

# **IEC Certification Kit Release Notes**

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### *IEC Certification Kit Release Notes*

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## Summary by Version

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

<b>Version (Release)</b>	<b>New Features and Changes</b>	<b>Version Compatibility Considerations</b>	<b>Fixed Bugs and Known Problems</b>
<b>Latest Version V1.4 (R2011a)</b>	Yes Details	No	Bug Reports
V1.3 (R2010bSP1)	Yes Details	No	Bug Reports
V1.3 (R2010b)	Yes Details	No	Bug Reports Includes fixes
V1.2 (R2010a)	Yes Details	No	Bug Reports Includes fixes
V1.1 (R2009b+)	Yes Details	No	Bug Reports
V1.0 (R2009a+)	Yes Details	Not applicable	Bug Reports

### 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®). Determine if enhancements, bugs, or compatibility considerations in other products impact you.

If you are upgrading from a software version other than the most recent one, review the current release notes and all interim versions. For example, when you upgrade from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

## **What Is 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 release appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so review the fixed bugs in Bug Reports for any compatibility impact.

### **Fixed Bugs and Known Problems**

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. Bug Reports include 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.

### **Documentation on the MathWorks Web Site**

Related documentation is available on [mathworks.com](http://mathworks.com) for the latest release and for previous releases:

- Latest product documentation
- Archived documentation

## Version 1.4 (R2011a) IEC Certification Kit Software

This table summarizes what's new in V1.4 (R2011a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports

New features and changes introduced in this version are:

- “Certification of Simulink® Design Verifier and Simulink® Verification and Validation” on page 3
- “Software Tool Validation Tests for Embedded Coder” on page 4
- “Enhanced Dialog for Generating Traceability Matrices” on page 4
- “IEC Certification of New Releases” on page 5
- “ISO 26262 Tool Qualification of New Releases” on page 6

### Certification of Simulink Design Verifier and Simulink Verification and Validation

This release provides certification artifacts for using the Simulink® Design Verifier™ and Simulink® Verification and Validation™ products in the context of the IEC 61508 standard. TÜV SÜD has certified Simulink Design Verifier Version 1.7.1 (R2010bSP1) and Version 2.0 (R2011a) and Simulink Verification and Validation Version 3.0.1 (R2010bSP1) and 3.1 (R2011a) for use in development processes that need to comply with IEC 61508, ISO 26262, EN 50128, or derivative standards. Certification encompasses the test case generation capability of Simulink Design Verifier and the model coverage analysis capability of Simulink Verification and Validation. For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

## Software Tool Validation Tests for Embedded Coder

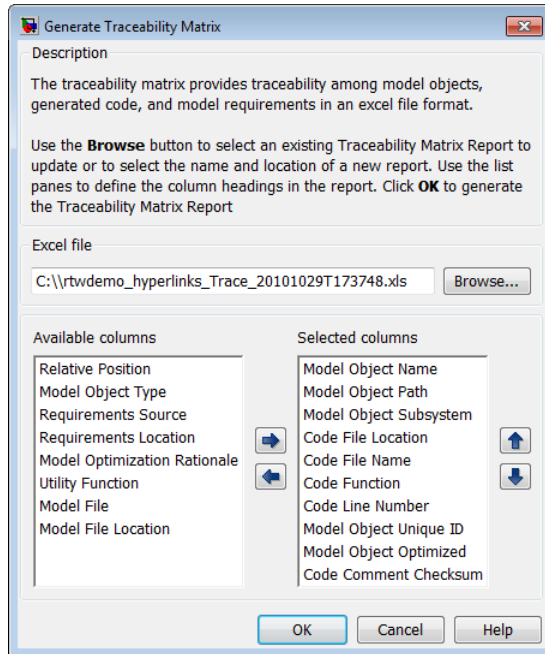
The Embedded Coder™ materials in the IEC Certification Kit product include exemplary test cases and test procedures that you can use to automate tool validation tests for Embedded Coder software. You can modify and extend these test cases to create a test suite that covers the requirements that are relevant for your application, your specific tool configuration, operating environment, and so on. For more information, see “Validating Software Tools” in the IEC Certification Kit documentation.

## Enhanced Dialog for Generating Traceability Matrices

On Windows® systems, you can generate a traceability matrix into Microsoft® Excel® format directly from the Embedded Coder code generation report for your model. In previous releases, clicking the **Generate Traceability Matrix** button opened a generic Windows file save dialog box that provided limited control over the updating or creation of a matrix file.

R2011a introduces the Generate Traceability Matrix dialog box, which opens when you click the **Generate Traceability Matrix** button. You can use this dialog box to browse to an existing matrix file to update or specify a new matrix file to create. Optionally, you can also use this dialog box to select and order the columns that appear in the generated matrix. For example, here is the dialog box that appears when you generate a traceability matrix for the demo model `rtwdemo_hyperlinks`:





For more information, see “Generating a Traceability Matrix” in the IEC Certification Kit documentation.

## IEC Certification of New Releases

TÜV SÜD certified the following versions of MathWorks products according to IEC 61508:

- Embedded Coder Version 6.0 (R2011a)
- Real-Time Workshop® Embedded Coder™ Version 5.6.1 (R2010bSP1)
- Simulink® PLC Coder™ Version 1.2 (R2011a)
- Simulink Design Verifier Version 1.7.1 (R2010bSP1) and 2.0 (R2011a)
- Simulink Verification and Validation Version 3.0.1 (R2010bSP1) and 3.1 (R2011a)
- Polyspace® Client™ for C/C++ and Polyspace® Server™ for C/C++ Version 8.1 (R2011a)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

## **ISO 26262 Tool Qualification of New Releases**

The following versions of MathWorks products are qualified with TÜV SÜD qualification assessment according to ISO/DIS 26262:

- Embedded Coder Version 6.0 (R2011a)
- Real-Time Workshop Embedded Coder Version 5.6.1 (R2010bSP1)
- Simulink Design Verifier Version 1.7.1 (R2010bSP1) and 2.0 (R2011a)
- Polyspace Client for C/C++ and Polyspace Server for C/C++ Version 8.1 (R2011a)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

## Version 1.3 (R2010bSP1) IEC Certification Kit Software

This table summarizes what's new in V1.3 (R2010bSP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports

New features and changes introduced in this version are:

### Using Version 1.3 of the IEC Certification Kit Software with R2010bSP1

Version 1.3 of the IEC Certification Kit software shipping with R2010bSP1 includes documents, templates, artifacts, and software capabilities that have not changed between R2010b and R2010bSP1.

You can use the documents, templates, and artifacts included in Version 1.3 when you use the following MathWorks products in projects involving ISO 26262, IEC 61508, and related standards:

- Polyspace Client for C/C++ and Polyspace Server for C/C++ Version 8.0 (R2010b)
- Simulink PLC Coder Version 1.1 (R2010b, R2010bSP1)

Version 1.3 of the IEC Certification Kit software does not include documents, templates, and artifacts for:

- Real-Time Workshop Embedded Coder Version 5.6.1 (R2010bSP1)

Please check future releases of the IEC Certification Kit software for documents, templates, and artifacts for Real-Time Workshop Embedded Coder Version 5.6.1 (R2010bSP1).

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**Note** You can use the IEC Certification Kit traceability matrix feature to generate traceability matrices for code generated with Real-Time Workshop Embedded Coder Version 5.6.1 (R2010bSP1).

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You can use the Certification Artifacts Explorer to explore documents, templates, and artifacts shipping with IEC Certification Kit Version 1.3 and to manage your own collections of certification artifacts.

## Version 1.3 (R2010b) IEC Certification Kit Software

This table summarizes what's new in V1.3 (R2010b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “IEC Certification of Simulink® PLC Coder” on page 9
- “Traceability Matrix Enhancements” on page 9
- “IEC Certification of New Releases” on page 10
- “ISO 26262 Tool Qualification of New Releases” on page 11

### IEC Certification of Simulink PLC Coder

In previous releases, the IEC Certification Kit product provided certification artifacts for using Real-Time Workshop Embedded Coder and Polyspace® code verification products in projects involving the IEC 61508 standard. This release additionally provides certification artifacts for using the Simulink PLC Coder product in the context of the IEC 61508 standard. TÜV SÜD has certified Simulink PLC Coder Version 1.0 (R2010a) and 1.1 (R2010b) according to IEC 61508. For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

### Traceability Matrix Enhancements

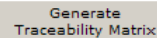
The traceability matrix, which provides traceability among model objects, generated code, and model requirements, has been enhanced in the following ways.

#### Ability to Export a Traceability Matrix Directly From a Generated HTML Traceability Report

On a Windows host, if your model build generates an HTML code generation report that includes traceability information, you can now export a traceability

matrix into Microsoft Excel format directly from the code generation report. To do this, go to the **Traceability Report** section and click the **Generate Traceability Matrix** button.

## Traceability Report for rtwdemo\_hyperlinks

A rectangular button with a light gray background and a thin black border. The text "Generate Traceability Matrix" is centered on the button in a small, black, sans-serif font.

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1. [Eliminated / Virtual Blocks](#)
2. [Traceable Simulink Blocks / Stateflow Objects / Embedded MATLAB Scripts](#)
  - o [rtwdemo\\_hyperlinks](#)
  - o [rtwdemo\\_hyperlinks/Chart](#)
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When you click the button, a Windows file save dialog appears. You can specify either a new or existing Excel® file name.

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**Note** If you specify an existing file name, the existing matrix is updated, not overwritten. If your intention is to update or merge information in an existing matrix, you can safely disregard the Windows warning that the file already exists and save the file.

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### New Code Interface Worksheet

When you generate a traceability matrix, using either the `iec.ExportTraceReport` function or the **Generate Traceability Matrix** button, the matrix now includes a **Code Interface** worksheet. The **Code Interface** worksheet captures information from the **Code Interface Report** section of the HTML code generation report, such as function prototype and timing information for the model initialize and step functions.

### IEC Certification of New Releases

TÜV SÜD certified the following versions of MathWorks products according to IEC 61508:

- Real-Time Workshop Embedded Coder Version 5.4.1 (R2009bSP1) and 5.6 (R2010b)
- Simulink PLC Coder Version 1.0 (R2010a) and 1.1 (R2010b)
- Polyspace Client for C/C++ and Polyspace Server for C/C++ Version 8.0 (R2010b)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

### **ISO 26262 Tool Qualification of New Releases**

The following versions of MathWorks products are qualified with TÜV SÜD qualification assessment according to ISO/DIS 26262:

- Real-Time Workshop Embedded Coder Version 5.4.1 (R2009bSP1) and 5.6 (R2010b)
- Polyspace Client for C/C++ and Polyspace Server for C/C++ Version 8.0 (R2010b)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

## Version 1.2 (R2010a) IEC Certification Kit Software

This table summarizes what's new in V1.2 (R2010a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “IEC Certification of New Releases” on page 12
- “ISO 26262 Tool Qualification of New Releases” on page 12
- “Access and Manage Certification Artifacts Using Certification Artifacts Explorer” on page 13

### IEC Certification of New Releases

TÜV SÜD certified the following versions of MathWorks products according to IEC 61508:

- Real-Time Workshop Embedded Coder Version 5.5 (R2010a)
- Polyspace Client for C/C++ and Polyspace Server for C/C++ Version 7.2 (R2010a)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

### ISO 26262 Tool Qualification of New Releases

The following versions of MathWorks products are qualified with TÜV SÜD qualification assessment according to ISO/DIS 26262:

- Real-Time Workshop Embedded Coder Version 5.5 (R2010a)
- Polyspace Client for C/C++ and Polyspace Server for C/C++ Version 7.2 (R2010a)



For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

## **Access and Manage Certification Artifacts Using Certification Artifacts Explorer**

The certification artifacts that are part of the IEC Certification Kit product are in many different locations. Previously, a central access point to the certification artifacts was not available. Now you can use the Certification Artifacts Explorer to access and manage the certification artifacts. Using the Certification Artifacts Explorer, you can:

- Access the certification artifacts that are part of the IEC Certification Kit product.
- Create certification packages containing the certification artifacts that you need to certify your projects.
- Access certification artifacts for editing.

For details, see “Accessing and Managing Certification Artifacts” in the IEC Certification Kit documentation. For limitations that apply, see “Limitations of the Certification Artifacts Explorer” in the IEC Certification Kit documentation.

## Version 1.1 (R2009b+) IEC Certification Kit Software

This table summarizes what's new in V1.1 (R2009b+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports

New features and changes introduced in this version are:

- “IEC 61508 Certification of New Versions” on page 14
- “ISO 26262 Tool Qualification” on page 14
- “ISO 26262 Support” on page 15
- “Traceability Among Model Objects, Generated Code, and Model Requirements” on page 15

### IEC 61508 Certification of New Versions

TÜV SÜD certified the following versions of MathWorks products according to IEC 61508:

- Real-Time Workshop Embedded Coder Version 5.4 (R2009b)
- Polyspace Client for C/C++ and Polyspace Server for C/C++ Versions 5.1 (R2008a), 6.0 (R2008b), 7.0.1 (R2009a+), and 7.1 (R2009b)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

### ISO 26262 Tool Qualification

The following versions of MathWorks products are qualified with TÜV SÜD qualification assessment according to ISO/DIS 26262:

- Real-Time Workshop Embedded Coder Versions 5.3 (R2009a) and 5.4 (R2009b)

- Polyspace Client for C/C++ and Polyspace Server for C/C++ Versions 7.0.1 (R2009a+) and 7.1 (R2009b)

For details, see “IEC Certification Kit Components” in the IEC Certification Kit documentation.

## ISO 26262 Support

The IEC Certification Kit product includes qualification evidence, documents, templates, and tools for certification-related development activities. You can use these certification artifacts and tools when you use the Real-Time Workshop Embedded Coder product in projects involving the ISO 26262 standard.

For details, see “IEC Certification Kit Product Overview” in the IEC Certification Kit documentation.

## Traceability Among Model Objects, Generated Code, and Model Requirements

When you use Model-Based Design and production code generation to develop application software components, you can generate a *traceability matrix*. The traceability matrix provides traceability among model objects, generated code, and model requirements. You can add comments to the generated traceability matrix. If you change the model and regenerate the traceability matrix, the software retains your comments.

For details, see “Generating a Traceability Matrix” in the IEC Certification Kit *User’s Guide*.

## Limitations

The `iec.ExportTraceReport` function that you use to generate traceability matrices has the following limitations:

- The `iec.ExportTraceReport` function does not support generating a traceability matrix for referenced models. When you generate a traceability matrix for a model that contains referenced models, the traceability matrix contains information about the Model block only. The traceability matrix does not contain information about the contents of the referenced model. If

your model contains referenced models, generate a traceability matrix for the top-level model and each referenced model separately.

- The `iec.ExportTraceReport` function works with the Microsoft® Windows platform only.

## Version 1.0 (R2009a+) IEC Certification Kit Software

This table summarizes what's new in V1.0 (R2009a+):

<b>New Features and Changes</b>	<b>Version Compatibility Considerations</b>	<b>Fixed Bugs and Known Problems</b>
Yes Details below	Not applicable	Bug Reports

Version 1.0 of the IEC Certification Kit software includes documents, certificates, and templates. You can use these certification artifacts when you use the following MathWorks products in projects involving the IEC 61508 standard:

- Real-Time Workshop Embedded Coder
- Polyspace Code Verification products (for C)

For more information, see:

- *IEC Certification Kit User's Guide*
- The IEC Certification Kit product page on [www.mathworks.com](http://www.mathworks.com).

## Compatibility Summary for IEC Certification Kit Software

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.

<b>Version (Release)</b>	<b>New Features and Changes with Version Compatibility Impact</b>
<b>Latest Version V1.4 (R2011a)</b>	None
V1.3 (R2010bSP1)	None
V1.3 (R2010b)	None
V1.2 (R2010a)	None
V1.1 (R2009b+)	None
V1.0 (R2009a+)	Not applicable