for saturated arithmetic, `Infineon TriCore`, has been enhanced to implicitly include all ISO optimizations. You can use the new `Infineon TriCore (ISO)` target function library with ERT or GRT system target files. The target function library `Infineon TriCore` is only available for ERT system target files.

See "C Language Extensions / Intrinsics".

3

New Supported TASKING® Toolsets

New toolsets supported include:

- Infineon® C166®
- Infineon® TriCore®
- ARM®

See "Supported Altium® TASKING Toolsets"

Limitation Removed

This release removes a limitation for Processor-in-the-Loop (PIL). Multidimensional signals are now supported at the PIL component boundary. See "Limitations and Tips".

Embedded IDE Link™ TS Build Directory and Target Preferences

You must use a clean build directory and the latest values for the target preference fields when setting up your installation.

Compatibility Considerations

To avoid problems when upgrading from a previous version, use either a new build directory, or clean up your existing build directory that you use to build models with the Embedded IDE Link™ TS product.

A previous installation of the Embedded IDE Link TS product could cause a compatibility issue if the target preferences are not reset. To avoid problems, click **Reset to Default** in the Embedded IDE Link TS Target Preferences dialog box before setting up your installation.

Note Resetting your target preferences overwrites any previously saved entries for the current MATLAB® release.
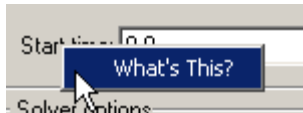

"What's This?" Context-Sensitive Help Available for Simulink® Configuration Parameters Dialog

R2008a introduces "What's This?" context-sensitive help for parameters that appear in the Simulink® Configuration Parameters dialog. This feature provides quick access to a detailed description of the parameters, saving you the time it would take to find the information in the Help browser.

To use the "What's This?" help, do the following:

1 Place your cursor over the label of a parameter.

2 Right-click. A **What's This?** context menu appears.

For example, the following figure shows the **What's This?** context menu appearing after a right-click on the **Start time** parameter in the **Solver** pane.

3 Click **What's This?** A context-sensitive help window appears showing a description of the parameter.

5

Version 1.2 (R2007b) Link for TASKING® Product

This table summarizes what's new in Version 1.2 (R2007b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes — Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports	Printable Release Notes: PDF Current product documentation

Infineon® TriCore® Optimized Code: Support for Saturated Arithmetic

A new target function library uses TASKING® compiler extensions and intrinsic functions optimized for saturated arithmetic. These target optimizations can increase execution speed up to 18 times for saturated arithmetic operations. Using these target optimizations improves the performance of most applications performing saturated arithmetic operations.

When using these target optimizations, the regular Real-Time Workshop® implementation for many saturated arithmetic operations is replaced by calls to target-optimized inlined functions. These functions behave identically to the regular Real-Time Workshop implementation and can be verified using processor-in-the-loop cosimulation.

See "C Language Extensions / Intrinsics".

USB XC164CM Support

This release provides support for compact USB stick evaluation hardware, with a new option set for XC164CM U CAN hardware.

Select the preconfigured target preference setting `xc164cm_hw_u_can` to target the XC164CM U CAN hardware.

New Supported TASKING® Toolsets

New toolsets supported include:

- Infineon® C166®: TASKING Tools for C166/ST10 v8.6 r3

- ARM®: TASKING C Compiler for ARM v1.2 r1

- 8051: TASKING Tools for 8051 v7.2 r1

- Infineon® TriCore®: TASKING VX-toolset for TriCore v2.5 r1

  Also, if you regenerate template projects, these additional toolsets are supported:

  - TASKING VX-toolset for TriCore and PCP v2.5 r1

  - As TASKING VX-toolset for TriCore v2.5 r1 but without on-chip debug support (OCDS)

Limitations Removed

This release removes several limitations:

- Complex, fixed-point data is now supported by PIL.

- With 8051 and ARM, DSP library build failures no longer occur.

- "Save data to workspace" no longer causes error.

- 8051 compiler assertion failure no longer occurs.

- 8051 link-order issue no longer causes PIL application failure.

- Model reference error messages now provide information if any referenced models have different hardware implementations or **TASKING configuration description**settings, or do not have a Link for TASKING® component.

See "Limitations and Tips".

Link for TASKING® Build Directory and Target Preferences

You must use a clean build directory and the latest values for the target preference fields when setting up your installation.

Compatibility Considerations

To avoid problems when upgrading from a previous version, use either a new build directory, or clean up your existing build directory that you use to build models with the Link for TASKING product.

A previous installation of the Link for TASKING product could cause a compatibility issue if the target preferences are not reset. To avoid problems, click **Reset to Default** in the Link for TASKING Target Preferences dialog box before setting up your installation.

Note Resetting your target preferences overwrites any previously saved entries for the current MATLAB® release.

Link and Target Products Regrouped in New Start, Help, and Demos Category

A new product category, Links and Targets, now contains all MathWorks™ software products that link, target, or cosimulate code.

Compatibility Considerations

This change impacts you in the following ways:

- Finding and viewing these products through the MATLAB Desktop **Start** button and in the Help browser **Contents** and **Demos** panes.
- Using the demo command to access the product demos.

For more about this new product category, see "Demos and Help Browser Contents Now Include New Category for Links and Targets", in the *MATLAB Release Notes*.

Version 1.1 (R2007a) Link for TASKING® Product

This table summarizes what's new in Version 1.1 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes — Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports	Printable Release Notes: PDF Current product documentation

Processor-in-the-Loop Verification

New verification workflow demo explains "SIL and PIL for System and Unit Testing", and incorporates hand-written algorithms via the Legacy Code Tool.

New verification tool, `target_block_verify` function, automates comparison of simulation and SIL/PIL results.

See "PIL Workflow" for details.

Stack Profiling

Maximum stack usage is reported automatically after PIL cosimulation (command line functions also available for non-PIL use). The report gives you a maximum bound on the stack usage of the algorithm under test.

See "Stack Profiling" for details.

Bidirectional Traceability Between Code and Model

Two-way traceability between generated source code (in TASKING® EDE / CrossView Pro) and Simulink® blocks (using context menu items and command-line functions).

See "Bidirectional Traceability Between Code and Model" for details.

Read/Write Memory Units

New methods for Link for TASKING® objects (`readMemoryUnits` and `writeMemoryUnits`) simplify reading from and writing to target memory units (the smallest addressable unit in the memory of the target). Use them with the MATLAB® functions, `typecast` and `swapbytes`, for reading and writing data of different datatypes.

See Read/Write Memory Units for details.

Model Reference Support

Model reference is supported.

Real-Time Workshop® GRT support

Real-Time Workshop® GRT target is supported for build and download, so the Real-Time Workshop® Embedded Coder™ product is optional. However Real-Time Workshop Embedded Coder ERT target is required for PIL.

PIL is Supported for the DSP563xx Toolset

PIL is supported for the Freescale™ DSP563xx (16-bit mode) Toolset.

New Supported TASKING® Toolsets

Toolsets supported:

- Infineon® TriCore®: TASKING C/C++, CrossView Pro SIM for TriCore v2.4r1 patch 1

- Infineon® C166®: TASKING Tools for C166/ST10 v8.6 r2

Link for TASKING® Build Directory and Target Preferences

You must use a clean build directory and the latest values for the target preference fields when setting up your installation.

Compatibility Considerations

To avoid problems when upgrading from a previous version, you should use a new build directory, or clean up your existing build directory that you use to build models with the Link for TASKING product.

It is possible a previous installation of the Link for TASKING product could cause a compatibility issue if the target preferences are not reset. To avoid problems, click the **Reset to Default** button in the Link for TASKING Target Preferences dialog box before setting up your installation.

Note Resetting your target preferences overwrites any previously saved entries for the current MATLAB release.

Version 1.0.1 (R2006b) Link for TASKING® Product

This table summarizes what's new in Version 1.0.1 (R2006b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	Yes — Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports	Printable Release Notes: PDF Current product documentation

Link for TASKING® Target Preferences

You must use the latest values for the target preference fields when setting up your installation.

Compatibility Considerations

It is possible a previous installation of the Link for TASKING® product could cause a compatibility issue if the target preferences are not reset. To avoid problems, click the **Reset to Default** button in the Link for TASKING Target Preferences dialog box before setting up your installation.

Note Resetting your target preferences overwrites any previously saved entries.

Version 1.0 (R2006a+) Link for TASKING® Product

This table summarizes what's new in V1.0 (R2006a+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes — Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports at Web site	No

Version 1.0 of the Link for TASKING® product, which was released in Web-downloadable form after R2006a, includes these features:

- "Automated Project-Based Build Process" on page 13
- "Automated Download and Debugging" on page 13
- "Highly Customized Code Generation" on page 14
- "Processor-in-the-Loop (PIL) Cosimulation " on page 14
- "MATLAB® APIs to Communicate with TASKING® Toolsets" on page 14
- "The Link for TASKING® Product Modifies a Real-Time Workshop® File" on page 14

Automated Project-Based Build Process

With the Link for TASKING product, you can automatically create and build TASKING® projects for code generated by the products Real-Time Workshop® or Real-Time Workshop® Embedded Coder™.

Automated Download and Debugging

You can use MATLAB® to rapidly and easily debug generated code in the CrossView Pro debugger, using either the instruction set simulator or real hardware.

Highly Customized Code Generation

Support for multiple TASKING toolsets provides a route to a large number of different target hardware platforms. The Link for TASKING product provides customizable templates for configuring hardware variants, automating MISRA C® code checking, and controlling the build process to generate target-specific optimized code. You can use any Real-Time Workshop system target file (STF).

Processor-in-the-Loop (PIL) Cosimulation

You can use cosimulation techniques to verify generated code running in an instruction set simulator or real embedded hardware environment. You can analyze and profile the target-specific code execution behavior using MATLAB and Simulink®. During a PIL test, you can use the TASKING debugger to set breakpoints, step through the code, and watch variables. After the test, the Link for TASKING product returns execution profiling and code coverage reports to MATLAB for your review.

MATLAB® APIs to Communicate with TASKING® Toolsets

You can write MATLAB scripts to automate complex tasks in the TASKING EDE and TASKING CrossView Pro debugger, or you can debug and analyze interactively in a live MATLAB session. You can automate project creation and debugging, and exchange data between MATLAB and the target running in CrossView Pro. You can set breakpoints, step through code, set parameters and retrieve profiling reports.

The Link for TASKING® Product Modifies a Real-Time Workshop® File

When you install the Link for TASKING product V1.0 on top of R2006a, one Real-Time Workshop file is modified. The file is *matlabroot*/rtw/c/libsrc/rt_interpolate.c. The Link for TASKING product modifies this file to avoid compilation errors on 24-bit targets. The Link for TASKING product removes the following line from this file:

```
include "simstruc_types.h"
```

Compatibility Considerations

It is possible a reinstall of a R2006a product could cause a compatibility issue if the `rt_interpolate.c` file is overwritten. If you do not have the correct version of the file, this will cause compiler errors with certain models for 24-bit targets.

Compatibility Summary for the Embedded IDE Link™ TS Product

This table summarizes new features and changes that might cause incompatibilities when you upgrade from an earlier version, or when you use files on multiple versions. Details are provided in the description of the new feature or change.

Version (Release)	New Features and Changes with Version Compatibility Impact
Latest Version V1.3 (R2008a)	See the **Compatibility Considerations** subheading for this new features or changes: "Embedded IDE Link™ TS Build Directory and Target Preferences" on page 4
V1.2 (R2007b)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "Link for TASKING® Build Directory and Target Preferences" on page 7 • "Link and Target Products Regrouped in New Start, Help, and Demos Category" on page 8
V1.1 (R2007a)	See the **Compatibility Considerations** subheading for this new feature or change: "Link for TASKING® Build Directory and Target Preferences" on page 10
V1.0.1 (R2006b)	See the **Compatibility Considerations** subheading for this new feature or change: "Link for TASKING® Target Preferences" on page 12
V1.0 (R2006a+)	See the **Compatibility Considerations** subheading for this new feature or change: "The Link for TASKING® Product Modifies a Real-Time Workshop® File" on page 14