

dSPACE Release

New Features and Migration

Release 7.1 – May 2011

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How to Contact dSPACE Support

There are different ways to contact dSPACE Support:

- Visit our Web site at <http://www.dspace.com/goto?support>
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 - Use the dSPACE Installation Manager:
 - On your dSPACE DVD at `\Tools\InstallationManager`
 - Via Start – Programs – dSPACE Installation Manager (after installation of the dSPACE software)
 - At <http://www.dspace.com/goto?im>
You can always find the latest version of the dSPACE Installation Manager here.
- dSPACE recommends that you use the dSPACE Installation Manager to contact dSPACE Support.

Software Updates and Patches

dSPACE strongly recommends that you download and install the most recent patches for your current dSPACE installation. Visit <http://www.dspace.com/goto?support> for software updates and patches.

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About This Document

Contents

This document informs you about the new features of all the dSPACE software products in Release 7.1. It also gives you an overview of software products with no or minor changes. There are instructions on migrating from older dSPACE releases, especially from older product versions, if required.

Overview of dSPACE Release 7.1

Objective Gives you an overview of the new key features in Release 7.1, and also information about unchanged products and general instructions on migrating.

Where to go from here Information in this section

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<i>Product Version Overview</i>	13
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General Enhancements and Changes

Objective	The following new features and changes concern several dSPACE products.
New installation concepts	<p>Since dSPACE Release 7.0, you can install RCP and HIL software, TargetLink, Model Compare, ControlDesk Next Generation and SystemDesk in different folders. This is because the software architecture has been redesigned to reduce dependencies between products. Software components which are used by several dSPACE products are now installed in the <code>Common Files</code> folder in Windows-compliant form, for example Real-Time Testing, DCI Configuration Tool, and ECU Flash Programming Tool. The dSPACE HelpDesk is now also in this folder.</p> <p>To prevent the removal of common software components, they are not listed in the Control Panel's <code>Add or Remove Programs</code> dialog.</p> <p>In the Windows <code>Start</code> menu, you will now find separate entries for each installed product family (RCP&HIL, TargetLink, Model Compare, ControlDesk Next Generation, SystemDesk). There is no longer a folder called <code>dSPACE Tools</code>.</p> <p>The new software architecture allows you to install the same TargetLink version multiple times. You do not have to switch between an activated and a deactivated installation. The settings required for the MATLAB connection can be made quickly in the new Installation Manager (for details, see below).</p> <p>Different installations of Model Compare, ControlDesk Next Generation and SystemDesk also do not need to be switched via the Installation Manager. Only RCP&HIL software still requires the Installation Manager to activate another installation.</p>
New version of dSPACE Installation Manager	<p>The dSPACE Installation Manager as of version 3.0 has enhanced functionality. In addition to its basic functionality (managing dSPACE installations), the tool now provides the following features.</p> <p>Linking MATLAB to dSPACE software The dSPACE Installation Manager provides an easy way to integrate your MATLAB installation into a specific dSPACE installation. All the available MATLAB installations on your host PC and their integration statuses are listed.</p>

Managing licenses The licenses available on your host PC are shown with details such as their license types. In addition, you can access the dSPACE license management tools (dSPACE License Manager and dSPACE Floating Network License Manager).

Getting diagnostic information for contacting dSPACE Support When contacting dSPACE Support, you need to provide the Support team with information about your dSPACE installation and the problems you may have. Some information required by dSPACE Support is extracted automatically by the dSPACE Installation Manager's diagnostic feature. Other information must be collected manually.

After collecting all the information, the diagnostic feature creates an e-mail with an automatically generated ZIP file to send to the responsible Support team in your country.

Restrictions when working with dSPACE HelpDesk

Because of the new installation concepts, dSPACE HelpDesk is installed in release-specific folders in C:\Program Files\Common Files\dSPACE. For example, if you have installed products from dSPACE Release 7.0 and products from dSPACE Release 7.1, there are two dSPACE HelpDesks available.

(RCP and HIL software still accesses dSPACE HelpDesk in %DSPACE_ROOT%\Doc.)

Note following restrictions:

If links to documents do not work, but return the error message *Selection is not associated with any topics.*, the possible reasons are:

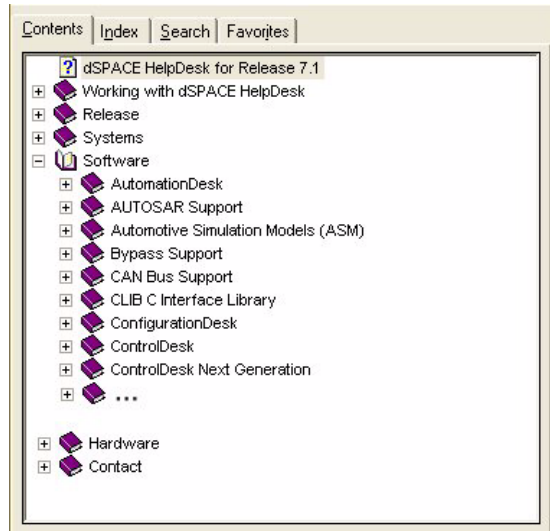
- The documents for the product are not installed anywhere because the product is not included in your license key.
- The documents for the product are installed in another dSPACE HelpDesk. For example, if a product on the current dSPACE Release is unchanged, its user documentation is installed in the dSPACE HelpDesk version that the product setup was created for.

After you install dSPACE Release 7.1, you can find the user documentation for the following products in the dSPACE HelpDesk 7.0:

- TargetLink 3.2
- Model Compare 2.1
- SystemDesk 3.0
- dSPACE CAN API 2.5.1

Restructuring of dSPACE HelpDesk

Because the user documentation is growing continuously, dSPACE HelpDesk has been restructured. There are now at most six top-level entries which list the products in alphabetical order, so the contents tree is easier to use.



Release update

The printed user documentation is not delivered with Release 7.1 if you receive the release as an update for your existing dSPACE release. Use the current online help or PDF files to obtain information about new features, enhancements, and the current safety precautions regarding your products.

Product Version Overview

Objective

The following table is an extract from product version histories showing the product versions of the current release and of the three preceding releases. If a product has new features, there is a link to the brief description in this document.

Product	dSPACE Release			
	6.5	6.6	7.0	7.1
AutomationDesk	3.0	3.1	3.2	3.3 <i>See AutomationDesk on page 23.</i>
Automotive Simulation Models	2.2	2.3	2.4	3.0 <i>See Automotive Simulation Models (ASM) on page 27.</i>
CalDesk ¹⁾	3.0	3.0.1	–	–
ConfigurationDesk	3.0.1	3.0.3	3.0.4	4.0 <i>See ConfigurationDesk on page 51.</i>
ControlDesk	3.5	3.6	3.7	3.7.1 <i>See ControlDesk on page 55.</i>
ControlDesk Next Generation ¹⁾	-	-	4.0	4.1 <i>See ControlDesk Next Generation on page 57.</i>
DCI Configuration Tool	2.1.4	2.2	2.3	2.4 <i>See DCI Configuration Tool on page 73.</i>
dSPACE Data Dictionary	2.0	2.0	3.2	3.2
dSPACE CAN API	2.5	2.5.1	2.5.1	2.5.1
dSPACE ECU Flash Programming Tool	2.1	2.1.2	2.2	2.2.1 ²⁾ <i>See dSPACE ECU Flash Programming Tool on page 75.</i>
dSPACE FlexRay Configuration Package	2.1.1	2.2.1	2.4	2.5 <i>See dSPACE FlexRay Configuration Package on page 77.</i>
dSPACE Target for Offline Simulation	1.1	1.1	1.2	1.2

Product	dSPACE Release			
	6.5	6.6	7.0	7.1
Model Compare	2.0.2	2.0.2	2.1	2.1
ModelDesk	2.2.1	2.2.1	2.3	2.4 <i>See ModelDesk on page 81.</i>
MotionDesk	2.1.4	2.1.5	2.1.6	2.2 <i>See MotionDesk on page 83.</i>
MotionDesk Blockset	2.0	2.0.1	2.0.2	2.1 <i>See MotionDesk on page 83.</i>
Real-Time Testing	1.6	1.7	1.7.1	1.8 <i>See Real-Time Testing on page 87.</i>
RTI	6.4	6.5	6.6	6.7 <i>See RTI/RTI-MP and RTLib on page 89.</i>
RTI-MP	6.0	6.1	6.2	6.3 <i>See RTI/RTI-MP and RTLib on page 89.</i>
RTI AUTOSAR Package	1.1	1.1.1	1.2	1.2
RTI Bypass Blockset	2.6	2.7.1	2.7.2	2.7.3 <i>See RTI Bypass Blockset on page 93.</i>
RTI CAN Blockset	2.6.8	2.6.8	2.7	2.7.1
RTI CAN MultiMessage Blockset	2.4.1	2.5.1	2.5.2	2.5.3 <i>See RTI CAN MultiMessage Blockset on page 95.</i>
RTI LIN MultiMessage Blockset	1.7.1	1.7.1	1.8	1.8.1 <i>See RTI LIN MultiMessage Blockset on page 99.</i>
RTI RapidPro Control Unit Blockset	1.9.1	1.9.1	1.9.1	1.10 <i>See RTI RapidPro Control Unit Blockset on page 103.</i>
RTI FPGA Programming Blockset	1.1	1.2	2.0	2.1 <i>See RTI FPGA Programming Blockset on page 107.</i>

Product	dSPACE Release			
	6.5	6.6	7.0	7.1
RTI Ethernet (UDP) Blockset	-	-	1.0	1.1 <i>See RTI Ethernet (UDP) Blockset on page 105.</i>
SystemDesk	2.1	2.1	3.0	3.0 ³⁾
TargetLink	3.1	3.1	3.2	3.2
Variable Editor	1.3	1.3	1.4	1.5 <i>See General Enhancements on page 72.</i>

¹⁾ ControlDesk Next Generation is the successor to ControlDesk and CalDesk.

²⁾ Up to dSPACE Release 6.6, the dSPACE ECU Flash Programming Tool was part of the CalDesk product setup. As of dSPACE Release 7.0, there is a separate setup for the dSPACE ECU Flash Programming Tool.

³⁾ You are recommended to install the newest patch for SystemDesk 3.0 immediately after installing SystemDesk 3.0. Download and install the patch from <http://www.dspace.com/goto?patchesd>.

If you have not updated regularly, refer to the *New Features and Migration* documents for the dSPACE releases listed above for information about the new features and necessary migration steps.

New Product Key Features

Objective

This is an overview of each product's new key features. For detailed information, refer to the product-specific sections.

Information in this topic

AutomationDesk on page 16
Automotive Simulation Models (ASM) on page 16
ConfigurationDesk on page 17
ControlDesk on page 17
ControlDesk Next Generation on page 17
DCI Configuration Tool on page 18
dSPACE ECU Flash Programming Tool on page 18
dSPACE FlexRay Configuration Package on page 18
ModelDesk on page 18
MotionDesk on page 19
Real-Time Testing on page 19
RTI, RTI-MP and RTLib on page 19
RTI Bypass Blockset on page 19
RTI CAN MultiMessage Blockset on page 19
RTI LIN MultiMessage Blockset on page 19
RTI Ethernet (UDP) Blockset on page 20
RTI FPGA Programming Blockset on page 20
Variable Editor on page 20

AutomationDesk

The new key features of AutomationDesk are:

- New Framework Builder library
- Support of SCALEXIO systems
- Further enhancements

For details on the new features, refer to *New Features of AutomationDesk 3.3* on page 23.

Automotive Simulation Models (ASM)

The ASM blocksets have been extended:

- The ASM Vehicle Dynamics Blockset supports front wheel, front engine and front wheel, front engine with 4WD extension drivetrains.
- The ASM Vehicle Dynamics Blockset, ASM Truck Blockset, and ASM Trailer Blockset supports an ancillary spring in addition to the existing main spring.
- The ASM Electric Components Blockset supports a three-phase power converter and a three phase half-bridge converter.

For details on the extensions, refer to *Automotive Simulation Models (ASM)* on page 27.

ConfigurationDesk

ConfigurationDesk comes with the new ConfigurationDesk – Implementation Version. For details on its features, refer to *ConfigurationDesk – Implementation* on page 51.

ConfigurationDesk – Configuration Version provides no new features.

ControlDesk

The new key features of ControlDesk are:

- Support of MicroAutoBox II improved
- ControlDesk's Bus Navigator supports the monitoring and logging of LIN bus events and status frames.

For details on the new features, refer to *New Features of ControlDesk 3.7.1* on page 55.

ControlDesk Next Generation

The new key features of ControlDesk Next Generation (ControlDesk 4.1) are:

- Support of SCALEXIO systems
- Support of the DCI-GSI2
- Extended support for MicroAutoBox II (hot plugging; USB flight recorder data handling)
- New measurement and recording features (multi-raster measurements; creation of new rasters on dSPACE platforms without recompile; SCALEXIO systems: definition of complex trigger conditions based on model variables, real-time stop triggers)
- New instrument libraries (Gauges Automotive library, LEDs Automotive, Measurement)
- Parameter values can be changed directly in the Data Set Manager.
- Variables can be connected to the individual elements (x-, y-, and data axis, and working point) of the Table Editor.
- Versions 4.0 and 4.1 of ControlDesk Next Generation can be used in parallel without having to switch the installation.
- License-free: ControlDesk Next Generation – *Loader Version* (for registering dSPACE hardware and handling real-time applications)

For details on the new features, refer to *New Features of ControlDesk Next Generation (ControlDesk 4.1)* on page 58.

DCI Configuration Tool

The new key feature of the DCI Configuration Tool is:

- Configuration settings for ECU calibration via overlay units

For details on the new features, refer to *New Features of the DCI Configuration Tool 2.4* on page 73.

dSPACE ECU Flash Programming Tool

The new key features of the dSPACE ECU Flash Programming Tool are:

- Support of the DCI-GSI2
- Enhanced Seed&Key DLL file handling

For details on the new features, refer to *New Features of the dSPACE ECU Flash Programming Tool 2.2.1* on page 75.

dSPACE FlexRay Configuration Package

The new key features of the dSPACE FlexRay Configuration Package are:

- Support of SCALEXIO systems
- New FlexRay Configuration Blockset
- Enhancements to the dSPACE FlexRay Configuration Tool:
 - Support of AUTOSAR System Template
- Enhancements to the RTI FlexRay Configuration Blockset:
 - New RTIFLEXRAYCONFIG Cycle Counter Read block
- Enhancements to the FlexRay Replay Script Generator:
 - Support of relative paths for MAT files, TRC files and replay scripts

For details on the new features, refer to *New Features of dSPACE FlexRay Configuration Package 2.5* on page 77.

ModelDesk

The new key features of ModelDesk are:

- Support of SCALEXIO systems
- Automation of the Traffic Editor

For details on the new features, refer to *New Features of ModelDesk 2.4* on page 81.

MotionDesk	<p>The new key features of MotionDesk are:</p> <ul style="list-style-type: none">■ Support of SCALEXIO systems■ New framework (adapted to other dSPACE tools)■ Using projects and experiments for handling the visualization task <p>For details on the new features, refer to <i>New Features of MotionDesk 2.2</i> on page 83.</p>
Real-Time Testing	<p>The new key features of Real-Time Testing are:</p> <ul style="list-style-type: none">■ Support of SCALEXIO systems■ Static code analysis <p>For details on the new features, refer to <i>New Features of Real-Time Testing 1.8</i> on page 87.</p>
RTI, RTI-MP and RTLib	<p>The new key features of RTI, RTI-MP and RTLib are:</p> <ul style="list-style-type: none">■ Support of the new I/O features of MicroAutoBox II■ Support of the DS1552 Multi-I/O Module used with MicroAutoBox II■ TRC file enhancements■ Support of MATLAB R2011a <p>For details on the new features, refer to <i>New Features of RTI/RTI-MP and RTLib</i> on page 89.</p>
RTI Bypass Blockset	<p>The new key feature of the RTI Bypass Blockset is:</p> <ul style="list-style-type: none">■ Support of bypassing on ECUs equipped with a DCI-GSI2 <p>For details on the new feature, refer to <i>New Features of the RTI Bypass Blockset 2.7.3</i> on page 93.</p>
RTI CAN MultiMessage Blockset	<p>The new key feature of the RTI CAN MultiMessage Blockset is:</p> <ul style="list-style-type: none">■ Support of SCALEXIO systems <p>For details on the new feature, refer to <i>New Features of the RTI CAN MultiMessage Blockset 2.5.3</i> on page 95.</p>
RTI LIN MultiMessage Blockset	<p>The new key feature of the RTI LIN MultiMessage Blockset is:</p> <ul style="list-style-type: none">■ Support of SCALEXIO systems <p>For details on the new feature, refer to <i>New Features of the RTI LIN MultiMessage Blockset 1.8.1</i> on page 99.</p>

RTI Ethernet (UDP) Blockset

The new key feature of the RTI Ethernet (UDP) Blockset is:

- Support of dSPACE modular systems based on DS1005 or DS1006

For details on the new feature, refer to *New Features of the RTI Ethernet (UDP) Blockset 1.1* on page 105.

RTI FPGA Programming Blockset

The new key features of the RTI FPGA Programming Blockset are:

- Extended Xilinx® software support
- Support of MicroAutoBox II with DS1552 Multi-I/O Module
- Support of DS5203 FPGA Board (LX50)

For details on the new features, refer to *New Features of the RTI FPGA Programming Blockset 2.1* on page 107.

Variable Editor

The new key feature of the Variable Editor is:

- Handling of structured notation of MAP file symbols

For details on the new features, refer to *New Features of the Variable Editor 1.5* on page 72.

Migrating to dSPACE Release 7.1

Objective	After you install Release 7.1, some additional steps may be necessary.
Migrating from dSPACE Release 7.0	There are no general migration steps to be done. Product-specific migration steps are usually done automatically by the products. For exceptions, refer to the product-specific migration descriptions.
Migrating from dSPACE Release 6.6 or earlier	To migrate from dSPACE Release 6.6 or earlier to Release 7.1, you also have to perform the migration steps of the intervening dSPACE Releases. All of the required migration steps can be done with Release 7.1 installed.
Example	<p>For example, if you want to migrate from dSPACE Release 6.4 to Release 7.1, you have to perform the migration steps described in:</p> <ol style="list-style-type: none"> 1. New Features and Migration of dSPACE Release 6.5 2. New Features and Migration of dSPACE Release 6.6 3. New Features and Migration of dSPACE Release 7.0 4. Finally, the migration steps described above.
Previous release documents	<p>The New Features and Migration documents for previous releases are available via Internet and on the dSPACE DVD:</p> <ul style="list-style-type: none"> ■ Download them from http://www.dspace.com/goto?migration. ■ Read them from the dSPACE DVD (see the \Doc\Print\PreviousReleases folder). The PDF files are called NewFeaturesAndMigrationxx.pdf, where xx stands for the release number.



Until dSPACE Release 6.2, the new features and migration steps for RCP & HIL software, CalDesk and TargetLink were described in separate documents.

AutomationDesk

Where to go from here


Information in this section

<i>New Features of AutomationDesk 3.3</i>	23
<i>Migrating to AutomationDesk 3.3</i>	25

New Features of AutomationDesk 3.3

New automation libraries

Framework Builder library AutomationDesk provides the Framework Builder library, which allows you to build custom frameworks. While the framework itself defines the structure of the program workflow, there are special blocks which you can replace by use-case-specific functional blocks without losing the library link.

For further information, refer to *Framework Builder* ( *AutomationDesk Library Reference*).

Enhancements to the libraries

The Sleep block in the Main library can now be stopped during execution. You do not have to wait for the specified time to interrupt the block's execution.

For further information, refer to *Sleep* ( *AutomationDesk Library Reference*).

Enhancements to the COM API

The AutomationDesk COM API provides the following enhancements:

- If you create the Application object, for example, by calling the Python dispatch method, AutomationDesk now starts. Formerly, it was necessary to start AutomationDesk manually before creating the AutomationDesk application object.
- The new Projects2 interface allows you to suppress the confirmation prompt when importing or loading projects created with an older AutomationDesk version.

For further information, refer to *AutomationDesk API Reference*.

Enhancements to project handling

The following changes enhance AutomationDesk's usability:

- AutomationDesk supports the SCALEXIO system.
- There is a new demo providing advanced application examples in combination with different libraries. You find it in `%DSPACE_ROOT%\Demos\AutomationDesk\AdvancedDemos`.
- There is a new document describing the handling of the VirtualCOM feature introduced with AutomationDesk 3.2. The VirtualCOM feature facilitates the handling of COM objects in AutomationDesk. For further information, refer to `AppNote_UsingVirtualCOMInAutomationDesk.pdf`
- You can now open an AutomationDesk project via hyperlink and optionally navigate to a specific element. For example, `automationdesk:D:\AutomationDesk\HIL API\TurnSignal.adp.Folder.Sequence` opens the TurnSignal project and navigates to the Sequence element.

Migrating to AutomationDesk 3.3

General migration aspects

If you open an AutomationDesk project with a newer AutomationDesk version, the software automatically detects whether migration is necessary. If you click OK in the message dialog, the migration is started. If you also want to continue working with the old project, you should not overwrite it with the migrated project, because the versions are not downward compatible. Save the migrated project to another path or name.



It is strongly recommended to make backup copies of your projects and custom libraries.

If you are using a version control system, there are some preconditions to be fulfilled for successful migration, refer to *Migrating projects and custom libraries under version control* on page 26.

Before you open an older project with the new AutomationDesk version, ensure the following preconditions are fulfilled:

- You must create backups of the project and of the linked custom libraries.
- AutomationDesk must be running properly. There must not be any error messages displayed in the Log Viewer.
- The built-in libraries, required custom libraries and other packages must be correctly loaded.

You need not do any manual migration, except for the following point.

Migrating projects and custom libraries containing HIL API Python scripts

With dSPACE Release 7.1 (AutomationDesk 3.3), there were some changes to make the dSPACE HIL API implementation compliant with the ASAM standard.

- Namespaces changed

While AutomationDesk projects and custom libraries containing blocks and data objects of the HIL API library are automatically migrated, you must manually adapt scripts used in `Exec` and `ExecFile` automation blocks, for example, code for checking data types.

- ConfigurationDict for MAPort changed

The data types of the `SystemType` and `ConnectionType` attributes were changed from integer to string. A `ConfigurationDict` data object specified with AutomationDesk 3.2 or earlier will lead to an error message in AutomationDesk 3.3 or later.

For further information, refer to *Using dSPACE HIL API Python Implementation* ( *dSPACE HIL API Python Implementation - Notes*).


Migrating projects and custom libraries under version control

Before you update your AutomationDesk version, you must check in all projects and custom libraries. If you are using the `AutomationDesk element archive` project type, you must recursively check in all the elements of the projects and custom libraries (set the `Include subelements` option in the Properties dialog).

Then delete all your working copies of AutomationDesk projects and custom libraries from the drive used.

After the software update, check out and open the projects and custom libraries so that they can be automatically migrated and saved. If you are using the `AutomationDesk element archive` project type, you must recursively check out all the elements of the projects and custom libraries.

When you check them in again, you have a consistent revision state in your repository.

For further information, refer to *How to Migrate Projects Under Version Control* ( *AutomationDesk Guide*).


Automotive Simulation Models (ASM)

Where to go from here

Information in this section

<i>ASM Base InCylinder Blockset</i>	28
<i>ASM Brake Hydraulics Blockset</i>	29
<i>ASM Diesel Exhaust Blockset</i>	31
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Information in other sections

Migrating ASM Models ( *ASM User Guide*)
Provides general information on the migration process of ASM models.

ASM Base InCylinder Blockset

Where to go from here

Information in this section

<i>New Features of ASM Base InCylinder Blockset 1.3</i>	28
<i>Migrating to ASM Base InCylinder Blockset 1.3</i>	28

New Features of ASM Base InCylinder Blockset 1.3

INCYLINDER_SETUP block

Air paths with multiple exhaust gas recirculation (EGR) attached to one exhaust manifold are supported.

The `INCYLINDER_SETUP` block was extended to provide the necessary information for the new `MAP_EGR2EXHSYS_SUM` and `MAP_EXHSYS2EGR_SUM` blocks.

You can now simulate engines with several EGR valves in parallel.

Migrating to ASM Base InCylinder Blockset 1.3

INCYLINDER_SETUP

The new parameters required to parameterize the connections to `MAP_EGR2EXHSYS_SUM` and `MAP_EXHSYS2EGR_SUM` blocks are set to default values.

To use this new feature, the parameterization and the model have to be synchronized manually with the current demo model.

ASM Brake Hydraulics Blockset

Where to go from here

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<i>Migrating to ASM Brake Hydraulics Blockset 1.3</i>	30

New Features of ASM Brake Hydraulics Blockset 1.3

PRE_CHARGE_VALVE_<n>_TABLE blocks

The new *Sw_FlowDirection_TableValve* mask parameter was added to switch between the valve flow directions one-way and two-way.

The new *Sw_Mirror_TableValve* mask parameter was added. This is a switch parameter to enable or disable the mirror of the table for negative pressure difference.

CHANGE_OVER_VALVE_<n>_TABLE blocks

The new *Sw_FlowDirection_TableValve* mask parameter was added to switch between the valve flow directions one-way and two-way.

The new *Sw_Mirror_TableValve* mask parameter was added. This is a switch parameter to enable or disable the mirror of the table for negative pressure difference.

INLET_VALVE_<xy>_TABLE blocks

The new *Sw_FlowDirection_TableValve* mask parameter was added to switch between the valve flow directions one-way and two-way.

The new *Sw_Mirror_TableValve* mask parameter was added. This is a switch parameter to enable or disable the mirror of the table for negative pressure difference.

OUTLET_VALVE_<xy>_TABLE blocks

The new *Sw_FlowDirection_TableValve* mask parameter was added to switch between the valve flow directions one-way and two-way.

The new *Sw_Mirror_TableValve* mask parameter was added. This is a switch parameter to enable or disable the mirror of the table for negative pressure difference.

Migrating to ASM Brake Hydraulics Blockset 1.3

**PRE_CHARGE_VALVE_
<n>_TABLE blocks**

During migration the default values of the new `Sw_FlowDirection_TableValve` and `Sw_Mirror_TableValve` parameters are set so that the simulation results match former results.

No additional migration steps are therefore required.

**CHANGE_OVER_VALVE_
<n>_TABLE blocks**

During migration the default values of the new `Sw_FlowDirection_TableValve` and `Sw_Mirror_TableValve` parameters are set so that the simulation results match former results.

No additional migration steps are therefore required.

**INLET_VALVE_<xy>_TABLE
blocks**

During migration the default values of the new `Sw_FlowDirection_TableValve` and `Sw_Mirror_TableValve` parameters are set so that the simulation results match former results.

No additional migration steps are therefore required.

**OUTLET_VALVE_<xy>_
TABLE blocks**

During migration the default values of the new `Sw_FlowDirection_TableValve` and `Sw_Mirror_TableValve` parameters are set so that the simulation results match former results.

No additional migration steps are therefore required.

ASM Diesel Exhaust Blockset

Where to go from here

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<i>Migrating to ASM Diesel Exhaust Blockset 1.2</i>	31

ASM Diesel Exhaust Blockset 1.2

ModelDesk

The parameterization of the ASM Diesel Exhaust Blockset is now supported by ModelDesk. ModelDesk provides a graphical user interface to configure models as well as modify, save and download parameters, etc. Parameters can also be exported to MATLAB ini files.

Migrating to ASM Diesel Exhaust Blockset 1.2

ADBLUE_PUMP block

To make the implementation ModelDesk-compliant, replace the gain for "1/J_Motor" with Constant and Product blocks. No functional changes are made.

PUMP_HOSE block

To make the implementation ModelDesk-compliant, replace the gain "A*k" for heat transfer in energy balance and gain "1/Const_m_Damper" in mass balance/damping system with Constant and Product blocks. No functional changes are made.

AIR_REGULATION_VALVE_HOSE block

To make the implementation ModelDesk-compliant, replace gain "A*k" for heat transfer in energy balance with Constant and Product blocks. No functional changes are made.

MIXING_CHAMBER block

To make the implementation ModelDesk-compliant, replace gain "A*k" for heat transfer in energy balance with Constant and Product blocks. No functional changes are made.

THROTTLE_HOSE block

To make the implementation ModelDesk-compliant, replace gain "A*k" for heat transfer in energy balance with Constant and Product blocks. No functional changes are made.

RAW_EXHAUST_COMPOSITION block

The input connections of the Map_m_Soot_DPF_set[g] look-up table has been corrected to engine speed and injection quantity. Previously, both inputs were connected to engine speed by mistake.

ASM Drivetrain Basic Blockset

Migrating to ASM Drivetrain Basic Blockset 1.5

TORQUE_CONTROLLER block

The torque controller now has its own inverted engine map instead of using the one from the driver, and the implementation has been redesigned. These changes are automatically migrated. The link is changed to the former version during migration. You can also copy the new block manually, in which case you must also adapt the parameterization project and the controller parameter.

LONGITUDINAL_CONTROL block

This block has been synchronized with the environment. The following mask parameters have been removed:

- Tire radius
- Rolling resistance
- Air resistance
- Vehicle mass
- Differential ratio

These signals became input ports instead.

The mask parameters for the following parameters are now shared with the `DRIVING_RESISTANCE` block.

- Gravity constant
- Vehicle cross section
- Air density

The new block now has independent parameters.

The calculation of the feedforward signal for the brake pedal has been moved to a separate `BRAKE_HYDRAULICS_VARIANT` block.

Migration is automatic.

DIFFERENTIAL block

The differential ratio has been added to the `ASMSignalBus`.

DRIVING_RESISTANCE block

The "^" sign has been removed in the units of the mask descriptions and block name.

The following signals have been added to the `ASMSignalBus`:

- `r_Tire[m]`

- F_Brake_Max[N]
- rho_Air[kg/m³]
- Vehicle_CrossSection[m²]
- Cw_Vehicle[]
- Coef_RollingRes[]
- m_Vehicle[kg]

ASM Electric Components Blockset

Where to go from here

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<i>Migrating to ASM Electric Components Blockset 2.1</i>	35

New Features of ASM Electric Components Blockset 2.1

THREE_LEVEL_THREE_PHASE_INVERTER block

The new **THREE_LEVEL_THREE_PHASE_INVERTER** block implements a three-phase power converter that consists of up to twelve power switches connected in a bridge configuration.

THREE_LEVEL_HALF_BRIDGE_INVERTER block

The new **THREE_LEVEL_HALF_BRIDGE_INVERTER** block is used to convert DC voltage to AC voltage of different magnitude and frequency. It can be built using different power electronics devices.

Migrating to ASM Electric Components Blockset 2.1

THREE_PHASE_INVERTER block

Zero current detection enlarged.

HALF_BRIDGE_INVERTER block

Zero current detection enlarged.

PERMANENT_MAGNET_SYNCHRONOUS_MACHINE_D_Q block

Interchanged signals L_d and L_q corrected.

ASM Engine Diesel Blockset

Migrating to ASM Engine Diesel Blockset 1.4.1

COMMON_DIESEL_PARAMETERS block	The block and signal names for Const_num_Cyl are now the same. No functional changes were made.
EXHAUST_MANIFOLD block	The block name Const_k_InMan[???] was changed to Const_k_InMan[Wl(m2K)] to correct the unit. Data connections for this variable in ControlDesk might be corrupted after updating this block.
COMBUSTION_TORQUE_CI block	The replacement value for zero injection mass was changed from 0 to 99. This means that the lambda value is not zero if the injected fuel mass is zero, for example, in the event of a fuel cut-off.
SOFT_ECU_DIESEL block	The ground block with constant zero was replaced to avoid problems with signal dimensions which cannot be evaluated by Simulink.

ASM Engine Gasoline Basic Blockset

Migrating to ASM Engine Gasoline Basic Blockset 1.3.6

COMMON_GASOLINE_
PARAMETERS block

The block and signal names for Const_num_Cyl are now the same. No functional changes were made.

COMBUSTION_TORQUE_SI
block

The replacement value for zero injection mass was changed from 0 to 99. This means that the lambda value is not zero if the injected fuel mass is zero, for example, in the event of a fuel cut-off.

ASM Engine Gasoline Blockset

Migrating to ASM Engine Gasoline Blockset 2.2.1

COMMON_GASOLINE_PARAMETERS block The block and signal names for the label Const_num_Cyl are now the same. No functional changes were made.

EXHAUST_MANIFOLD block The block name Const_k_InMan[???] was changed to Const_k_InMan[Wl(m2K)] to correct the unit. Data connections for this variable in ControlDesk might be corrupted after updating this block.

COMBUSTION_MODE_SWITCH block A lambda calculation which includes injection mass flows (stratified and homogenous) was added. This means that the lambda value is not zero if the injected fuel mass is zero, for example, in the event of a fuel cut-off.

Related topics

Basics

- [Migrating ASM Models](#) ( *ASM User Guide*)

ASM Environment Blockset

Where to go from here

Information in this section

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<i>Migrating to ASM Environment Blockset 1.6</i>	39

New Features of ASM Environment Blockset 1.6

CONTROLLER block

The feedforward part of the controller now also contains a power-based approach. This calculation avoids steps in the accelerator pedal after gear changes.

ROAD block

The ASM road now provides user signals allowing important information about GPS coordinates or others to be handled.

Phase-shifted bumps can be defined by an initial distance offset.

Migrating to ASM Environment Blockset 1.6

CONTROLLER block

The new `Sw_FeedForward_Mode` parameter was added.

DRIVETRAIN_VARIANT block

The `i_FinalDrive[]` output signal of this block is now provided as a signal line from the drivetrain model. The old `DRIVETRAIN_VARIANT` block is obsolete.

During migration, the old block is emptied and the `i_FinalDrive[]` signal is provided via a from/goto connection.

In multiprocessor systems in which the environment and drivetrain are separate, the `i_FinalDrive[]` signal must be provided via signal line from one processor to the other.

ROAD block

The matrix size of the road block parameter was changed. During migration, the road MAT files in the `<ProjectRoot>\Simulation.current\IniFiles\Road` folder are migrated to the new format.

To migrate further road MAT files, type `asm_migrate_road` in the MATLAB command window.

The new `UserSignals` outport was added.

ASM Traffic Blockset

Migrating to ASM Traffic Blockset 1.1.5

TRAFFIC_SCHEDULER block To avoid skipped segments, a minimum segment length of 2 samples was implemented.

ASM Trailer Blockset

Where to go from here

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<i>New Blockset: ASM Trailer Operator 1.0</i>	43
<i>Migrating to ASM Trailer Operator Blockset 1.0</i>	44

New Features of ASM Trailer Blockset 1.4

SUSFORCES Ancillary Spring
block

An ancillary spring can now be used in addition to the main spring. The ancillary spring accounts for additional stiffnesses of real suspension joints, which are not made of ideal revolute joints but contain elastic parts. This block calculates the ancillary spring forces as functions of the ancillary spring displacements.

SUSKIN Ancillary Spring
block

An ancillary spring can now be used in addition to the main spring. The ancillary spring accounts for additional stiffnesses of real suspension joints, which are not made of ideal revolute joints but contain elastic parts. This block calculates the ancillary spring displacements as functions of the wheel lift and/or steering rod displacement.

Migrating to ASM Trailer Blockset 1.4

TIRE_MODEL_MAGIC_
FORMULA_TRAILER block

The sign of the lateral slip signal output in ASMSignalBus for the tire on the right side was corrected.

TIRE_MODEL_TMEASY
block

- The signal label of front right tire was changed from v_Circumf_dyn to v_Circumf_Dyn to be compatible with the operator version.
- The signal label of front left tire was changed from F_FL_Tire[N] to F_FL_Tire_CoorSys_CP[N] to be compatible with the operator version.

BRAKE_CIRCUIT_BASIC_TRAILER block	The initial condition of the brake pressure was set to 1 bar.
SUSPENSION_FORCE_KINEMATICS block	New inports for an ancillary spring were added.
SUSCOMP_TRAILER block	The behavior of the compliance table for the right side of the suspension was mirrored for the left side.
All SWITCH blocks	The signal data type of all switches is now double instead of boolean.

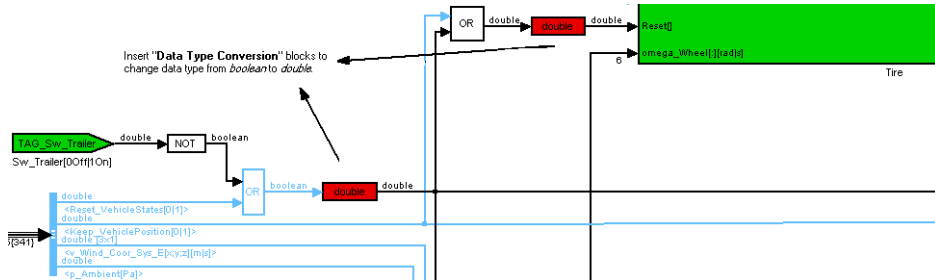
New Blockset: ASM Trailer Operator 1.0

Objective	The ASM Trailer Operator Blockset is the operator version of the ASM Trailer Blockset.
Operator Version	The operator version has been designed for Simulink simulation only. The operator model offers similar functionality, and the same simulation quality and parameterization options, as the standard simulation package. The operator version is compatible with the standard model (developer version) and can be parameterized in ModelDesk. The basic difference is in how the library components are implemented: The components are encapsulated in S-functions. The blocks are accessible in the model so that the input and output behavior can be studied and parameters can be changed. Real-time code cannot be generated from operator models.

Migrating to ASM Trailer Operator Blockset 1.0

Objective

If an ASM Trailer model is migrated from the developer version to the operator version, two additional data type conversion blocks must be inserted after OR blocks in the Trailer subsystem to change data types from boolean to double, see the following illustration.



ASM Truck Blockset

Where to go from here

Information in this section

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<i>Migrating to ASM Truck Blockset 1.3</i>	45
<i>New Blockset: ASM Truck Operator 1.0</i>	46

New Features of ASM Truck Blockset 1.3

SUSFORCES_ANC_SPRING block

An ancillary spring can now be used in addition to the main spring. The ancillary spring accounts for additional stiffnesses of real suspension joints, which are not made of ideal revolute joints but contain elastic parts. This block calculates the ancillary spring forces as functions of the ancillary spring displacements.

SUSKIN_ANC_SPRING block

An ancillary spring can now be used in addition to the main spring. The ancillary spring accounts for additional stiffnesses of real suspension joints, which are not made of ideal revolute joints but contain elastic parts. This block calculates the ancillary spring displacements as functions of the wheel lift and/or steering rod displacement.

Migrating to ASM Truck Blockset 1.3

TIRE_MODEL_MAGIC_FORMULA block

The sign of the lateral slip signal output in ASMSignalBus for the tire on the right side was corrected.

TIRE_MODEL_TMEASY block

The signal label of front right tire was changed from v_Circumf_dyn to v_Circumf_Dyn to be compatible to the operator version.

SUSPENSION_FORCE_KINEMATICS block

New inports for an ancillary spring was added.

SUSPENSION_COMPLIANCE block

The behavior of the compliance table for the right side of the suspension was mirrored for the left side.

All SWITCH blocks The signal data type of all switches is now double instead of boolean.

New Blockset: ASM Truck Operator 1.0

Objective The ASM Truck Operator Blockset is the operator version of the ASM Truck Blockset.

Operator Version The operator version has been designed for Simulink simulation only. The operator model offers similar functionality, and the same simulation quality and parameterization options, as the standard simulation package. The operator version is compatible with the standard model (developer version) and can be parameterized in ModelDesk. The basic difference is in how the library components are implemented: The components are encapsulated in S-functions. The blocks are accessible in the model so that the input and output behavior can be studied and parameters can be changed. Real-time code cannot be generated from operator models.

ASM Turbocharger Blockset

Migrating to ASM Turbocharger Blockset 1.5.1

TURBINE block	The label of a constant block was corrected. No functional changes were made.
TURBINE_SAEJ922 block	The label of a constant block was corrected. No functional changes were made.

ASM Vehicle Dynamics Blockset

Where to go from here

Information in this section

<i>New Features of ASM Vehicle Dynamics Blockset 2.0</i>	48
<i>Migrating to ASM Vehicle Dynamics Blockset 2.0</i>	49

New Features of ASM Vehicle Dynamics Blockset 2.0

New drivetrain variants for Front Wheel Front Engine Vehicle with Optional 4WD Extension

In addition to the existing drivetrain variants All Wheel Drive, Front Wheel Drive and Rear Wheel Drive, the ASM Vehicle Dynamics model now also supports front wheel front engine and front wheel front engine with 4WD extension drivetrains. To use the new variant, you can replace the subsystem of the existing drivetrain variant by a prepared demo subsystem.

For details of the variants and how to switch between them, refer to the *ASM Vehicle Dynamics Model Description*.

The following blocks have been added to support the new variants:

- CLUTCH_4WD
- TRANSFER_GEARBOX
- SHAFT_TGCL4WD
- STABILIZATION_FF_FF4WD

For details of these blocks, refer to the *ASM Vehicle Dynamics Reference*.

SUSFORCES_ANC_SPRING block

An ancillary spring can now be used in addition to the main spring. The ancillary spring accounts for additional stiffnesses of real suspension joints, which are not made of ideal revolute joints but contain elastic parts. This block calculates the ancillary spring forces as functions of the ancillary spring displacements.

SUSKIN_ANC_SPRING block

An ancillary spring can now be used in addition to the main spring. The ancillary spring accounts for additional stiffnesses of real suspension joints, which are not made of ideal revolute joints but contain elastic parts. This block calculates the ancillary spring displacements as functions of the wheel lift and/or steering rod displacement.

Migrating to ASM Vehicle Dynamics Blockset 2.0

TIRE_MODEL_MAGIC_FORMULA block	The sign of the "lateral slip" signal output in ASMSignalBus for the tire on the right side was corrected.
TIRE_MODEL_TMEASY block	The signal label of the front right tire was changed from v_Circumf_dyn to v_Circumf_Dyn to be compatible with the operator version.
STEERING block	The unit of the steering angle was corrected from [rad] to [deg].
STEERING_VARIABLE_RATIO block	The unit of the steering angle was corrected from [rad] to [deg].
WHEEL_SPEED	A Switch block to reset the integrator of the rotation angle calculation has been added.
SUSPENSION_FORCE_KINEMATICS block	New inports for an ancillary spring have been added.
SUSPENSION_COMPLIANCE block	The behavior of the compliance table for the right side of the suspension was mirrored for the left side.
STARTER block	The signal label for starter inertia was corrected from Signal1 to Inertia_Starter[kgm2].
CENTRAL_DIFFERENTIAL block	<p>New input ports for an external torque introduced on the cage (Trq_Ext_Cage[Nm]) and an additional inertia of parts connected to the cage (Inertia_Ext_Cage[kgm2]) were added. The main reduction ratio and the torque distribution were added to the ASMSignalBus.</p> <p>The bus to the stabilization now contains the inertia for each separate part and for all ratios.</p>
FRONT_DIFFERENTIAL, REAR_DIFFERENTIAL block	<p>New input ports for an external torque introduced on the cage (Trq_Ext_Cage[Nm]), an additional inertia of parts connected to the cage (Inertia_Ext_Cage[kgm2]) and the parking pawl(Ctrl_Parking_Pawl[011]) were added. The main reduction ratio and the torque distribution were added to the ASMSignalBus.</p> <p>The bus to the stabilization now contains the inertia for each separate part and for all ratios.</p>

ConfigurationDesk

ConfigurationDesk – Implementation

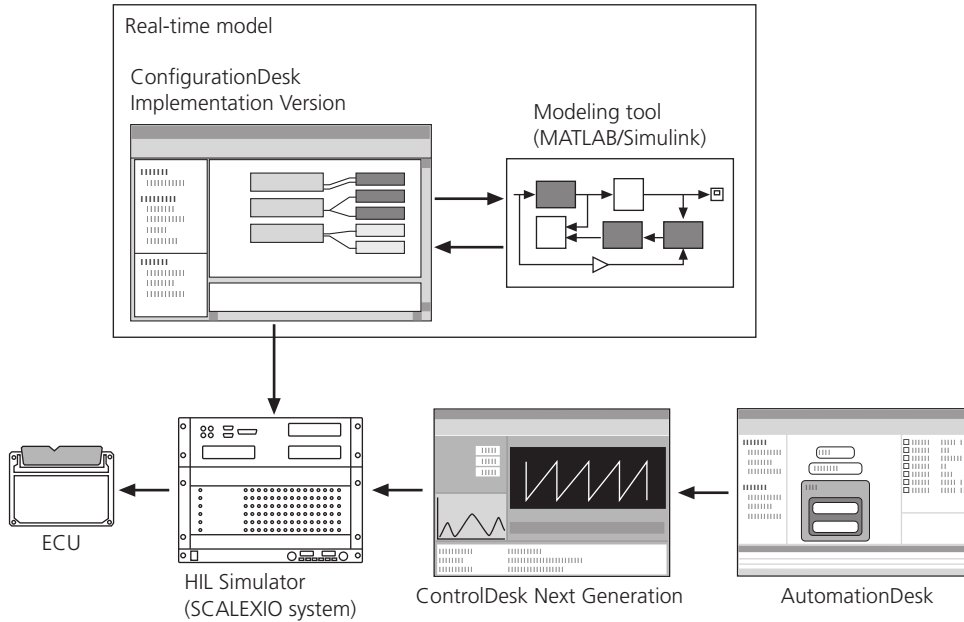
Objective

As of dSPACE Release 7.1 the dSPACE DVD contains ConfigurationDesk - Implementation Version, which lets you implement real-time applications to use them for HIL simulation.

Use Scenario and Features

Using ConfigurationDesk for HIL simulation

In this use scenario, ConfigurationDesk is part of the SCALEXIO system, which is designed for testing electronic control units (ECUs) in a hardware-in-the-loop (HIL) simulation. The system comprises hardware and software. ConfigurationDesk is used for implementing real-time applications. The following illustration shows the main components of this use scenario:



Software interfaces The real-time application which runs on the SCALEXIO simulator is created from an I/O model implemented in ConfigurationDesk and a behavior model implemented in MATLAB/Simulink. You can control the real-time application on the registered hardware with ControlDesk Next Generation. If you want to perform automated ECU tests, you can use AutomationDesk to implement all read and write accesses to ControlDesk Next Generation.

Simulator The SCALEXIO simulator is the real-time hardware to which the real-time application is downloaded. For details on the SCALEXIO simulator, refer to *Overview of SCALEXIO Systems* ([📖 SCALEXIO System Overview](#)).

Main features

Some of its main features are described in the following table:

Feature	Description
Hardware identification	ConfigurationDesk's Platform Manager gives you detailed information on the registered hardware systems and their hardware resources.
Creating and managing projects	ConfigurationDesk's Project Manager allows you to organize all the relevant project information, such as project- and application-specific data.
Specifying a signal chain	The logical path of the signal from the ECU pin to the model and to the channel on the real-time hardware is shown in a signal chain which you can specify.
Implementing and configuring I/O functionality	You can implement and configure I/O functions and add them to the signal chain independently of the hardware and the Simulink model.
Calculating the external wiring information	The wiring information of the external cable harness can be calculated in ConfigurationDesk.
Building real-time applications	ConfigurationDesk's Build Manager allows you to configure and start the build process for real-time applications.
Downloading real-time applications	You can download real-time applications to the selected hardware via ConfigurationDesk's Platform Manager and Project Manager .
System messages	The Log Viewer in ConfigurationDesk displays all system messages in chronological order.


For more basics and detailed instructions on using ConfigurationDesk - Implementation Version, refer to *ConfigurationDesk Implementation Guide*.

ControlDesk

New Features of ControlDesk 3.7.1

MicroAutoBox II support

The ControlDesk support of MicroAutoBox II was enhanced:

- Hot plugging is supported. ControlDesk can reconnect to MicroAutoBox II if it was switched off or disconnected from the host PC.
- The option on the [Animation](#) page of the [General Settings](#) dialog to continue animation if MicroAutoBox gets disconnected is now also supported for MicroAutoBox II.
- ControlDesk can access USB mass storage devices which are connected to MicroAutoBox II and used for flight recording. You can read the BIN files saved during flight recording and delete them from the USB mass storage device. For details, refer to *How to Upload Flight Recorder Data Written to a USB Mass Storage Device (MicroAutoBox II only)* ( [ControlDesk Experiment Guide](#)).

Converting BIN files

The [Convert BIN File](#) dialog supports conversion of several BIN files into the CSV or MAT file format.

Enumeration in TRC files

ControlDesk now supports parsing of TRC files with enumerated types (enum).

Bus Navigator

Monitoring LIN bus status and event frames ControlDesk's Bus Navigator now supports the monitoring of LIN bus status and event frames, such as the reception of sleep requests or wake-up signals. In the monitoring list, the output is displayed in different colors to visualize the meanings of the entries.

ControlDesk Next Generation

Where to go from here

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<i>New Features of the Variable Editor 1.5</i>	72

Information in other sections

<i>ControlDesk Next Generation Migration Guide</i> Explains migration from CalDesk/ControlDesk to ControlDesk Next Generation (ControlDesk 4.1).
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New Features of ControlDesk Next Generation (ControlDesk 4.1)

Where to go from here




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New General Features (ControlDesk 4.1)

Support of SCALEXIO systems	ControlDesk Next Generation supports SCALEXIO systems. For details on the SCALEXIO system, refer to the <i>SCALEXIO System Overview</i> .
Support of the DCI-GSI2	ControlDesk Next Generation supports the DCI-GSI2. For details on the DCI-GSI2, refer to the <i>DCI-GSI2 Feature Reference</i> .
Loader Version	ControlDesk Next Generation now provides the <i>Loader Version</i> for registering dSPACE real-time hardware and handling real-time applications. The Loader Version is license-free. For details, refer to the <i>ControlDesk Next Generation Loader Version Document</i> .
Using ControlDesk 4.0 and 4.1 in parallel	You can use either ControlDesk 4.0 or ControlDesk 4.1 without having to switch between installations.

New Project and Experiment Features (ControlDesk 4.1)

Autosaving projects	You can let ControlDesk Next Generation autosave the currently open project. You can specify the autosave interval. Refer to <i>Project Page</i> ( <i>ControlDesk Next Generation Reference</i>).
Importing a ConfigurationDesk application	You can import a ConfigurationDesk application into a ControlDesk Next Generation project. This lets you define a new ControlDesk Next Generation experiment containing a SCALEXIO processing unit based on the ConfigurationDesk application. Refer to <i>Import - ConfigurationDesk Application</i> ( <i>ControlDesk Next Generation Reference</i>).
Recognizing ConfigurationDesk-specific parts in a project	When you open or manage projects in ControlDesk Next Generation, you can recognize whether a project contains ConfigurationDesk-specific parts. Refer to <i>Handling Mixed Projects</i> ( <i>ControlDesk Next Generation Guide</i>)


Enhancements to the Manage Projects dialog

- The **Manage Projects** dialog now indicates whether a project is under version control. If so, it has an additional  icon.
- The **Manage Projects** dialog now supports multiselection of projects.

Refer to *Manage Projects /Select an Experiment Dialog* ( *ControlDesk Next Generation Reference*).

"Open Project + Experiment from Backup" command enhanced

When you open a project/experiment from backup, you can specify whether to overwrite existing files. If you deselect this option, you can select whether to keep the existing file or to use the one from the backup.

Refer to *Open Project + Experiment from Backup* ( *ControlDesk Next Generation Reference*).

Creating project root directories more intuitively

The icon for creating a new project root directory on the **Project** page of the **ControlDesk NG Properties** dialog now is the Windows standard icon for creating new folders ().


Refer to *Project Page* ( *ControlDesk Next Generation Reference*).

New Features of Platform Management and Platforms/Devices (ControlDesk 4.1)


New platforms/devices

ControlDesk Next Generation now also supports the following platforms/devices:


SCALEXIO Processing Unit platform A platform that provides access to a SCALEXIO system (→*SCALEXIO system* ( *ControlDesk Next Generation Guide*)) connected to the ControlDesk PC for HIL simulation and ECU testing purposes.


For details on the platform, refer to *SCALEXIO Processing Unit* ( *ControlDesk Next Generation Reference*).

DCI-GSI2 device A device that provides access to an ECU with DCI-GSI2 connected to the ControlDesk PC for measurement, calibration, and bypassing purposes via the ECU's debug interface.

For details on the device, refer to *DCI-GSI2* ( *ControlDesk Next Generation Reference*).

**Extended support for
MicroAutoBox II**

Hot plugging support Hot plugging now is supported for MicroAutoBox II. Refer to *Reconnecting to Platform/Device Hardware Automatically* ( *ControlDesk Next Generation Guide*).

Handling USB flight recorder data MicroAutoBox II can write flight recorder data to a USB mass storage device. ControlDesk Next Generation now lets you upload flight recorder data from a USB mass storage device and delete flight recorder data from it. Refer to *Explore to USB Flight Recorder* ( *ControlDesk Next Generation Reference*).

**Improved Add
Platform/Device dialog**

You can limit the list of platforms/devices in the **Add Platform/Device** dialog to platforms/devices that are licensed.

Refer to *Show Licensed Platforms/Devices Only* ( *ControlDesk Next Generation Reference*).

**Handling slave
DSP applications**

ControlDesk Next Generation now supports slave DSP applications of the DS1103 and DS1104. When you load a main application containing a slave DSP application to a DS1103 or DS1104, the slave DSP application is also loaded.

New Variable Management Features (ControlDesk 4.1)

**Virtual variables and
output parameters**

Specifying parameters and value blocks as virtual You can specify parameters and value blocks as *virtual* variables. If a parameter or value block is specified as *virtual*, it is not linked to its memory address. You can visualize a virtual variable in an instrument and change the value of the variable. Since there is no link to the virtual variable's memory address, these values are not written to or read from it.

Refer to *Variable Properties* ( *ControlDesk Next Generation Reference*).

You can process the value of a *virtual variable* in connection with *output parameters*.

Assigning output parameters to calculated variables You can process the value of a *virtual variable* by selecting the variable as an input signal of a calculated variable and writing the calculated variable value to one or more *output parameters* (parameters and writable measurements) assigned to that calculated variable.

Refer to *How to Write Calculated Variable Values to Parameters and Writable Measurements* ( *ControlDesk Next Generation Guide*).

New Instrument Features (ControlDesk 4.1)

New instrument libraries

ControlDesk Next Generation now provides the following instrument libraries from ControlDesk 3.x:

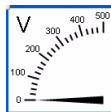
- *Gauges Automotive library* – a library with gauge instruments, for example:



- *LEDs Automotive library* – a library with LED instruments, for example:



- *Measurement library* – a library with instruments for measurement purposes, for example:





For details, refer to *Instrument Descriptions* ( *ControlDesk Next Generation Reference*).

Background pictures of instruments

- ControlDesk Next Generation now lets you display animated pictures (GIF files) in the background of instruments. For the MultiState Display, you can specify one animated picture for each state.

You can specify background pictures for the following instruments:

- *Bar* ( *ControlDesk Next Generation Reference*)
- *Check Button* ( *ControlDesk Next Generation Reference*)














- *Display* ( *ControlDesk Next Generation Reference*)
- *Frame* ( *ControlDesk Next Generation Reference*)
- *Gauge* ( *ControlDesk Next Generation Reference*)
- *Knob* ( *ControlDesk Next Generation Reference*)
- *MultiState Display* ( *ControlDesk Next Generation Reference*)
- *Numeric Input* ( *ControlDesk Next Generation Reference*)
- *On/Off Button* ( *ControlDesk Next Generation Reference*)
- *Push Button* ( *ControlDesk Next Generation Reference*)
- *Radio Button* ( *ControlDesk Next Generation Reference*)
- *Selection Box* ( *ControlDesk Next Generation Reference*)
- *Slider* ( *ControlDesk Next Generation Reference*)
- *Static Text* ( *ControlDesk Next Generation Reference*)
- ControlDesk Next Generation now lets you select whether to *embed* or *reference* the background picture of an instrument.

Table Editor connections

ControlDesk Next Generation now lets you connect variables to the individual elements (x-, y-, and data axis, and working point) of the Table Editor.


For details, refer to *Table Editor* ( *ControlDesk Next Generation Reference*).








Changing additional write variables if main variable is read-only

You can now change the values of additional write variables even if the main variable of the related instrument is a read-only measurement variable.

Refer to *How to Write the Same Value to Several Parameters Simultaneously* ( *ControlDesk Next Generation Guide*).

Support for the individual elements of parameter vectors (value blocks)

You can now connect the elements of a parameter vector/value block () individually with instruments of ControlDesk Next Generation such as the Variable Array. To do so, expand the value block in the Variable Browser to access the individual elements of the value block:

		ParamVector	XCP			Unsigned 16 bit
		ParamVector[0]	XCP			Unsigned 16 bit
		ParamVector[1]	XCP			Unsigned 16 bit
		ParamVector[2]	XCP			Unsigned 16 bit
		ParamVector[3]	XCP			Unsigned 16 bit
		ParamVector[4]	XCP			Unsigned 16 bit

New Measurement and Recording Features (ControlDesk 4.1)


Multi-raster measurements

ControlDesk Next Generation now lets you select different measurement rasters for a single variable. For example, you can measure a variable in one raster and record the same variable in another raster.

Creating additional rasters for dSPACE platforms


ControlDesk Next Generation now lets you create *additional rasters* for dSPACE platforms by copying an existing raster. You do not have to modify the model and rebuild the real-time application for this.

Creating additional rasters allows you to measure variables, for example, in a raster with a sampling period of 1 ms, and record them in another raster with the same sampling period but with different trigger conditions.

Refer to *Measurement Rasters* ( *ControlDesk Next Generation Guide*).


Support for event-based rasters


ControlDesk Next Generation now lets you define *sample count triggers* for stopping event-based rasters. A sample count trigger specifies the number of samples of a data capture for an event-based raster.

For instructions, refer to *How to Configure a Sample Count Trigger* ( *ControlDesk Next Generation Guide*).


Defining complex platform triggers for SCALEXIO systems

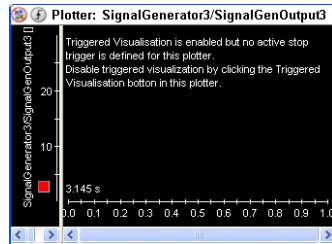
ControlDesk Next Generation now lets you define complex platform triggers based on model variables for starting and stopping rasters on SCALEXIO systems. The trigger condition syntax must conform with the HIL API.


For instructions, refer to *How to Configure a Platform Trigger* ( *ControlDesk Next Generation Guide*).

For details on the supported trigger conditions, refer to *Measurement Configuration* ( *ControlDesk Next Generation Reference*).

Enhancement for the triggered Plotter display

If ControlDesk Next Generation's Plotter is in triggered mode (indicated by the  button in the Plotter title bar) but the trigger for the Plotter display is inactive, no data is displayed in the Plotter. ControlDesk Next Generation now indicates this situation like this:




To display data in the Plotter, you can, for example, enable continuous Plotter display by clicking the  button.

For instructions, refer to *How to Specify a Trigger for the Plotter Display* ( *ControlDesk Next Generation Guide*).

New Bus Navigator Features (ControlDesk 4.1)

Global monitoring and logging for CAN and LIN

ControlDesk Next Generation's Bus Navigator now supports global monitoring and logging for CAN (incl. J1939) and LIN.

Refer to *Add Unfiltered (CAN/LIN) Monitor* ( *ControlDesk Next Generation Reference*).


Exporting/importing logged/monitored data to the ASC file format

ControlDesk Next Generation's Bus Navigator now lets you export logged/monitored bus communication for CAN and LIN to the ASC (CANalyzer) file format. You can also import ASC files.

Refer to *Add Logger* ( *ControlDesk Next Generation Reference*).

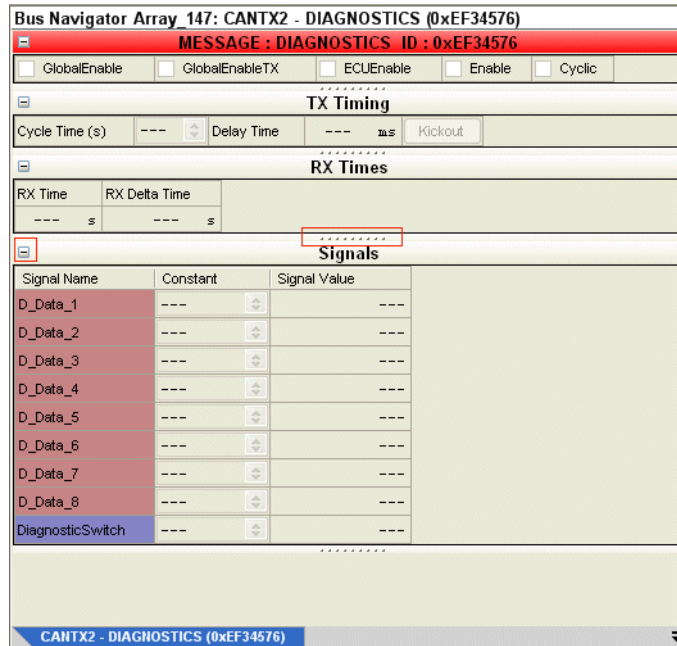
Monitoring of LIN bus status and event frames


ControlDesk Next Generation's Bus Navigator now supports the monitoring of LIN bus status and event frames, such as the reception of sleep requests or wake-up signals. In the monitoring list, the output is displayed in different colors to visualize the meanings of the entries.

Refer to *Add Unfiltered (CAN/LIN) Monitor* ( *ControlDesk Next Generation Reference*).

Improved user interface of Bus Instruments

The user interface of ControlDesk Next Generation's Bus Instruments was improved. For example, you can expand and collapse the different instrument regions, and adapt the region size via splitter bars. See the illustration below.




Refer to *Bus Navigator Instruments* ( *ControlDesk Next Generation Reference*).

New Data Set Management Features (ControlDesk 4.1)


Changing parameter values directly in the Data Set Manager

You can now change parameter values directly in the Data Set Manager. You can also toggle between viewing and editing values in physical (converted) mode or in hex (source) mode.

Refer to *Data Set Manager* ( *ControlDesk Next Generation Reference*).





Writing sub data sets to dSPACE real-time hardware


You can now also write sub data sets to dSPACE real-time hardware. A sub data set is a data set that does not contain the complete set of the parameters of a platform/device. Writing only sub data sets to dSPACE real-time hardware therefore saves time.

Refer to *Write to Working Data Set* ( *ControlDesk Next Generation Reference*).

Comparing complex parameters


The Data Set Manager now lets you compare the individual elements of complex parameters such as maps and curves in an expandable list:

Parameter Name	CalDemo XCP.mmf	CalDemo XCP-1.mmf	New Data Set
 throttle2percent_x 			
 throttle2percent_x	0.11199951171875	0.11297607421875	
 throttle2percent_x	0.96502685546875	0.96502685546875	

Refer to *Data Set Manager* ( *ControlDesk Next Generation Reference*).

Exporting data sets of inactive variable descriptions

You can now also export a data set if it belongs to a currently inactive variable description.

Refer to *Export Data Sets to Global Data Sets* ( *ControlDesk Next Generation Reference*).

New ECU Diagnostics Features (ControlDesk 4.1)

Reloading ODX database files

ControlDesk Next Generation now lets you reload ODX database files. Files to be reloaded are reimported using the original import paths.

Refer to *Configure Platform/Device* ( *ControlDesk Next Generation Reference*).

Deactivating StartCommunication execution

ControlDesk Next Generation now lets you select whether to execute the `StartCommunication` control primitive during the device's state transition from "disconnected" to "connected".

Refer to *Configure Platform/Device* ( *ControlDesk Next Generation Reference*).

Deactivating `TesterPresent` execution

ControlDesk Next Generation now lets you select whether to execute the `TesterPresent` service during the device's state transition from "disconnected" to "connected".

Refer to *Configure Platform/Device* ( *ControlDesk Next Generation Reference*).

New Signal Editor Features (ControlDesk 4.1)


Automation support

ControlDesk Next Generation now supports the automation of the Signal Editor. This allows you, for example, to download and start a signal generator via script.

Refer to *Automating the Signal Editor* ( *ControlDesk Next Generation Guide*).

Locating mapped variables in the Variable Browser

Variables that are mapped to signals can now easily be located and highlighted in the Variable Browser.

Refer to *Select in Variable Browser* ( *ControlDesk Next Generation Reference*).

Multiselection of signals and segments

Multiselection of signals and segments now is supported. You can use the `shift` key or the `ctrl` key for multiselection.

Further Enhancements with ControlDesk Next Generation (ControlDesk 4.1)

Icons for view sets

You can specify an icon file for a view set. The icon is displayed in the View Sets toolbar and in the View menu of ControlDesk Next Generation.


Refer to *Customize* ( *ControlDesk Next Generation Reference*).

Migrating to ControlDesk Next Generation (ControlDesk 4.1)

Migrating to ControlDesk Next Generation (ControlDesk 4.1)

Migrating from ControlDesk 4.0

To migrate from ControlDesk 4.0 to ControlDesk 4.1 and reuse existing experiments, you may have to carry out additional migration steps.

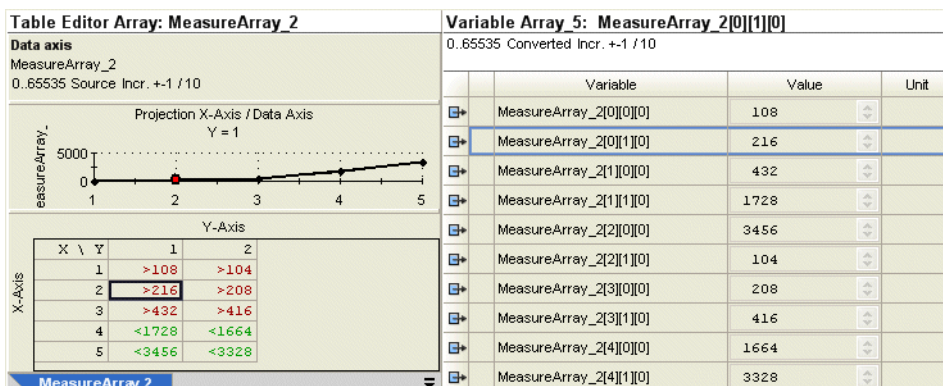
Reloading variable descriptions of XCP devices If your project/experiment contains one or more XCP devices, you have to reload the related variable description (A2L) files in ControlDesk 4.1. Refer to *Reload Variable Description* ( *ControlDesk Next Generation Reference*).

Corrected indexing of measurement array elements The indexing of the elements of a measurement array was incorrect in ControlDesk 4.0 and in CalDesk. It is correct in ControlDesk 4.1.

■ *Indexing in ControlDesk 4.0 and CalDesk*

The illustration below shows a measurement array with the dimension [5;2;1] in a Table Editor as an example. The elements of the measurement array are also visualized in a Variable Array.

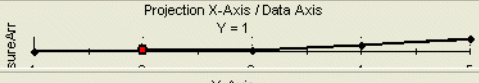
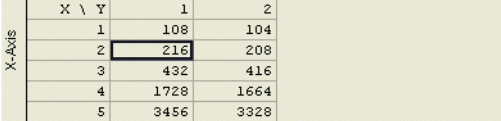
The element with index [2;1;1] has row (x axis) index 2 and column (y axis) index 1 in the Table Editor. The row index and the column index are correct. In the Variable Array, the indexing is erroneously swapped.



■ Indexing as of ControlDesk 4.1

The illustration below shows the same measurement array in a Table Editor and in a Variable Array of ControlDesk 4.1.

In the Table Editor, the element with the index [2;1;1] has row (x axis) index 2 and column (y axis) index 1. The indexing is correct and consistent in the Table Editor and in the Variable Array.

Table Editor Array: MeasureArray_2		Variable Array_3: MeasureArray_2[1][0][0]																																														
Data axis MeasureArray_2 0.65535 Converted Incr. +-1 / 10 Read-only 		0.65535 Converted Incr. +-1 / 10 <table border="1"> <thead> <tr> <th></th> <th>Variable</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>MeasureArray_2[0][0][0]</td> <td>108</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[0][1][0]</td> <td>104</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[1][0][0]</td> <td>216</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[1][1][0]</td> <td>208</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[2][0][0]</td> <td>432</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[2][1][0]</td> <td>416</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[3][0][0]</td> <td>1728</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[3][1][0]</td> <td>1664</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[4][0][0]</td> <td>3456</td> <td></td> </tr> <tr> <td>+</td> <td>MeasureArray_2[4][1][0]</td> <td>3328</td> <td></td> </tr> </tbody> </table>				Variable	Value	Unit	+	MeasureArray_2[0][0][0]	108		+	MeasureArray_2[0][1][0]	104		+	MeasureArray_2[1][0][0]	216		+	MeasureArray_2[1][1][0]	208		+	MeasureArray_2[2][0][0]	432		+	MeasureArray_2[2][1][0]	416		+	MeasureArray_2[3][0][0]	1728		+	MeasureArray_2[3][1][0]	1664		+	MeasureArray_2[4][0][0]	3456		+	MeasureArray_2[4][1][0]	3328	
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Discontinuation of the Enums module The Python-based tool automation demos for ControlDesk Next Generation 4.1 no longer use the `Enums` module containing enumeration definitions for configuring automation elements of ControlDesk Next Generation.

If you imported the `Enums` module in your script, you are recommended to replace the import and usage of the module like this:

1. In your script, remove the import instruction for the `Enums` module.

For example, remove from `Enums import PlatformType` from your script.

2. Import the enumeration definitions like this:

```
from win32com.client import Enums
```

3. Define an `Enums` object like this:

```
self.Enums = Enums(self.ControlDeskApplication)
```


4. Change the usage of enumeration definitions like this:

Change


```
MyDevice = self.ControlDeskApplication.ActiveProject.Platforms.Add(PlatformType.CCP)
to
```

```
MyDevice = self.ControlDeskApplication.ActiveProject.Platforms.Add(self.Enums.PlatformType.CCP)
```

**Migrating from
ControlDesk 3.x**

To migrate from ControlDesk 3.x to ControlDesk Next Generation 4.1 and reuse existing ControlDesk experiments in ControlDesk Next Generation, you have to carry out additional migration steps. For details, refer to *Migrating from ControlDesk 3.x to ControlDesk Next Generation* ( *ControlDesk Next Generation Migration Guide*).


Migrating from CalDesk

To migrate from CalDesk to ControlDesk Next Generation 4.1 and reuse existing experiments last saved with CalDesk, you may have to carry out additional migration steps. For information on the migration steps, refer to *Migrating from CalDesk to ControlDesk Next Generation* ( *ControlDesk Next Generation Migration Guide*).

New Features of the Variable Editor 1.5

General Enhancements


Handling structured notation of MAP file symbols

The Variable Editor lets you handle MAP files with structured symbols. If your MAP file contains several symbols with the same name but with a different path structure in the MAP file, you can now specify the path structure to be preselected for the automatic assignment of MAP file symbols to variables. For details, refer to *Assigning Structured Symbols* ( *Variable Editor Guide*).

DCI Configuration Tool

New Features of the DCI Configuration Tool 2.4


Configuring calibration settings for the DCI-GSI1

The DCI-GSI1 provides two calibration methods: ECU calibration via overlay units of the ECU processor and ECU calibration in external ECU RAM. The DCI Configuration Tool provides configuration settings for both calibration methods. For details, refer to *Calibration Settings Page (only DCI-GSI1)* ( *DCI Configuration*).

Modifications to the dialog tree of the main window

The dialog tree of the main window has been modified:

- Formerly, the *Emulation Memory* page was used for DCI-GME1 and DCI-GSI1 configuration. For DCI-GSI1 configuration, the page has been replaced by the new *Calibration Memory* page.
- The *External RAM Calibration* page was replaced by the *Calibration Settings* page, which is a subpage of the *Interface Configuration* page.
- Some dialog pages have been renamed:
 - The *Calibration Interface Name* page was renamed *Device Name* page.
 - The *Calibration Interface Options* page was renamed *Device Options* page.

For details on the dialog tree pages, refer to *Main Window* ( *DCI Configuration*).

dSPACE ECU Flash Programming Tool

New Features of the dSPACE ECU Flash Programming Tool 2.2.1



Up to dSPACE Release 6.6, the dSPACE ECU Flash Programming Tool was part of the CalDesk product setup. As of dSPACE Release 7.0, there is a separate setup for the dSPACE ECU Flash Programming Tool.

Support of the DCI-GSI2

The dSPACE ECU Flash Programming Tool also supports ECU flash programming via DCI-GSI2.

Refer to *Supported ECU Interface Types* ( *ECU Flash Programming*).

For details on the new DCI-GSI2, refer to the *DCI-GSI2 Feature Reference*.

Enhanced Seed&Key DLL file handling

When you add a Seed & Key DLL file to a flash project, you can select whether to copy the file to the flash project folder or reference it by the flash project.

Refer to *Configure Interface Settings Dialog* ( *ECU Flash Programming*).

dSPACE FlexRay Configuration Package

Where to go from here

Information in this section

<i>New Features of dSPACE FlexRay Configuration Package 2.5</i>	77
<i>Migrating to dSPACE FlexRay Configuration Package 2.5</i>	79

New Features of dSPACE FlexRay Configuration Package 2.5

FlexRay Configuration Package


Support of SCALEXIO systems The FlexRay Configuration Package now also supports SCALEXIO systems with a DS2671 Bus Board and/or DS2672 Bus Module.

To configure a SCALEXIO system as a simulation node in a FlexRay network, dSPACE provides the new FlexRay Configuration Blockset (see below).

FlexRay Configuration Tool

Support of AUTOSAR System Template The FlexRay Configuration Tool now also supports the AUTOSAR System Template based on AUTOSAR Release 3.1.4 for describing FlexRay networks. You can base your configuration on an imported AUTOSAR system description file.

RTI FlexRay Configuration Blockset

RTIFLEXRAYCONFIG Cycle Counter Read block The blockset provides the new *RTIFLEXRAYCONFIG Cycle Counter Read* block. The block is used only in real-time models for more than one FlexRay bus (based on several FlexRay configurations). It reads the cycle counter of the *FLEXRAYCONFIG* configuration with configuration ID '-'. In the synchronization task for the FlexRay configuration with configuration ID '-', it replaces the *RTIFLEXRAYCONFIG Status* block. For further information, refer to *RTIFLEXRAYCONFIG Cycle Counter Read* ( *RTI FlexRay Configuration Reference*).

New FlexRay Configuration Blockset

The FlexRay Configuration Blockset is used to connect a dSPACE SCALEXIO system to a FlexRay bus. Automatically generated FlexRay models are generated according to configuration data created by the FlexRay Configuration Tool. The blocks of the model are configured for your FlexRay network, which is described by a FIBEX file or AUTOSAR System Template.

The automatically generated FlexRay models provide the basic blocks for FlexRay communication. To analyze and handle the FlexRay communication model, you must configure it in ConfigurationDesk.

Main features The main features of the FlexRay Configuration Blockset are:



- Generating FlexRay communication blocks configured for your FlexRay network. The necessary configuration data is created by the FlexRay Configuration Tool based on a FIBEX file or AUTOSAR System Template.
- Supporting single-channel and dual-channel FlexRay systems (dual-channel FlexRay systems are supported by PDU-based modeling only)
- Simulating the FlexRay node on a SCALEXIO system
- Supporting PDU-based modeling
- Supporting task-driven modeling
- Simulating several FlexRay buses on one SCALEXIO system, for example, to simulate a gateway
- Supporting the Bus Navigator of ControlDesk Next Generation


Hardware support The blockset supports SCALEXIO systems with a DS2671 Bus Board and/or DS2672 Bus Module.

For further information, refer to *FlexRay Configuration Blockset Reference*.

FlexRay Replay Script Generator

Support of SCALEXIO systems The FlexRay Replay Script Generator supports SCALEXIO systems with a DS2671 Bus Board and/or DS2672 Bus Module.

The tasks required for logging and replay are created in the FlexRay Configuration Tool (refer to *Creating Tasks* ( *FlexRay Configuration Tool Guide*)), but they are selected in ConfigurationDesk (refer to *Configuring Tasks in ConfigurationDesk* ( *ConfigurationDesk Implementation Guide*)).

Support of relative paths The FlexRay Replay Script Generator now lets you use relative paths for MAT files, TRC files and/or replay scripts. Refer to *Project Management* ( *FlexRay Replay Script Generator Reference*).

Migrating to dSPACE FlexRay Configuration Package 2.5

Migrating multiple-bus models

The RTI FlexRay Configuration Blockset provides the new RTIFLEXRAYCONFIG Cycle Counter Read block. To make it available to an existing model with several FlexRay configurations, you must update your Simulink model using the RTIFLEXRAYCONFIG UPDATE block. The Exchange the Basic Configuration subsystem option must be enabled in the Update block during the update process.

ModelDesk

New Features of ModelDesk 2.4

New supported platform	ModelDesk supports the SCALEXIO system.
Automatic traffic scenario creation	ModelDesk has an automation interface. The ModelDesk automation interface allows you to control ModelDesk using scripts. Now you can also write scripts for editing traffic scenarios.
Supporting new ASM models	ModelDesk supports further ASM models: <ul style="list-style-type: none">■ ASM Diesel Exhaust model■ Front wheel front engine and front wheel front engine with 4WD extension drivetrain variants (see <i>New Features of ASM Vehicle Dynamics Blockset 2.0</i> on page 48)■ Ancillary spring for suspension forces and suspension kinematics (see <i>New Features of ASM Vehicle Dynamics Blockset 2.0</i> on page 48)
Registering custom libraries	When custom libraries are registered, some errors can occur. ModelDesk writes the error messages to the Log viewer for diagnostics purposes.

MotionDesk

Where to go from here

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<i>Migrating to MotionDesk 2.2</i>	84

New Features of MotionDesk 2.2

New supported platform

MotionDesk supports the SCALEXIO system.

New framework

MotionDesk now has the same framework as other dSPACE tools. This unifies the look and feel in the dSPACE tool chain. Thus, MotionDesk handles all files in projects and experiments. A project can contain several experiments. Migration from older MotionDesk versions is done automatically when you open an MDX file.

Movable objects and signals for instruments

The maximum number of movable objects is 500.
The maximum number of signals for instruments is 300.

Renderer

You can use the antialiasing and texture filtering functions of your graphics card to improve graphical quality, and activate or deactivate the settings via the *MotionDesk Properties* dialog.

MotionDesk Blockset 2.1

- The MotionDesk Blockset has a new `MD_Instrumentation` block. The block can be used to send data from the simulation model to MotionDesk to visualize it in instruments. The block lets you specify units and signal names in the model and display them in the visualization.
- The MotionDesk blockset supports the Rapid Accelerator mode.

Related topics

Basics

- *Using Instruments in the Scene* ( [MotionDesk 3-D Online Visualization Guide](#))

HowTos


- *How to Activate Antialiasing and Texture Filtering* ( [MotionDesk 3-D Online Visualization Guide](#))

References

- *MD_Instrumentation* ( [MotionDesk Blockset Reference](#))

Migrating to MotionDesk 2.2


Migrating older experiments

MotionDesk structures data for the visualization task in projects and experiments since MotionDesk 2.2. Before you can work with experiments created with older MotionDesk versions, the experiments must be migrated. For details on the migration process, refer to *Migrating from MotionDesk 2.1.6 and Lower* ( [MotionDesk 3-D Online Visualization Guide](#)).

Using instruments

The MotionDesk Blockset comes with a new `MD_Instrumentation` block. The instruments in MotionDesk work with real-time applications which were built using the old `MD_Instrumentation` block, but it is not possible to reconfigure the assignments of data streams to instruments. It is recommended to use the new `MD_Instrumentation` block instead:

1. Replace the previous `MD_Instrumentation` block by the new `MD_Instrumentation` block in the real-time model.
2. Specify signal names and units in the `MD_Instrumentation` block in the real-time model.
3. Connect the data stream of the signals to the instruments in the scene in MotionDesk.

For details, refer to *Using Instruments in the Scene* ( [MotionDesk 3-D Online Visualization Guide](#)).

3-D Object Updater	The 3-D Object Updater is no longer supported. If it is necessary to downgrade your 3-D Object Gallery, contact dSPACE Support.
Network connection	Using a network connection in the 1-PC solution is no longer supported.
Simulator access	For DS1103, DS1005- and DS1006-based systems and MicroAutoBox: ControlDesk cannot stop the simulation while the animation is running in MotionDesk. You must first stop the animation in MotionDesk.

Real-Time Testing

Where to go from here

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<i>Migrating to Real-Time Testing 1.8</i>	88

New Features of Real-Time Testing 1.8

New supported platform

Real-Time Testing supports the SCALEXIO system.

The following Real-Time Testing modules are not supported for a SCALEXIO system:

- `rttlib.rs232lib` (sending and receiving data via an RS232 interface)
- `rttlib.hostcall` (starting an RTT sequence with arguments)

Static code analysis

As Python is an interpreted language, some programming errors are detected only during run time. Now you can use Real-Time Testing to check RTT sequences for errors before execution.

Related topics


Basics

- *Checking RTT Sequences* ([📄](#) *Real-Time Testing Guide*)

Migrating to Real-Time Testing 1.8

Different versions of Real-Time Testing

The version used on the real-time platform and on the host PC must be the same. For example, if a real-time application was built using Real-Time Testing 1.7.1, the RTT sequences cannot be managed from a host PC with Real-Time Testing 1.8 installed.

To work with the real-time application, you can install the runtime version of Real-Time Testing with the corresponding version number. Refer to *Using Different Versions of Real-Time Testing* ( *Real-Time Testing Guide*)

RTI/RTI-MP and RTLib

Where to go from here

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<i>Migration Aspects of RTI/RTI-MP and RTLib</i>	91

New Features of RTI/RTI-MP and RTLib

MicroAutoBox

MicroAutoBox comes with new hardware and some software enhancements.

MicroAutoBox Embedded PC The MicroAutoBox Embedded PC can be integrated into a MicroAutoBox II system to provide the features of a standard personal computer, such as a processor for running applications, data storage, USB, DVI and Ethernet connections. For example, it is ideal for use with modern driver assistance applications.

DS1552 Multi-I/O Module The DS1552 Multi-I/O Module can be mounted on a MicroAutoBox II 1401/1511/1512 as a piggyback board to extend the I/O capabilities of the MicroAutoBox system. The module can be used with the RTI DS1552 I/O Extension Blockset or with the RTI FPGA Programming Blockset.

The following I/O features are provided by the RTI DS1552 I/O Extension Blockset:

- A/D conversion
 - 8 parallel A/D converters with 16-bit resolution and a conversion time of 1 μ s
 - 16 parallel A/D converters with 16-bit resolution and a conversion time of 5 μ s
- D/A conversion
 - 4 parallel D/A converters with 16-bit resolution
- Digital I/O Unit
 - 16 digital input channels and 16 digital output channels that can be used for:
 - Bit I/O
 - PWM signal generation (PWM)
 - Square-wave signal generation (FREQ)
 - PWM signal measurement (PWM2D)
 - Frequency measurement (F2D)

For information on the I/O features provided by the RTI FPGA Programming Blockset, refer to *RTI FPGA Programming Blockset* on page 107.


RTI support of incremental encoder interface RTI now provides blocks for the incremental encoder interface of the DIO Type 3 unit (available with MicroAutoBox II 1401/1511 and MicroAutoBox II 1401/1511/1512).

FPGA support The general FPGA support is now available for MicroAutoBox II 1401/1511/1512. It is required, for example, for using the RTI DS1552 I/O Extension Blockset.

For further information, refer to MicroAutoBox Features.

TRC file enhancements


You can specify enumerations in Simulink to improve the readability of code and simulation results. Signals and parameters of `enum` data type are now generated in the variable description file. For example, with ControlDesk Next Generation, parameters can be easily identified by the enumeration's strings.

For further information, refer to *Available Variables in the Variable Description File* ( *RTI and RTI-MP Implementation Reference*).

New features with MATLAB R2011a

The following new features and modifications are supported.

- Simulink's **Asynchronous Task Specification** block allows you to implement an asynchronous function call to a **Model** block. With this feature, RTI interrupt blocks (hardware interrupts, timer interrupts, and software interrupts) can be used to drive input ports of a **Model** block.

For further information, refer to *Configuring Tasks with Model Referencing* ( *RTI and RTI-MP Implementation Guide*).

- Function-call signals can now be connected to an inport of a **Model** block. This is still a limitation for outports.

See also *Limitations with Model Referencing* ( *RTI and RTI-MP Implementation Guide*).

- The generated code for **Lookup Table** blocks and for **Lookup Table (2-D)** blocks in the model differs from the code generated with previous MATLAB releases.

For further information, refer to *Migration Aspects of RTI/RTI-MP and RTLib* on page 91.

Migration Aspects of RTI/RTI-MP and RTLib

Migration aspects of MicroAutoBox II

Applications compiled with MicroAutoBox do not have to be recompiled for MicroAutoBox II if the same I/O boards are used.

MicroAutoBox II 1401/1511 and MicroAutoBox II 1401/1511/1512 require at least boot firmware version 3.0.

**Invalid variable references
when migrating to
MATLAB R2011a**

If you update an existing Simulink model via the `supdate` command when migrating to MATLAB R2011a, the code generated for **Lookup Table** blocks and for **Lookup Table (2-D)** blocks in the model differs from the code generated with previous MATLAB releases. As a consequence, the SDF/TRC file entries for **Lookup Table** blocks and **Lookup Table (2-D)** blocks change.

This affects several dSPACE products such as ControlDesk Next Generation. If your dSPACE product references such **Lookup Table** and **Lookup Table (2-D)** variables, you have to adapt the references according to the new SDF/TRC file entries. For example, the connections from **Lookup Table** and **Lookup Table (2-D)** variables to **Table Editors** in a ControlDesk Next Generation experiment become invalid when you migrate to MATLAB R2011a and rebuild an updated model. To solve the problem, you have to reconnect the variables yourself.

RTI Bypass Blockset

New Features of the RTI Bypass Blockset 2.7.3

RTI Bypass Blockset

Support of bypassing on ECUs equipped with a DCI-GSI2 The RTI Bypass Blockset supports bypassing on ECUs equipped with a DCI-GSI2. The DCI-GSI2 is connected to the bypass system via XCP on Ethernet, so the DCI-GSI2 can be treated as a generic XCP on UDP/IP device in the RTI Bypass Blockset. Refer to the *RTI Bypass Blockset Reference*.

For details on the new DCI-GSI2, refer to the *DCI-GSI2 Feature Reference*.

Working with models from earlier RTI Bypass Blockset versions 2.x

The current release comes with RTI Bypass Blockset 2.7.3, which is compatible with earlier blockset versions 2.x. However, data management has changed compared to the RTI Bypass Blockset version 2.5 or earlier.

If you have a Simulink model built with blockset version 2.5 or earlier and open it with RTI Bypass Blockset 2.7.3, the old Data Dictionary file (file name extension .dd) is replaced by a new Data Dictionary file (.vdb) using the information stored in the Setup block as soon as you open and close the Setup block dialog by clicking OK, or open the Read, Write, Upload or Download block dialog and click the Fill Variable Selector button on the Variables page.

If you have a model that was saved with RTI Bypass Blockset 2.7.3 and want to use it with RTI Bypass Blockset 2.5 or earlier, the model's Data Dictionary file for the earlier blockset version (file name extension .dd) is recreated as soon as you update the A2L files in the Setup block or open the Read, Write, Upload or Download block and click the **Fill Variable Selector** button on the Variables page. The Data Dictionary file created under RTI Bypass Blockset 2.7.3 (*.vdb) remains on disk.

To enable the RTI Bypass Blockset to recreate the data dictionary, the ASAM-MCD 2MC (A2L) files specified in the Setup block must be accessible at the specified location and must be unchanged.

RTI CAN MultiMessage Blockset

Where to go from here

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<i>Migrating to RTI CAN MultiMessage Blockset 2.5.3</i>	96

New Features of the RTI CAN MultiMessage Blockset 2.5.3

New supported platforms

The RTI CAN MultiMessage Blockset supports SCALEXIO systems with a DS2671 Bus Board and/or DS2672 Bus Module.

Support for offline calibration

TRC/SDF files generated for Simulink models including blocks from the RTI CAN MultiMessage Blockset now contain initial data. This allows you to perform offline calibration with ControlDesk Next Generation using the TRC/SDF files as variable descriptions.

For further information, refer to *Migrating to RTI CAN MultiMessage Blockset 2.5.3* on page 96.

Migrating to RTI CAN MultiMessage Blockset 2.5.3

Changed TRC file generation

TRC file generation for Simulink models including blocks from the RTI CAN MultiMessage Blockset has changed. The `default` string attribute for signals and parameters in the TRC file has been replaced by the `value` attribute (with numerical value) used for initial data. The RTI CAN MultiMessage Blockset therefore provides initial values to all the parameters and signals in the TRC file. The initial data lets you perform offline calibration with ControlDesk Next Generation.


The following table contains two examples showing the differences in TRC file generation for parameters and signals:

TRC File Entry Generated With RTI CAN MultiMessage Blockset 2.5.3	TRC File Entry Generated With Earlier Blockset Versions
Parameter	
<pre>CANMMCAN_GEIN { type: UINT(8) alias: "GlobalEnable" flags: PARAM desc: "Enable CAN" unit: "0 1" value: 1 }</pre>	<pre>CANMMCAN_GEIN { type: UINT(8) alias: "GlobalEnable" flags: PARAM desc: "Enable CAN" unit: "0 1" default: "1" }</pre>
Signal	
<pre>CANMMCAN_RX_Msg_1_Sgn_1 { type: UINT(8) alias: "SignalWithError" flags: OUTPUT READONLY desc: "SignalWithError" unit: "" value: 0 }</pre>	<pre>CANMMCAN_RX_Msg_1_Sgn_1 { type: UINT(8) alias: "SignalWithError" flags: OUTPUT READONLY desc: "SignalWithError" unit: "" default: "0" }</pre>

Working with models from earlier RTI CAN MultiMessage Blockset versions

To reuse a model created with an earlier RTI CAN MultiMessage Blockset version, you must update the S-functions for all the contained RTICANMM blocks before you perform modifications to the CAN configuration.

To create new S-functions for all the RTICANMM blocks in your model in one step, you can select the *Create S-Function for all CAN Blocks* command from the *Options* menu of the RTICANMM GeneralSetup block.

For further information, refer to *Limitations with RTICANMM* ( *RTI CAN MultiMessage Reference*).

RTI LIN MultiMessage Blockset

Where to go from here

Information in this section

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New Features of the RTI LIN MultiMessage Blockset 1.8.1

New supported platforms

The RTI LIN MultiMessage Blockset supports SCALEXIO systems with a DS2671 Bus Board and/or DS2672 Bus Module.

Support for offline calibration

TRC/SDF files generated for Simulink models including blocks from the RTI LIN MultiMessage Blockset now contain initial data. This allows you to perform offline calibration with ControlDesk Next Generation using the TRC/SDF files as variable descriptions.

For further information, refer to *Migrating to RTI LIN MultiMessage Blockset 1.8.1* on page 100.

Migrating to RTI LIN MultiMessage Blockset 1.8.1

Changed TRC file generation

TRC file generation for Simulink models including blocks from the RTI LIN MultiMessage Blockset has changed. The `default` string attribute for signals and parameters in the TRC file has been replaced by the `value` attribute (with numerical value) used for initial data. The RTI LIN MultiMessage Blockset therefore provides initial values to all the parameters and signals in the TRC file. The initial data lets you perform offline calibration with ControlDesk Next Generation.


The following table contains two examples showing the differences in TRC file generation for parameters and signals:

TRC File Entry Generated With RTI LIN MultiMessage Blockset 1.8.1	TRC File Entry Generated With Earlier Blockset Versions
Parameter	
<pre>MonitoringEnable_RTILINMMController1 { type: UINT(8) alias: "MonitoringEnable_Controller1" flags: PARAM desc: "MonitoringEnable_Controller1" unit: "-" value: 0 }</pre>	<pre>MonitoringEnable_RTILINMMController1 { type: UINT(8) alias: "MonitoringEnable_Controller1" flags: PARAM desc: "MonitoringEnable_Controller1" unit: "-" default: "0" }</pre>
Signal	
<pre>RTILINMM_Controller1_LINF3RXS { type: UINT(8) alias: "Frame3_status" flags: OUTPUT READONLY desc: "Frame3 Status" unit: "" value: 0 }</pre>	<pre>RTILINMM_Controller1_LINF3RXS { type: UINT(8) alias: "Frame3_status" flags: OUTPUT READONLY desc: "Frame3 Status" unit: "" default: "0" }</pre>

Working with models from earlier RTI LIN MultiMessage Blockset versions

To reuse a model created with an earlier RTI LIN MultiMessage Blockset version, you must update the S-functions for all the contained RTILINMM blocks before you perform modifications to the LIN configuration.

To create new S-functions for all the RTILINMM blocks in your model in one step, you can select the **Create S-Function for all LIN Blocks** command from the **Options** menu of the RTILINMM GeneralSetup block.

For further information, refer to *Limitations of RTI LIN MultiMessage Blockset* ( *RTI LIN MultiMessage Reference*).

RTI RapidPro Control Unit Blockset

New Features of the RTI RapidPro Control Unit Blockset 1.10


RPCU SENT blockset

The RTI RapidPro Control Unit Blockset provides a SENT blockset for you to use the RapidPro system as a *SENT receiver*.

SENT is a protocol used between sensors and ECUs to transmit data of high-resolution sensors as an alternative to an analog interface.




The RapidPro Control Unit RTI blockset and the RapidPro Control Unit RTLib do not yet provide the functionality to use the RapidPro system as a SENT transmitter.

For basic information on the SENT protocol and implementing it on a RapidPro system, refer to *Basics on the SENT Protocol* ( *RapidPro System – I/O Subsystem MPC565 Implementation Features*).


Suppressing engine speed calculation

For the `RPCU_CRANK_SETUP_TPU_BLx` block, it is possible to suppress speed calculation during a specific angle range succeeding a gap of the crankshaft wheel. The speed is not calculated until a user-defined number of teeth has passed by. The last calculated speed value is used during the suppression phase instead.

The `Enable speed calculation suppression following a gap` option allows peak overshoots of the calculated speed values to be ignored. For details on the feature, refer to *Basics on Speed Measurement* ( *RapidPro System – I/O Subsystem MPC565 Implementation Features*).

Optimizing synchronization time

For the `RPCU_CAM_TPU_BLx` block, it is possible to force synchronization even if no signal edge (camshaft marker) is detected within the camshaft evaluation segment during the first crankshaft rotation. The synchronization algorithm then assumes that the signal edge will come during the second crankshaft rotation.

The Force synchronization without camshaft signal edge detection option allows the angle counter to always be quickly synchronized always during the first crankshaft rotation. To avoid damage to the combustion engine, however, some preconditions must be strictly fulfilled. For details on the feature, refer to *Example of Synchronization Without Camshaft Signal* ( *RapidPro System – I/O Subsystem MPC565 Implementation Features*).

RTI Ethernet (UDP) Blockset

New Features of the RTI Ethernet (UDP) Blockset 1.1

Enhanced hardware support

The blockset now also supports the interfaces of a DS4121 ECU Interface Board in a dSPACE modular system based on DS1005 or DS1006.

To connect the DS4121 ECU Interface Board to the Ethernet, an LVDS Ethernet cable is required.

The blockset now provides a demo model that includes the encoding and decoding of signals.

For further information, refer to *RTI Ethernet (UDP) Blockset Reference*.

RTI FPGA Programming Blockset

Limited availability outside Europe and Asia, please inquire.

Where to go from here

Information in this section

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<i>Migrating to RTI FPGA Programming Blockset 2.1</i>	109

New Features of the RTI FPGA Programming Blockset 2.1

New variant of DS5203 FPGA Board

The DS5203 FPGA Board is now available in two variants:

- DS5203 FPGA Board (SX95)
This is the board variant that has been available since 2009 including a Xilinx Virtex[®]-5 SX95T FPGA.
- DS5203 FPGA Board (LX50)
This is the new board variant including a Xilinx Virtex[®]-5 LX50T FPGA with fewer logic cells but the same I/O features.

MicroAutoBox II with DS1552 Multi-I/O Module

The RTI FPGA Programming Blockset now supports MicroAutoBox II 1401/1511/1512 with DS1552 Multi-I/O Module.

The related FPGA framework provides the following I/O features:

- Data exchange with the processor model:
 - Register In / Register Out
 - Buffer In / Buffer Out
 - Interrupt Request
 - A/D conversion:
 - 8 parallel A/D converters with 16-bit resolution and a conversion time of 1 μ s
 - 16 parallel A/D converters with 16-bit resolution and a conversion time of 5 μ s
 - D/A conversion:
 - 4 parallel D/A converters with 16-bit resolution
 - Digital I/O Unit:
 - 16 digital input channels for Digital In (Type A)
 - 16 digital output channels for Digital Out (Type A)
 - 8 digital bidirectional channels for
 - Digital In (Type B)
 - Digital Out (Type B)
- Additional I/O:
- Status In
 - LED Out
 - Sensor Supply

Enhancements to the RTI blocks of the Processor Interface library

The PROC_PHS_READ_BLx block and the PROC_PHS_WRITE_BLx block now provide Parameters pages in their block dialogs. They contain information on the configurations in the related FPGA Interface blocks, for example, the binary point position and the data format.

For further information, refer to *RTI FPGA Programming Blockset - Processor Interface Reference*.

Extended Xilinx® support

The RTI FPGA Programming Blockset now supports the Versions 10.1.03 and 12.4 of the Xilinx design tools.

This increases the number of MATLAB versions and operating systems supported for the blockset's FPGA Interface.

Xilinx Design Tools Version	Operating System	MATLAB Version
10.1.03	Windows XP Professional (32-bit version)	<ul style="list-style-type: none"> ■ MATLAB R2007b+ ■ MATLAB R2008a+
12.4 ¹⁾	<ul style="list-style-type: none"> ■ Windows XP Professional (32-bit version) ■ Windows Vista Business, Ultimate, and Enterprise (32-bit version and 64-bit version) 	<ul style="list-style-type: none"> ■ MATLAB R2009a ■ MATLAB R2009bSP1 ■ MATLAB R2010a ■ MATLAB R2010bSP1

¹⁾ (only 32-bit version)

The DS5203 FPGA boards support both Xilinx design tools versions, MicroAutoBox II requires Xilinx design tools version 12.4.

The DS5203 FPGA Board (LX50) also supports the WebPACK Editions of the Xilinx design tools.

Related topics

Basics

- *Migrating to RTI FPGA Programming Blockset 2.1* on page 109

Migrating to RTI FPGA Programming Blockset 2.1

Objective

There are different methods to migrate an existing model, depending on the blockset version used.

Available methods

- Migrating from RTI FPGA Programming Blockset 1.0 to 2.1
- Migrating from RTI FPGA Programming Blockset 1.1 to 2.1
- Migrating from RTI FPGA Programming Blockset 1.2 to 2.1
- Migrating from RTI FPGA Programming Blockset 2.0 to 2.1

Migrating from RTI FPGA Programming Blockset 1.0 to 2.1

Because the RTI FPGA Programming Blockset 1.0 (released with dSPACE Release 6.4) was not fully implemented, a model that you implemented with it must be migrated manually. You must replace each block of the RTI FPGA Programming Blockset by a new one to make the model compatible with the current dSPACE RTI environment for modeling, building and executing.



The update function of the script interface does not support RTI FPGA Programming Blockset 1.0.

Migrating from RTI FPGA Programming Blockset 1.1 to 2.1

If you have implemented your FPGA application using RTI FPGA Programming Blockset 1.1 (released with dSPACE Release 6.5), and you want to use it with RTI FPGA Programming Blockset 2.1 (released with dSPACE Release 7.1), you must update the FPGA framework. This involves only a few internal modifications that do not affect the blocks' inputs and outputs or their parameters. You can use the script interface to update the FPGA framework.

To update the FPGA framework without changing the values of the block parameters

```
rtifpga_scriptinterface('FPGAFrameworkUpdate',
    <SimulinkHandle>)
```

The script handles all the subsystems in the model/subsystem which is specified by the Simulink handle. The parameters of the blocks are unchanged after updating to the current framework version.

Example: The following script updates the FPGA framework for any FPGA subsystems in the processor model called *MyProcModel*. The specified values of the block parameters are not changed.

```
ProcModelHandle = get_param('MyProcModel', 'handle')
rtifpga_scriptinterface('FPGAFrameworkUpdate',
    ProcModelHandle)
```

To update the FPGA framework and reset the values of the block parameters to their initial values

```
rtifpga_scriptinterface('FPGAFrameworkUpdate',
    <SimulinkHandle>, 'ReInit')
```

The script handles all the subsystems in the model/subsystem which is specified by the Simulink handle. The parameters of the blocks are reset to their initial values after updating to the current framework version.

```
ProcModelHandle = get_param('MyProcModel', 'handle')
rtifpga_scriptinterface('FPGAFrameworkUpdate',
    ProcModelHandle, 'ReInit')
```

Migrating from RTI FPGA Programming Blockset 1.2 to 2.1

No migration is necessary unless you have updated from Xilinx design tools version 10.1.03 to 12.4. Then you must also update the framework, refer to Migrating from RTI FPGA Programming Blockset 1.1 to 2.1.

**Migrating from RTI FPGA
Programming Blockset 2.0
to 2.1**

No migration is necessary, unless you have updated from Xilinx design tools version 10.1.03 or 11.5 to 12.4. Then you must also update the framework, refer to Migrating from RTI FPGA Programming Blockset 1.1 to 2.1.

Compatibility Information

Where to go from here

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Supported MATLAB Releases

Supported MATLAB releases

The table below shows which dSPACE software item supports which MATLAB release:

MATLAB Release...	Is Supported by Release 7.1 Software Item...			
	RCP and HIL Software	TargetLink 3.2	Model Compare 2.1	SystemDesk 3.0 ¹⁾
R2011a	Yes ²⁾	No	No	No
R2010bSP1	Yes	Yes	Yes	No
R2010b	No	Yes	Yes	Yes
R2010a	Yes	Yes	Yes	Yes
R2009bSP1	Yes	Yes	Yes	Yes
R2009b	No	No	No	No
R2009a	Yes	Yes	Yes	Yes
R2008b	Yes ²⁾	Yes	Yes	Yes
R2008a+	Yes	Yes	Yes	Yes
R2007b+	Yes	Yes	Yes	Yes

¹⁾ DSOffSim (dSPACE target for offline simulation) installed with SystemDesk requires MATLAB.

²⁾ Not supported by the RTI FPGA Programming Blockset - FPGA Interface

For up-to-date information on additional MATLAB releases which can be used in combination with dSPACE software, refer to <http://www.dspace.com/goto?sw3rdparty>.



dSPACE software supports only 32-bit versions of MATLAB. 64-bit MATLAB versions are not supported.

For detailed information on compatibility, refer to <http://www.dspace.com/goto?Compatibility> on the dSPACE Web site.

Operating System

Operating system on host PC

The following table shows which software items in Release 7.1 support which operating system:

Operating System...	Is Supported By...				
	RCP & HIL Software	TargetLink 3.2	ControlDesk 4.1 ¹⁾	Model Compare 2.1	SystemDesk 3.0
Windows XP Professional (32-bit version) with Service Pack 3	Yes	Yes	Yes	Yes	Yes
Windows Vista Business, Ultimate, and Enterprise (32-bit version) with the latest Service Pack ²⁾	Yes	Yes	Yes	Yes	Yes
Windows Vista Business, Ultimate, and Enterprise (64-bit version) with the latest Service Pack ²⁾³⁾	Yes	Yes	Yes ⁴⁾	Yes	Yes
Windows 7 Professional, Ultimate, and Enterprise (32-bit version) with the latest Service Pack ⁵⁾	Yes	Yes	Yes ⁴⁾	Yes	Yes
Windows 7 Professional, Ultimate, and Enterprise (64-bit version) with the latest Service Pack ³⁾⁵⁾	Yes	Yes	Yes ⁴⁾	Yes	Yes

¹⁾ ControlDesk Next Generation (= ControlDesk 4.x) is the successor to CalDesk and ControlDesk. However, ControlDesk versions lower than ControlDesk 4.0 are still included in the RCP and HIL software item.

²⁾ Only the editions Windows Vista Business, Ultimate, and Enterprise are supported. The editions Windows Vista Home and Starter are not supported.

³⁾ The 64-bit operating systems are supported by 32-bit software running in WoW64 (Windows-On-Windows64). 64-bit MATLAB versions are not supported.

⁴⁾ ControlDesk Next Generation's ECU Diagnostics Module is not supported.

⁵⁾ Only the editions Windows 7 Professional, Ultimate, and Enterprise are supported. The editions Windows 7 Home and Starter are not supported.



- As of dSPACE Release 6.5, Windows 2000 is no longer supported.
- Windows XP Professional x64 Edition is not supported.

Limitations for Windows Vista/Windows 7 Some limitations apply when you use Windows Vista or Windows 7 in combination with dSPACE software. Refer to *Limitations for Windows Vista/Windows 7* on page 117.

Notes on 64-bit Windows operating systems dSPACE software runs as a 32-bit application under 64-bit Windows operating systems in a WoW64 (Windows-on-Windows 64-bit) subsystem. WoW64 is the x86 emulator that allows 32-bit Windows-based applications to run seamlessly on 64-bit versions of Windows. This allows you to use up to 4 GB virtual memory for each 32-bit process. 32-bit versions of Windows can address only up to 3.2 GB of memory in total for all running processes including the operating system itself.

Some additional limitations apply when you use a 64-bit Windows operating system with dSPACE software. Refer to *Limitations for 64-bit Windows Operating Systems* on page 119.

Operating system on dSPACE License Server

If you purchased floating network licenses, you have to install and configure one of the networked PCs as the dSPACE License Server.

The operating system of the dSPACE License Server must be one of the following:

- Windows XP Professional (32-bit version) with Service Pack 3
- Windows Vista Business, Ultimate, or Enterprise with the latest Service Pack
- Windows 7 Professional, Ultimate, or Enterprise
- Windows Server 2003

The dSPACE License Server does not support non-Windows operating systems.

Limitations for Windows Vista/Windows 7

Objective	Some limitations apply when you use Windows Vista/Windows 7 in combination with dSPACE software.
MATLAB support	<p>Under Windows 7, the dSPACE software has been released for MATLAB versions since MATLAB R2009a.</p> <p>For further system requirements of MathWorks® software, refer to http://www.mathworks.com/support/sysreq/current_release.</p>
S-function generation	<p>If you use Windows 7 and MATLAB R2010b, the compilation of S-functions stops with error messages. These are caused by a Simulink bug that occurs if the MATLAB installation path contains a space (e.g. C:\Program Files\MATLAB). This bug applies to RTI and TargetLink and can be corrected by installing bugfix 661855 (refer to http://www.mathworks.com/support/bugreports/661855).</p> <p>Whenever an S-function is compiled using the MEX compiler, the following error might occur:</p> <p>Microsoft compilers</p> <pre>fatal error C1083: Cannot open include file: 'simstruc.h': No such file or directory</pre> <p>LCC</p> <pre><filename:lineNumber> Could not find include file "simstruc.h"</pre> <p>RTI The error might occur when S-functions are generated, e.g., by RTICANMM or RTILINMM.</p> <p>TargetLink In TargetLink, error messages might occur when compiling</p> <ul style="list-style-type: none"> ■ Simulation S-functions for SIL/PIL simulation ■ Stand-alone S-functions ■ Custom code S-functions <p>Depending on the selected MEX compiler, LCC or MSVC, there are different compiler messages:</p> <pre>MSVC: "fatal error C1083: Cannot open include file: <simstruc.h>: No such file or directory" LCC: lcc preprocessor error: <filename:lineNumber> Could not find include file <simstruc.h></pre>
Fast user switching not supported	The dSPACE software does not support the fast user switching feature of Windows Vista and Windows 7.

Closing dSPACE software before PC shutdown	The modified shutdown procedure of Windows operating systems causes some required processes to be aborted although they are still being used by dSPACE software. To avoid data loss, it is recommended to terminate the dSPACE software manually before a PC shutdown is performed.
Valid only for Windows 7: User Account Control	It is recommended to disable Windows' User Account Control (UAC) during the installation of dSPACE software. If you cannot disable it, you should note the following Windows behavior: If UAC is enabled, the setup programs run with the administrator account instead of the user account. Therefore it is important that the administrator account has access to the required drives, particularly to the required network drives.
USB devices under Windows 7	The first time dSPACE USB devices using cables with opto-isolation are connected to the PC, there might be a message that the device driver software was not successfully installed. The dSPACE device will nevertheless work properly later on.
Using boards with ISA interface installed in the host PC	When installed directly in the host PC, ISA boards such as the DS1103 or DS813 cannot be used with Windows Vista/Windows 7 with the standard installation routines. If necessary, contact dSPACE Support.
Allowing communication via additional firewall rules	During installation of the dSPACE software, two additional Windows firewall rules are installed. The first rule allows communication with a dSPACE expansion box, for example, AutoBox. The second rule allows MotionDesk to receive motion data from a network channel. The rules are created by the following commands: <ul style="list-style-type: none">■ <code>advfirewall firewall add rule name="dSPACE Net Service" service=any dir=in action=allow profile=any protocol=icmpv4:0, any description="Allow the dSPACE Net Service to connect to a dSPACE expansion box via network."</code>■ <code>advfirewall firewall add rule name="dSPACE MotionDesk" program="%dSPACE_ROOT%\MotionDesk\Bin\MotionDesk.exe" dir=in action=allow profile=any description="Allow dSPACE MotionDesk to receive motion data via network."</code>

Limitations for 64-bit Windows Operating Systems

Objective	Some additional limitations apply when you use Windows Vista/Windows 7 (64-bit versions) in combination with dSPACE software.
Limitations of device drivers	Third-party bus interfaces (CAN, LIN, or FlexRay) are supported only if they have 64-bit drivers from the manufacturers.
Limitations of target compilers	For information on support for a specific target compiler, contact the respective compiler manufacturer.
Limitations with software	The following table shows the known limitations of the dSPACE and third-party software under 64-bit Windows operating systems:

Software	Limitations and Recommendations
Naming of installation path	Under 64-bit Windows operating systems, the default installation folder for 32-bit applications is C:\Program Files (x86). Since parentheses in the path name can cause problems, make sure to choose installation paths without parentheses for the dSPACE software, MATLAB, the DS1006 board and Microtec PowerPC C compilers.
AutomationDesk 3.3	The winsound Python module used to create an acoustic signal in the Tutorialdemo06 project is not supported by Windows Vista (64-bit version).
MATLAB	If you install a 32-bit version of MATLAB under Windows Vista/Windows 7 (64-bit versions), the MATLAB installation program generates a message that a 64-bit version of MATLAB is available. Click OK and continue installing the 32-bit version of MATLAB. dSPACE software supports only 32-bit versions of MATLAB, not 64-bit versions.

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