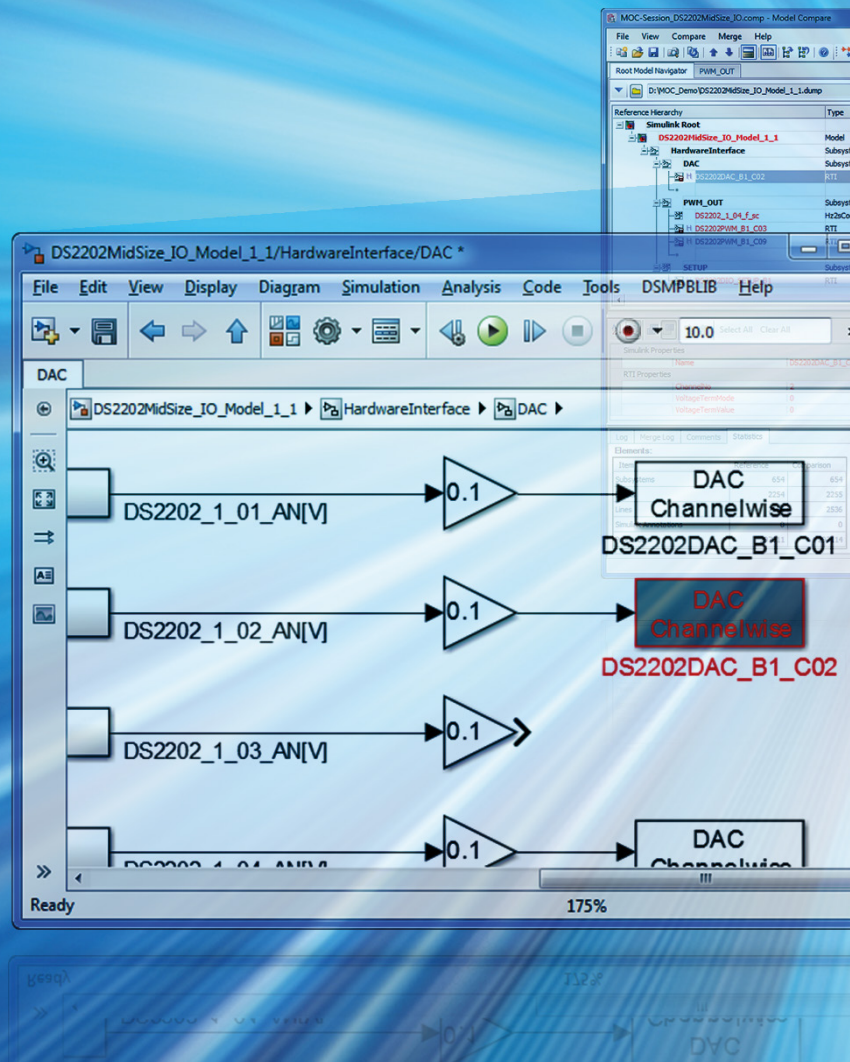
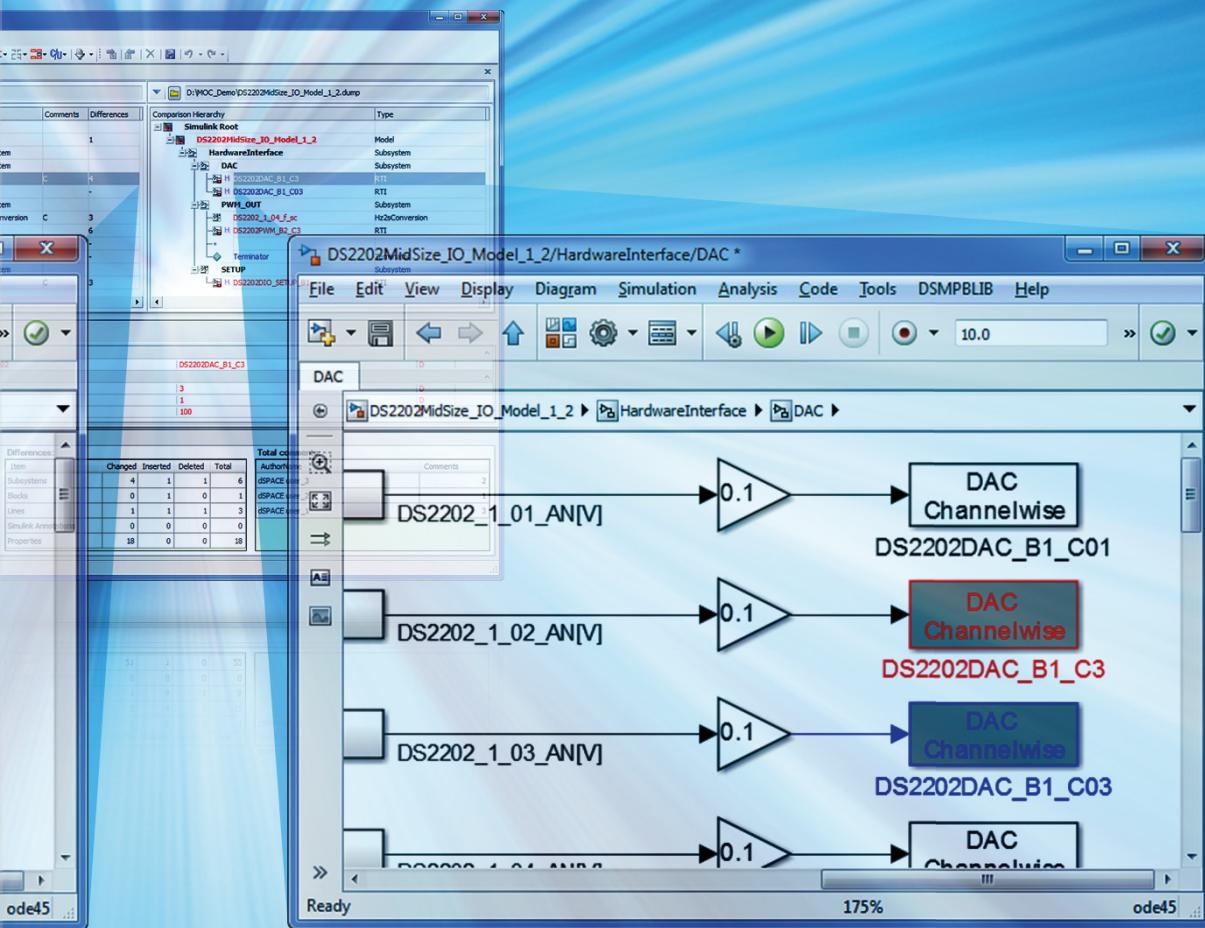


Find and structure all the differences between two model versions quickly and easily: That is what the well-established dSPACE tool Model Compare does. Even large models can be visually compared in minutes, which would be practically impossible without tool support. A very powerful comparison algorithm ensures that all model differences are detected and block correspondences are identified, even if their positions, individual properties or even names have changed. Thanks to the integrated TargetLink support, Model Compare gives a precise overview of the model differences that are relevant to the users of the dSPACE production code generator. Redundant and implementation-specific data, such as data underneath block masks, is hidden by default. This makes comparing models not only effective but also very efficient. A new mechanism in Model Compare 2.6 lets you use this easily readable and sustainable overview also for other Simulink-based model libraries. This means that developers from other areas, such as rapid control prototyping (RCP) and hardware-in-the-loop (HIL) simulation, can take advantage of the useful Model Compare functions even more efficiently than before. >>



Increased transparency for comparing complex function and plant models



Models Side-by-Side

Model-based development often involves different versions of one model. Sometimes it is difficult to keep up. What exactly were the differences between the versions? Model Compare creates clarity – with version 2.6 now for HIL and many other models.

The screenshot displays the Model Compare tool interface. The top section shows two Simulink models being compared: **DS2202MidSize_IO_Model_1_1** (left) and **DS2202MidSize_IO_Model_1_2** (right). The Reference Hierarchy and Comparison Hierarchy panels show the model structure, with differences highlighted in red. The Simulink Properties panel shows the properties of the selected **DS2202DAC_B1_C02** block, with differences in **ChannelNo** (2 vs 3) and **VoltageTermValue** (0 vs 100) highlighted. The Statistics panel shows a summary of differences, and the Comments panel shows a list of changes with author information.

Item	Type	Comments	Differences
Simulink Root	Model		1
HardwareInterface	Subsystem		
DAC	Subsystem		
DS2202DAC_B1_C02	RTI	C	H
PWM_OUT	Subsystem		
DS2202_1_04_f_sc	Hz2sConversion	C	3
DS2202PWM_B1_C03	RTI	C	6
DS2202PWM_B1_C09	RTI	C	-
SETUP	Subsystem		
DS2202DIO_SETUP_B1	RTI	C	3

Item	Type
Simulink Root	Model
HardwareInterface	Subsystem
DAC	Subsystem
DS2202DAC_B1_C3	RTI
PWM_OUT	Subsystem
DS2202_1_04_f_sc	Hz2sConversion
DS2202PWM_B2_C3	RTI
Terminator	Terminator
SETUP	Subsystem
DS2202DIO_SETUP_B1	RTI

Name	DS2202DAC_B1_C02	DS2202DAC_B1_C3	D
ChannelNo	2	3	D
VoltageTermMode	0	1	D
VoltageTermValue	0	100	D

Item	Reference	Comparison
Subsystems	655	654
Blocks	2254	2255
Lines	2537	2536
Simulink Annotations	0	0
Properties	297028	297112

Item	Changed	Inserted	Deleted	Total
Subsystems	4	0	1	5
Blocks	0	1	0	1
Lines	1	0	1	2
Simulink Annotations	0	0	0	0
Properties	18	0	0	18

AuthorName	Comments
dSPACE user_2	2
dSPACE user_2	1
dSPACE user_1	3

The screenshot shows the configuration dialog for **DS2202DAC Channel-wise D/A Conversion**. The **Channel** is set to 2. The **Initial output** Range is (0...100) and the **Initialization value** is 0%. The **Termination output** Range is (0...100) and the **Output on termination** is set to 0%.

The screenshot shows the configuration dialog for **DS2202DAC Channel-wise D/A Conversion**. The **Channel** is set to 3. The **Initial output** Range is (0...100) and the **Initialization value** is 0%. The **Termination output** Range is (0...100) and the **Output on termination** is set to 100%.

- 1 The synchronized hierarchy trees in Model Compare's user interface show all the differences in the models.
- 2 Comparison of RTI blocks. Model Compare detects the settings **3** made in the configuration dialogs and presents them clearly in the Property Inspector **4**.
- 5 The Statistics Viewer of the Tool Window provides a summary of all the discovered differences and of the models themselves.
- 6 Model Compare supports review comments and complex review sessions involving several participants.

Complex models can be compared in minutes, which would be practically impossible without tool support.

All Differences at a Glance

The convenient graphical user interface of Model Compare shows the comparison results in well-structured, color-coded synchronized hierarchy trees (page 60, No. 1). These trees immediately show you which model elements belong together and which elements were changed, added, or deleted. Initialization routines for the models and their environment or tool chains can also be considered. To illustrate differences in particular, they can be highlighted in different colors directly in the Simulink®/TargetLink® models (page 60, No. 2). This makes it easy for you to graphically inspect them in their respective model context. The displays of the model and the hierarchy tree are connected so that you can trace the differences in both directions with just one click.

Comprehensive Filter Options

To make your work as efficient as possible, Model Compare provides many different filter options. For example, you can use different display filters to specify which model elements to show in the central display area (page 60, No. 1): only the changed blocks or signal lines, the added or deleted ones, or a combination of the two. Model Compare also offers several predefined filters that let you focus on a specific kind of difference. For TargetLink models, e.g., you can focus on all functional changes or only on implementation-specific changes. The tool also lets you define your own filters to exclude one or several element properties, or even entire model elements from the comparison. To reuse the defined

filter settings in other projects, you can save them as favorites.

Review and Merge Support

During a model review with Model Compare, developers can add review comments to differences at the block or property level. The tool automatically adds the time stamps and author information to support even complex reviews with several participants (page 60, No. 6). If you want to merge parallel development branches or transfer changes from one model variant to another, you can do this right in the comparison views via user-friendly commands, such as Copy to Right or Copy to Left. Merging is possible at the element and property levels. You can merge individual properties, model elements or entire subsystems. During the merge process, a smart line handling option makes sure that the appropriate connections are copied or deleted as well. All of the merge operations are logged in the Merge Log Viewer, which is part of Model Compare's Tool Window (page 60, No. 5).

Documenting the Comparison Results and Tool Automation

The comparison results can be saved as a PDF, HTML or XML report so you can pass them to other colleagues or archive them. Review comments, filter settings and screenshots of the models can be integrated in the reports so that you can also use them for model reviews. A powerful application programming interface (API) lets you automatically start model comparison or create comparison reports. It also makes it easy to integrate Model Compare into existing tool chains.

Conclusion

With the new add-on mechanism, Model Compare 2.6 now provides an effective and efficient model comparison for models with any Simulink-based block libraries. This means that developers from different areas, such as rapid control prototyping (RCP) or hardware-in-the-loop (HIL) simulation, benefit from the useful Model Compare functions and use the tool to compare their plant or I/O models.

*Limited availability outside Europe and Asia.
Please contact dSPACE.*

New Add-on Mechanism

In addition to pure Simulink, Stateflow and TargetLink models, Model Compare can also compare models with any Simulink-based block library. A new add-on mechanism in Model Compare 2.6 lets you use hook scripts to integrate block-specific knowledge in the comparison of any number of models. Model differences in mask variables or block dialog parameters can therefore be displayed immediately (page 60, No. 4). This means that Model Compare now provides precise and efficient model comparisons, e.g., for RCP or HIL models. This of course includes the Real-Time Interface (RTI) blocksets by dSPACE. ■