dSPACE Release

New Features and Migration

Release 2018-A – May 2018

Embedded Success dSPACE

How to Contact dSPACE

Mail:	dSPACE GmbH Rathenaustraße 26 33102 Paderborn Germany
Tel.:	+49 5251 1638-0
Fax:	+49 5251 16198-0
E-mail:	info@dspace.de
Web:	http://www.dspace.com

How to Contact dSPACE Support

If you encounter a problem when using dSPACE products, contact your local dSPACE representative:

- Local dSPACE companies and distributors: http://www.dspace.com/go/locations
- For countries not listed, contact dSPACE GmbH in Paderborn, Germany.
  Tel.: +49 5251 1638-941 or e-mail: support@dspace.de

You can also use the support request form:
http://www.dspace.com/go/supportrequest. If you are logged on to mydSPACE, you are automatically identified and do not need to add your contact details manually.

If possible, always provide the relevant dSPACE License ID or the serial number of the CmContainer in your support request.

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/go/support for software updates and patches.

Important Notice

Contents

About This Document

Contents

This document informs you about the new features of all the dSPACE software products in Release 2018-A. It also gives you an overview of software products with no or minor changes. There are instructions on migrating from earlier dSPACE releases, especially from earlier product versions, if required.

Where to go from here

Information in this section

Conventions Used in dSPACE User Documentation

Symbols

dSPACE user documentation uses the following symbols:

Symbol	Description
DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a hazard that, if not avoided, could result in property damage.
Note	Indicates important information that you should take into account to avoid malfunctions.
Tip	Indicates tips that can make your work easier.

Symbol	Description
	Indicates a link that refers to a definition in the glossary, which you can find at the end of the document unless stated otherwise.
	Precedes the document title in a link that refers to another document.

Naming conventions

dSPACE user documentation uses the following naming conventions:

%name% Names enclosed in percent signs refer to environment variables for file and path names.

< > Angle brackets contain wildcard characters or placeholders for variable file and path names, etc.

Special folders

Some software products use the following special folders:

Common Program Data folder A standard folder for application-specific configuration data that is used by all users.

```
%PROGRAMDATA%\dSPACE\<InstallationGUID>\<ProductName>
```

or

```
%PROGRAMDATA%\dSPACE\<ProductName>\<VersionNumber>
```

Documents folder A standard folder for user-specific documents.

```
%USERPROFILE%\My Documents\dSPACE\<ProductName>\
<VersionNumber>
```

Local Program Data folder A standard folder for application-specific configuration data that is used by the current, non-roaming user.

```
%USERPROFILE%\AppData\Local\dSPACE\<InstallationGUID>\
<ProductName>
```

Accessing dSPACE Help and PDF Files

Introduction

After you install and decrypt your dSPACE software, the documentation for the installed products is available as online help in dSPACE Help and as Adobe® PDF files.

Online help

There are various ways to open dSPACE Help.

Note

Not all the ways to open dSPACE Help are available for all dSPACE software products.

Opening from Windows You can open dSPACE Help on its home page:

- Via Windows Start Menu

Opening from dSPACE software with menu bar You can open dSPACE Help on a product's start page:

- Via the menu bar in a dSPACE product

Opening from dSPACE software with ribbons If you use dSPACE software with ribbons, you can open dSPACE Help:

- Via the Start page in dSPACE software
- Via the Backstage view in dSPACE software (leftmost ribbon tab)
- Via the button

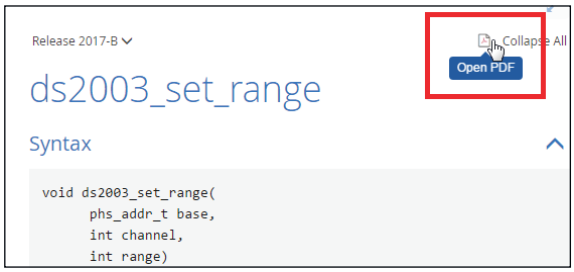
Opening context-sensitive help dSPACE Help provides context-sensitive help. You can open help on the currently active context in dSPACE software:

- Via **F1**
- Via the Help button

PDF files

You can open the PDF files as follows:

Opening from a topic in dSPACE Help You can access the PDF file with the current topic via the button at the topic's top right. The following illustration shows an example:



The PDF document opens on its first page.

Opening from dSPACE software with ribbons If your dSPACE software has a user interface with ribbons, you can open a folder that contains the user documentation in PDF format via the button in the Backstage view (leftmost ribbon tab).

Overview of dSPACE Release 2018-A

Introduction

Gives you an overview of the new key features in Release 2018-A and information about unchanged products.

Where to go from here

Information in this section

General Enhancements and Changes

Introduction

The following new features and changes concern several dSPACE products.

64-bit Python distribution

dSPACE Release 2018-A contains a 64-bit Python 2.7 distribution with the following components.

Python Component	Version
Python core	2.7.14
PyWin32	221.10
Numpy	1.13.3
Matplotlib	1.5.3
WxPython	3.0.2.0
Py2exe	0.6.9
Comtypes	1.1.3

Python Component	Version
Python for .NET	2.3.0
Cycler	0.10.0
Pillow	4.3.0
Pip	9.0.1
Pyparsing	2.2.0
Python_dateutil	2.6.1
Pytz	2017.3
Six	1.11.0

The support of Python 2.7 will be discontinued. For more information, refer to Discontinuations on page 15.

RCP and HIL software: C/C++ compiler for building MATLAB MEX files

RCP and HIL software (such as RTI CAN MultiMessage Blockset, RTI LIN MultiMessage Blockset, or Automotive Simulation Models) now supports the following C/C++ compiler to build MATLAB MEX files:

- MinGW (GNU Compiler Collection (GCC 4.9.2)): In combination with MATLAB Releases 2016b and 2017a.
- MinGW (GNU Compiler Collection (GCC 5.3.0)): In combination with MATLAB Releases 2017b and 2018a.
- Microsoft Visual Studio 2015 Professional: In combination with MATLAB Releases 2016b, 2017a, 2017b, and 2018a.

Note

The Microsoft Windows SDK 7.1 C/C++ compiler is no longer supported.

Printed user documentation

The printed user documentation is not delivered automatically. You can decide which of the available printed documents you would like to have. To order printed documentation, refer to http://www.dspace.com/go/requestreleasematerial.

Note

If you do not order printed documentation, use dSPACE Help or PDF files to learn about new features, enhancements, and the safety precautions regarding your products.

Discontinuations

Introduction

The following discontinuations for software and hardware are relevant to the current Release or are planned for future Releases.

Discontinuation of dSPACE hardware

DCI-CAN1 This product is discontinued as of December 2017. New Releases of dSPACE software will continue to support the DCI-CAN1 at least until the end of 2019.

However, for new projects we recommend that you use the successors DCI-CAN2 or DCI-CAN/LIN1.

DCI-GSI1 This product is discontinued as of December 2017. New Releases of dSPACE software will continue to support the DCI-GSI1 at least until the end of 2019.

However, for new projects we recommend that you use the successor DCI-GSI2.

Calibration Hub This product will be discontinued as of December 2018. New Releases of dSPACE software will continue to support the Calibration Hub at least until the end of 2020.

However, for new projects we recommend that you use the successors DCI-CAN2 or DCI-CAN/LIN1.

Planned software support discontinuation

Python 2.7 The support of Python 2.7 will be discontinued with dSPACE Release 2018-B. Python 3.6 will then be supported.

In advance of Release 2018-B, you can find information on changes and migration aspects of Python scripts in dSPACE products on the dSPACE website, refer to http://www.dspace.com/go/Python36Migration.

Product Version Overview

Product versions

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			
	2016-B	2017-A	2017-B	2018-A
AutomationDesk	5.3	5.4	5.5	5.6 Refer to AutomationDesk on page 27.
Automotive Simulation Models	8.3	8.4	9.0	9.1 Refer to Automotive Simulation Models (ASM) on page 31.

Product	dSPACE Release			
	2016-B	2017-A	2017-B	2018-A
Bus Manager (stand-alone)	5.6	5.7	6.0	6.1 Refer to Bus Manager (Stand-Alone) on page 63.
ConfigurationDesk	5.6	5.7	6.0	6.1 Refer to ConfigurationDesk on page 67.
Container Manager	4.5	4.5	5.0	5.0
ControlDesk	6.0	6.1	6.2	6.3 Refer to ControlDesk on page 75.
DCI Configuration Tool	3.7	3.7.1	3.8	3.9 Refer to DCI Configuration Tool on page 87.
dSPACE CAN API Package	3.0	3.0.1	3.0.2	3.0.3 Refer to dSPACE CAN API Package on page 89.
dSPACE ECU Flash Programming Tool	2.3.1	2.3.2	2.4	2.5 Refer to dSPACE ECU Flash Programming Tool on page 91.
dSPACE FlexRay Configuration Package	3.8	3.9	4.0	4.1
dSPACE Python Extensions	2.2	2.3	2.4	2.5
dSPACE XIL API .NET	2016-B	2017-A	2017-B	2018-A Refer to dSPACE XIL API .NET on page 93.
ECU Interface Manager	2.0	2.1	2.2	2.3 Refer to ECU Interface Manager on page 95.
Firmware Manager	2.2	2.3	2.4	2.5 Refer to Firmware Manager on page 101.
Model Compare	2.7	2.7	2.8	2.8
ModelDesk	4.4	4.5	4.6	4.7 Refer to ModelDesk on page 103.
Model Interface Package for Simulink	3.3	3.4	3.5	3.6 Refer to Model Interface Package for Simulink on page 107.
MotionDesk	3.9	4.0	4.1	4.2 Refer to MotionDesk on page 109.
MotionDesk Blockset	2.5	2.5.1	2.5.2	2.5.3 Refer to MotionDesk on page 109.
Real-Time Testing	3.1	3.2	3.3	3.4 Refer to Real-Time Testing on page 113.
RTI[1)]	7.7	7.8	7.9	7.10 Refer to RTI/RTI-MP and RTLib on page 115.
RTI-MP[2)]	7.7	7.8	7.9	7.10 Refer to RTI/RTI-MP and RTLib on page 115.
RTI Bypass Blockset	3.7	3.8	3.9	3.10 Refer to RTI Bypass Blockset on page 117.
RTI CAN Blockset	3.4.3	3.4.4	3.4.5	3.4.6

Product	dSPACE Release			
	2016-B	2017-A	2017-B	2018-A
RTI CAN MultiMessage Blockset	4.4	4.5	4.6	5.0 Refer to RTI CAN MultiMessage Blockset on page 119.
RTI Electric Motor Control Blockset	1.3.1	1.4	1.4.1	1.4.1
RTI Ethernet Blockset	1.2.1	1.2.2	1.2.3	1.2.3
RTI Ethernet (UDP) Blockset	1.4.1	1.4.2	1.4.3	1.4.3
RTI FPGA Programming Blockset	3.2	3.3	3.4	3.5 Refer to RTI FPGA Programming Blockset on page 121.
RTI LIN MultiMessage Blockset	2.7	2.8	2.9	3.0 Refer to RTI LIN MultiMessage Blockset on page 125.
RTI RapidPro Control Unit Blockset	2.2.2	2.2.2	2.2.3	2.2.3
RTI USB Flight Recorder Blockset	1.2.1	1.2.1	1.2.2	1.2.2
RTI Watchdog Blockset	2.0	2.1	2.1.1	2.1.1
SCALEXIO firmware	3.5	4.0	4.1	4.2 Refer to SCALEXIO Firmware on page 127.
SYNECT	2.2	2.3	2.4	2.5 Refer to SYNECT on page 129.
SystemDesk	4.7	4.8	5.0	5.1 Refer to SystemDesk on page 145.
TargetLink	4.2	4.2	4.3	4.3
Variable Editor[3)]	2.3	2.3	2.4	2.4
VEOS	3.7	4.0	4.1	4.2 Refer to VEOS on page 155.

1) Including the standard I/O blocksets.
2) Including the RTI Gigalink Blockset.
3) The Variable Editor is no longer part of the dSPACE Release DVD. It is available at https://www.dspace.com/go/requestreleasedownload.

If you have not performed regular updates, 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

Introduction

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

Where to go from here

Information in this topic

AutomationDesk

The new key features of AutomationDesk are:

- The **Evaluation** library provides new automation blocks to get access to specific data stored in an MDF 4.1 (MF4) file, such as channel identifiers and bookmarks.
- Enhancements to the **Signal Editor**, such as displaying the evaluation verdicts.
- Enhancement to the find functionality to get information on the instances of a library template.
- Enhancements to the context menus of **MAPort** and **Capture** data objects to release these objects manually.
- Enhancement to the **Execution Configuration** dialog to configure the update behavior of data object values during execution.
- Redesign of the tooltips with an updated look and more content.
- SCALEXIO: Support of multiple Simulink behavior models and SIC files per application process.
- Enhancements to the COM API to get information on Python Modules and to configure the update behavior of data object values during execution.

For more information on the new features, refer to New Features of AutomationDesk 5.6 on page 27.

Bus Manager (stand-alone)

The new key features of the Bus Manager (stand-alone) are:

- Manipulating bus communication of communication clusters independently from the involved ECUs
- New bus configuration features

For more information, refer to Features of the Bus Manager (Stand-Alone) 6.1 on page 63.

ConfigurationDesk (Implementation Version)

The new key features of ConfigurationDesk are:

- Support of new SCALEXIO hardware: DS6241 D/A Board.
- Support of new function block types: TCP, Angular Wavetable Voltage Out, Angular Wavetable Digital Out, Power On Signal In, and System Shutdown.
- Support of multiple Simulink behavior models and SIC files assigned to the same application process.
- Various enhancements of the Bus Manager for configuring bus communication for simulation, manipulation, and inspection purposes.

For more information, refer to ConfigurationDesk - Implementation Version on page 68.

ControlDesk

The new key features of ControlDesk 6.3 are:

Platform/device enhancements

- Video capturing in combination with Windows 10
- SCALEXIO: DS6241 support
- SCALEXIO: Support of multiple Simulink behavior models and SIC files per application process

For more information on the new features, refer to New Features of Platform Management and Platforms/Devices (ControlDesk 6.3) on page 76.

Instrument enhancements

- Table Editor: Support for multiple working points
- Adding variables to instruments via instrument context menu

For more information on the new features, refer to New Instrument Features (ControlDesk 6.3) on page 77.

Measurement and recording enhancements

- Improved export and saving of large MF4 files
- Measurement signal list: Alternating row colors

For more information on the new features, refer to New Measurement and Recording Features (ControlDesk 6.3) on page 77.

User interface handling enhancements

- Customizing ribbons

For more information on the new feature, refer to New User Interface Handling Features (ControlDesk 6.3) on page 78.

Bus Navigator enhancements Bus instrument enhancements:

- Bus communication manipulation support
- Bus instrument (TX status type for LIN): Support for LIN network node wake-up
- Bus instrument (Inspection type for CAN), Bus instrument (Inspection type for LIN): Support for PDU raw data inspection
- Bus instrument (RX type for CAN), Bus instrument (RX type for LIN): Support for counter signals
- Bus instrument (TX type for CAN), Bus instrument (RX type for CAN): Support for CAN frame access
- Bus configuration enable support

Ethernet monitoring enhancements:

- Ethernet monitoring: Decoding view
- Ethernet monitoring: Display of ECU names instead of MAC/IP addresses in the monitoring list

For more information on the new features, refer to New Bus Navigator Features (ControlDesk 6.3) on page 78.

Electrical error simulation (failure simulation) enhancements

- Error configuration commands also available in full-screen mode
- EESPort creation based on non-dSPACE EESPort implementations
- New tutorial videos

For more information on the new features, refer to New Electrical Error Simulation Features (ControlDesk 6.3) on page 81.

Signal Editor enhancements

- Specifying general Signal Editor settings
- Enhanced zooming signals

For more information on the new features, refer to New Signal Editor Features (ControlDesk 6.3) on page 81.

Automation enhancements

- Importing/exporting the recent platform configuration

For more information on the new features, refer to New Automation Features (ControlDesk 6.3) on page 82.

dSPACE CAN API Package

The new key feature of the dSPACE CAN API Package is:

- New functions to convert baud rates to bit timing parameters

For more information on the new features, refer to New Features of dSPACE CAN API Package 3.0.3 on page 89.

dSPACE XIL API

The new key features of dSPACE XIL API are:

- XIL API MAPort now supports multiple Simulink behavior models and SIC files per application process in a ConfigurationDesk application.
- XIL API EESPort now supports Ethernet-to-RS232 converters to control dSPACE failure simulation hardware.

For more information on the new features, refer to New Features of dSPACE XIL API .NET 2018-A on page 93.

ECU Interface Manager

The new key features of the ECU Interface Manager are:

- Support for the Infineon AURIX 2G microcontroller family
- Configuration of variable-based ECU-synchronous data access
- Improved variable-based ECU-asynchronous data access
- Improvements for control variables of control execution
- Import of A2L files with XCPplus interface description data of XCP 1.3 and 1.4

For more information on the new features, refer to New Features of ECU Interface Manager 2.3 on page 95.

Firmware Manager

The new key feature of the Firmware Manager is:

- Support of a new SCALEXIO board:
  - DS6241 D/A Board

For more information on the new hardware, refer to New Features of the SCALEXIO Firmware 4.2 on page 127.

Model Interface Package for Simulink

The new key feature of Model Interface Package for Simulink is:

- New command for the creation of model port block periphery.

ModelDesk

The new key features of ModelDesk are:

- The new **Scenario Editor** is an enhancement of the **Traffic Editor**. You can specify maneuver and traffic in one component.
- Improvements of the **Road Generator**.

For more information on the new features, refer to New Features of ModelDesk 4.7 on page 103.

MotionDesk

The new key features of MotionDesk are:

- Terrain generation
- Supporting very large networks.
- 2 × 2 patterns and high dynamic range for camera sensors.

For more information on the new features, refer to New Features of MotionDesk 4.2 on page 109.

Python Extensions

Python Extensions 2.5 has no new features.

Real-Time Testing

The new key features of Real-Time Testing are:

- The rttlib.dsethernetapilib module supports the access to Ethernet on SCALEXIO and DS6001.
- The rttlib.utilities.Logging module supports writing messages to the standard output or dSPACE log file.

For more information on the new features, refer to New Features of Real-Time Testing 3.4 on page 113.

RTI, RTI-MP, and RTLib

The new key feature of RTI, RTI-MP, and RTLib is:

- Support of MATLAB R2018a

For more information on the new feature, refer to New Features of RTI/RTI-MP and RTLib on page 115.

RTI Bypass Blockset

The new key features of the RTI Bypass Blockset are:

- Support of Infineon AURIX 2G microcontroller family for on-target bypassing
- Support of X86 target when using TargetLink Code Generator
- Import of A2L files with XCPplus interface description data of XCP 1.3 and 1.4

For more information on the new features, refer to New Features of the RTI Bypass Blockset 3.10 on page 117.

RTI CAN MultiMessage Blockset

The new key feature of the RTI CAN MultiMessage Blockset is:

- Support of CAN FD for SCALEXIO systems with a DS2672 Bus Module

For more information on the new features, refer to New Features of the RTI CAN MultiMessage Blockset 5.0 on page 119.

RTI FPGA Programming Blockset

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

- Extended Xilinx® software support.
- Extended FPGA access with your experiment software for SCALEXIO systems and MicroLabBox.

For more information on the new features, refer to New Features of the RTI FPGA Programming Blockset 3.5 on page 121.

SCALEXIO firmware

The new key feature of the SCALEXIO firmware is:

- Support of the DS6241 D/A Board

For more information on the new features, refer to New Features of the SCALEXIO Firmware 4.2 on page 127.

SYNECT

The new key features of SYNECT 2.5 are:

- Creation of checkpoints when you release items.
- Management of requirements document and requirement content item versions.
- Automatic creation of new item versions if you import model implementations, signals & parameters.

For more information on the new features, refer to New Features of SYNECT 2.5 on page 130.

SystemDesk

The new key features of SystemDesk 5.1 are:

- Support of AUTOSAR Release 4.3.1.
- Generation of V-ECUs according to the AUTOSAR Adaptive Platform.
- Selection of the AUTOSAR release of master files.
- Undoing and redoing actions.

For more information on the new features, refer to New Features of SystemDesk 5.1 on page 146.

VEOS

The new key features of VEOS are:

- Integration and simulation of V-ECUs according to the AUTOSAR Adaptive Platform
- Support of Ethernet communication simulation
- Export of SMC files

For more information on the new features, refer to New Features of VEOS 4.2 on page 155.

Aspects of Migrating from Previous Releases

Introduction	After you install products of the current dSPACE Release, some additional steps might be necessary. The migration steps required when you update from the last dSPACE Release are described in the product-specific migration topics in this document. If you update from an earlier dSPACE Release, refer to the related *New Features and Migration* document.

Migrating to dSPACE Release 2018-A

Introduction	After you install Release 2018-A, some additional steps might be necessary.
Migrating from dSPACE Release 2017-B	**Product-specific migration steps** Product-specific migration steps are usually performed automatically. For exceptions, refer to the product-specific migration descriptions.
Migrating from dSPACE Release 2017-A or earlier	To migrate from dSPACE Release 2017-A or earlier to Release 2018-A, you also have to perform the migration steps of the intervening dSPACE Releases. All of the required migration steps can be performed with Release 2018-A installed. For more information on the required migration steps, refer to the *New Features and Migration* documents of the intervening dSPACE Releases.
Previous release documents	The PDF files of previous Releases are called `NewFeaturesAndMigrationxx.pdf`, where xx stands for the Release number.

You can find the *New Features and Migration* files for previous Releases in the following locations:

- In the installation folder of the current dSPACE Help. Refer to `C:\Program Files\Common Files\dSPACE\Help 2018-A\Print\PreviousReleases`.
- On the dSPACE DVDs. Refer to `\Doc\PreviousReleases`.
- At www.dspace.com/go/migration for download. Here, you can also find *New Features and Migration* documents for very early Releases.

AutomationDesk

Where to go from here

Information in this section

New Features of AutomationDesk 5.6

Where to go from here

Information in this topic

General enhancements

The following usability improvements are available:

- Enhanced handling of the Signal Editor:
  - The evaluation verdicts are displayed in the Signal Editor.
  - When dragging a segment, insertion points are displayed in the Signal Editor.
  - The commands for zooming a signal have been improved.
  - The new **Signal Editor** page of the **AutomationDesk Options** dialog lets you specify default values for the display settings and for new segments when you create a signal.
- Enhanced handling of the Mapping Editor:
  - The context menu of a table entry now provides the Cut, Copy, Paste, and Delete commands and their corresponding icons and keyboard shortcuts.

  - The filter functionality has been extended to all the tables in the Mapping Editor.
- Enhanced find functionality

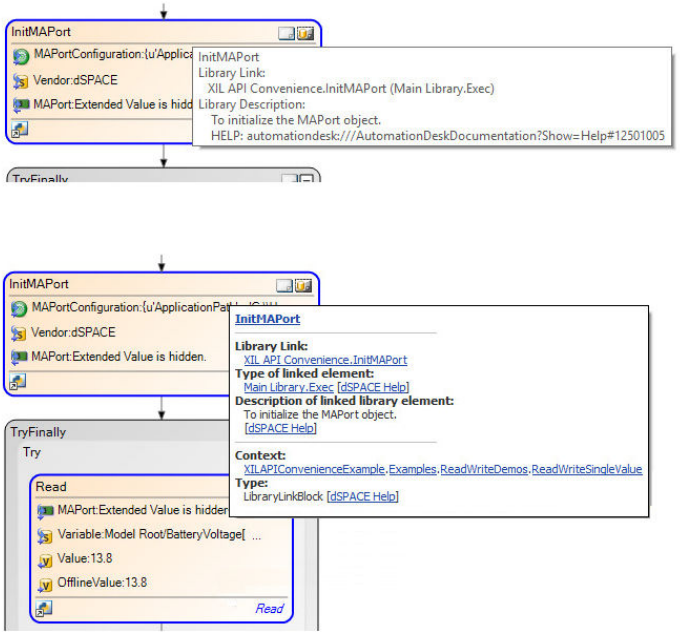
  The Library Browser provides the new **Find Instances** command to find all instances of the selected library template in the currently opened projects. The occurrences are listed in the **Found Items Viewer**. You can navigate to a found instance by double-clicking its entry in the viewer.
- Enhanced handling of MAPort and Capture data objects

  While implementing and testing sequences for platform access, it might be necessary to occasionally release the instantiated COM objects of MAPort and Capture data objects. If the related automation blocks in the sequence to automatically release these objects are not executed, you can do this now manually via the **Release MAPort** command in the context menu of an MAPort data object and the **Release Capture** command in the context menu of a Capture data object.
- Enhanced application handling

  AutomationDesk supports multiple Simulink behavior models and SIC files per application process in a ConfigurationDesk application. For more information, refer to New Features of ConfigurationDesk 6.1 (Implementation Version) on page 68.
- Enhanced configuration of executions

  With the new **Display data object value updates** setting in the **Execution Configuration** dialog, you can decide whether all the displays of data object values should be updated during execution. By default, this setting is disabled to improve performance.
- The content and the look of tooltips has been updated. Tooltips can now contain formatted text and hyperlinks. The text formatting is done by using HTML-like tags, such as `<b>text</b>` for a text in bold format.

The following example shows a tooltip of an instantiated **InitMAPort** block in AutomationDesk 5.5 and in AutomationDesk 5.6.



Enhancements to the libraries

The following library was enhanced:

Evaluation library The Evaluation library provides new automation blocks in the MDF File Access library folder to get access to specific data stored in an MDF 4.1 (MF4) file:

- AddMDFBookmarks

  This block is used to add user bookmarks to an MDF file.
- GetMDFEvents

  This block is used to get the events that are contained in an MDF file.
- GetMDFSignalIdentifiers

  This block is used to get the channel identifiers of the signals that are contained in an MDF file.
- SetMDFBookmarks

  This block is used to replace bookmarks in an MDF file.

For more information, refer to Evaluation (🕮 AutomationDesk Basic Practices).

Enhancements to the COM API

The AutomationDesk COM API provides the following enhancements:

- You can get information on Python Modules and Python Packages in a Custom Library.
  - The new `PythonModules`, `PythonModule` and `PythonPackage` objects are available in the `CustomLibraryFolder2` object.

  - With the methods and properties of these objects, you get, for example, the storage path, or the subelements of the specified module or package.
- You can use the `DisplayDataObjectValueUpdates` property of the `ExecutionConfiguration2` object to configure the update behavior of data object values during execution.

For more information, refer to 🕮 AutomationDesk Automation.

Migrating to AutomationDesk 5.6

General migration aspects

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

Note

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

- You must create backups of the project and of the linked custom libraries.
- AutomationDesk must be running properly. The Log Viewer must not display any error messages.
- The built-in libraries, required custom libraries, and other packages must be loaded correctly.
- To import an older project to a new AutomationDesk version, the exported project or custom library must be available in ZIP format. The automatic migration does not support the XML format.

If you use a version control system, there are some preconditions for successful migration, refer to How to Migrate Projects Under Version Control (🕮 AutomationDesk Basic Practices).

For more information, refer to Migrating AutomationDesk (🕮 AutomationDesk Introduction And Overview).

Automotive Simulation Models (ASM)

Where to go from here

Information in this section

All ASM Blocksets

Where to go from here

Information in this section

Migrating All ASM Blocksets

Migration strategy

The ASM migration supports the migration from the last ten Releases to dSPACE Release 2018-A. If you want to migrate from an older Release than the supported versions, the migration may fail. In this case, migrate to an intermediate Release and afterwards to the current Release. For more information, refer to Migrating ASM Models (🕮 ASM User Guide).

Discontinuation of Rapid Accelerator Support for ASM Products

Discontinuation for Release 2018-A

As of dSPACE Release 2018-A, the support of Simulink's Rapid Accelerator Simulation Mode is discontinued for all ASM products.

ASM Base InCylinder Blockset

Where to go from here

Information in this section

New Features of ASM Base InCylinder Blockset 2.3.3

Variable valve train

The demo models contain a blockset for simulating variable valve actuation. The camshaft phase can be adjusted by a cam phaser block. In the InCylinder models, this affects the gas exchange process in the cylinders.

The blockset consists of mechanical models for simulating the change rate of the camshaft offset. There are also control blocks for controlling the camshaft phaser. The control algorithm is based on the operating point of the engine.

The following blocks are added to the library:

- CAM_PHASER_INTAKE_CONTROL
- CAM_PHASER_INTAKE
- CAM_PHASER_EXHAUST_CONTROL
- CAM_PHASER EXHAUST

Reset

All Blocks that contain integrators and memory blocks are reset at the same time when the reset is active. Even if the simulation contains an NaN or Inf value, the simulation is restored when you click the **Reset** button in the ControlDesk layout.

Migrating to ASM Base InCylinder Blockset 2.3.3

DIRECTINJECTOR

The t_inj input signal has been modified. In previous versions, the t_inj input signal was included directly in the ASMSignalBus. As a consequence, the t_inj signal was also updated during active injections. If fewer injections occurred in the active event capture window, injection durations of the previous event capture window were still included.

VVT_SETPOINT	The block was discontinued. Its functionality is distributed to the following blocks: ▪ CAM_PHASER_INTAKE_CONTROL ▪ CAM_PHASER_EXHAUST_CONTROL
Reset	The Reset inport has been added to the following ASM blocks: ▪ IGNITION_SET ▪ INJECTOR_MODE ▪ PORTINJECTOR_TIMING ▪ RAIL_CONTROL ▪ TRIGGER_INJ_UPDATE ▪ ENGINE_OPERATION ▪ DIRECTINJECTOR_TIMING ▪ EGR_RATE_CONTROL ▪ RAIL_CONTROL_CRANKBASED
Related topics	Basics Migrating ASM Models (📖 ASM User Guide)

ASM Brake Hydraulics Blockset

Migrating to ASM Brake Hydraulics Blockset 2.0.2

DESIRED_BRAKE_PRESSURE	Memory has been added to the DESIRED_BRAKE_PRESSURE block to avoid an algebraic loop in the ASM Operator mode.

Related topics

Basics

Migrating ASM Models (📖 ASM User Guide)

ASM Diesel Engine Blockset

Where to go from here

Information in this section

New Features of ASM Diesel Engine Blockset 2.6.1

Variable valve train

The demo models contain a blockset for simulating variable valve actuation. The camshaft phase can be adjusted by a cam phaser block. In the EngineDiesel model, this does not affect the engine output.

The blockset consists of mechanical models fro simulating the change rate of the camshaft offset. There are also control blocks for controlling the camshaft phaser. The control algorithm is based on the operating point of the engine.

The following blocks are added to the library:

- CAM_PHASER_INTAKE_CONTROL
- CAM_PHASER_INTAKE
- CAM_PHASER_EXHAUST_CONTROL
- CAM_PHASER EXHAUST

Reset

All blocks that contain integrators and memory blocks are reset at the same time when the reset is active. Even if the simulation contains an NaN or Inf value, pressing the reset will now retrieve the simulation.

Changes in the ASM Diesel Engine Demo Model

HighPressureSystem

The original HighPressurePump system of FuelSystem was renamed to HighPressureSystem. HighPressureSystem includes components for generating (regulating) pressure in the rail.

The current-based HighPressureSystem system contains the current-based high-pressure pump (HIGH_PRESSURE_PUMP) and the pressure control valve, which is not required for the crank-angle-based high-pressure pump

	(HPP_CRANKBASED). If the crank-angle-based HighPressureSystem is selected, the model does not contain PRESSURE_CONTROL_VALVE block.
Fuel tank	The post-injection of the direct injector is also considered in the mass balance of the fuel tank (mdot_Fuel[kg|h] inport of the FUELTANK block).
Rail	The post-injection of the direct injector is also considered in the mass balance of the rail (q_Inj[mm3|s] inport of the RAIL block).
ASM Driver	A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. Refer to Driver (🕮 ASM Environment Reference).

Migrating to ASM Diesel Engine Blockset 2.6.1

PRESSURE_CONTROL_VALVE	The Sw_PresCtrlValve[1On|2Off] inport was removed. Instead, there is a new parameter: Sw_PresCtrlValve. In the previous versions, the parameter was located in an external SWITCHES_PRES_CTRL_VALVE block, does not exist anymore. There are former versions of two new blocks: ▪ PRESSURE_CONTROL_VALVE_3_0 on page 37 ▪ SWITCHES_PRES_CTRL_VALVE_3_0 on page 37
PRESSURE_CONTROL_VALVE_3_0	There is a former version of the PRESSURE_CONTROL_VALVE block. During migration, the library link of the PRESSURE_CONTROL_VALVE block is changed to the PRESSURE_CONTROL_VALVE_3_0 block.
SWITCHES_PRES_CTRL_VALVE _3_0	There is a former version of the SWITCHES_PRES_CTRL_VALVE block. During migration, the library link of the SWITCHES_PRES_CTRL_VALVE block is changed to the SWITCHES_PRES_CTRL_VALVE _3_0 block. The SWITCHES_PRES_CTRL_VALVE block is discontinued, i.e., it does not exist in the current Release.
Integrators	The continuous integrators were replaced by discrete ones. The following ASM blocks are affected: ▪ FUELTANK ▪ COOLER ▪ RAIL

FUELTANK	There is a new outport: Level_FuelTank[0_1].
RAIL_CONTROL_CRANKBASED	There is a new inport: phi_CamShaft_Offset_Exhaust[deg]. The phi_CamShaft_Offset[deg] inport was renamed to phi_CamShaft_Offset_Intake[deg].
Reset	The Reset inport has been added. The following ASM blocks are affected: ▪ IGNITION_SET ▪ INJECTOR_MODE ▪ PORTINJECTOR_TIMING ▪ RAIL_CONTROL ▪ TRIGGER_INJ_UPDATE ▪ ENGINE_OPERATION ▪ DIRECTINJECTOR_TIMING ▪ EGR_RATE_CONTROL ▪ RAIL_CONTROL_CRANKBASED
DIRECTINJECTOR	There is a new outport: q_Inj_Post[mm3|s]. The sum of q_Inj[mm3|s] and q_Inj_Post[mm3|s] is the total fuel mass taken from the rail.
Related topics	Basics Migrating ASM Models (📖 ASM User Guide)

ASM Diesel Exhaust Blockset

Migrating to ASM Diesel Exhaust Blockset 2.1.6

ADBLUE_TANK

The following labels in the ASMSignalBus are renamed according to the following table:

Old Label	New Label
Tank_Level[%]	Level_AdBlue_AdBlueTank[%]
T_Volume[degC],	T_AdBlueTank[degC]
p_Volume[bar]	p_AdBlueTank[bar]

During the migration, a subsystem which provides the previous labels is inserted.

DIESEL_PARTICULATE_FILTER

The PT2 element of the lambda calculation is initialized with 99 instead of zero.

Related topics

Basics

Migrating ASM Models (📖 ASM User Guide)

ASM Diesel InCylinder Blockset

Changes in the ASM Diesel InCylinder Demo Model

ASM Driver	A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. Refer to Driver (🕮 ASM Environment Reference).
CAM_PHASER	The demo is extended to support engine configurations including cam phaser actuators.

ASM Drivetrain Basic Blockset

Where to go from here

Information in this section

New Features of ASM Drivetrain Basic Blockset 5.1

Rearranged library

The library blocks of the Environment subsystem are rearranged with respect to their functionality.

AMBIENT block

The AMBIENT block has the following new inports:

- Sw_Replace_Ambient
- p_Ambient_Stim
- T_Ambient_Stim

The AMBIENT block has the following new parameters:

- Const_p_Ambient
- Const_T_Ambient

When you set the Sw_Replace_Ambient variable to 1, the ambient conditions are specified as stimulus signals (e.g., measurement) that provide the block input via p_Ambient_Stim and T_Ambient_Stim.

The AMBIENT block also has a new outport, Altitude_Vehicle[m], which outputs the current altitude of the vehicle.

Changes in the ASM Drivetrain Basic Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. Refer to Driver (📖 ASM Environment Reference).

Migrating to ASM Drivetrain Basic Blockset 5.1

Relocated library blocks	Blocks that were moved in the library are automatically migrated. During the migration, the links to these blocks are changed according to the new positions in the library.
GEAR_SHIFTER	The new v_Vehicle_Ref_Preview[m|s] inport was added. During the migration, this inport is connected to a **Constant** block so that the previous block behavior remains unchanged.
LONGITUDINAL_CONTROL	During the migration, the links to LONGITUDINAL_CONTROL block are changed to the former version implementation: Longitudinal Control (Version 8.0 or earlier) (🕮 ASM Drivetrain Basic Reference).
BRAKE_HYDRAULICS_ VARIANT	This block has become obsolete. During the migration, the links to BRAKE_HYDRAULICS_VARIANT block is changed to the former version: Brake Hydraulics Variant (🕮 ASM Drivetrain Basic Reference).
TEST_CYCLE	The calculation of v_Vehicle_Set_Preview[m|s] is now active.
CLUTCH_ENGAGEMENT_ CONTROL	The issue of the block not passing reverse gears has been solved.
AMBIENT	The block has a new outport: s_Vehicle[km]. Before, this signal was a part of the ASMSignalBus but not as an outport. The unit of the signal has been changed from meters to kilometers.

Related topics

Basics

Migrating ASM Models (🕮 ASM User Guide)

ASM Electric Components Blockset

Where to go from here

Information in this section

New Features of ASM Electric Components Blockset 3.6

BRAKE_CONTROL	The functionality and internal structure of this block has been completely redesigned. The old block is available as a former version block: BRAKE_CONTROL_2_0.
TRQ_REQUEST_ COORDINATION_BEV	This new block coordinates the torque requests (e.g., from the accelerator pedal, the recuperation, or external components, such as the ACC) for the electric machines of a battery electric vehicle (BEV).
BRAKE_CONTROL_BEV	This new block monitors and coordinates the allocation of the requested braking torque between the electric generator and the hydraulic brake system for a battery electric vehicle (BEV).
SOFT_ECU_EV_CHARGE_ CONTROLLER	This new block controls the constant current constant voltage (CCCV) battery charging process with a pre-charge phase. The controller monitors the battery state and determines a charge current request that is sent to the DC charging station.
SOFT_ECU_CHARGING_ STATION	This new block controls the battery charging current by setting the desired charging station DC voltage.

Changes in the ASM Electric Components Demo Model

Battery electric vehicle (BEV) demo model

The new battery electric vehicle (BEV) model simulates the dynamics of a passenger car. The vehicle is composed of an energy storage system, an electric drive for the front axle and one for the rear axle, a drivetrain with flexible shafts, a rigid vehicle body with four wheels, a serial regenerative brake system, an electric air conditioning system, and a battery charging system with charging station.

The model represents the vehicle's longitudinal, lateral, and vertical dynamics, and provides a detailed simulation of a drivetrain, suspension kinematics and compliance, tire-road friction forces and moments, steering, and brakes.

Permanent Magnet Synchronous Motor (PMSM) demo model

The new Permanent Magnet Synchronous Motor model simulates the control of a permanent magnet synchronous machine (PMSM) including a controller, a supercapacitor as the power supply, a three-level inverter, a motor, and the mechanics of an engine shaft.

Migrating to ASM Electric Components Blockset 3.6

BRAKE_CONTROL_2_0

Because the block functionality and internal structure of the BRAKE_CONTROL block has been completely redesigned, the library link to this block now references to the former version of this block during migration.

Related topics

Basics

Migrating ASM Models (📖 ASM User Guide)

ASM Environment Blockset

Where to go from here

Information in this section

New Features of ASM Environment Blockset 4.8

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. The driver model also adapts the vehicle velocity to the road height profile. This ensures a stable vehicle guidance when driving uphill and downhill without losing road contact. Refer to Driver (🕮 ASM Environment Reference).

ASM Road

The LANE_SENSOR block was replaced with a new LANE_SENSOR_DYNAMIC block. The new block has several new features, such as:

- Configurable interpretation of lane borders.
- Detection of virtual lanes on junctions.
- Configurable measurement points on the vehicle from which the distances to the lane markings are accurately measured.

The new block also lets you specify the number of lanes to the left and to the right of the current lane that are to be considered by the lane sensor.

ASM Maneuver

ASM Maneuver supports the new ModelDesk Scenario Editor. For more information, refer to the ModelDesk documentation. With the new ASM Maneuver subsystem, the following additional features are available:

- Stimulus of the selector lever position.
- Maneuver user signals support a time delay of the specified signal values.
- Multiple segment transition conditions can be concatenated with the OR operator.

Related topics

Basics

Migrating to ASM Environment Blockset 4.8

GEAR_SHIFTER	The new v_Vehicle_Ref_Preview[m|s] inport has been added. During the migration, this inport is connected to a **Constant** block so that the previous block behavior remains unchanged.
CONTROLLER	During the migration, the links to the CONTROLLER block are changed to the former version: Controller_10_0 (🕮 ASM Environment Reference).
BRAKE_HYDRAULICS_ VARIANT	This block is obsolete. During the migration, the links to the BRAKE_HYDRAULICS_VARIANT block are changed to the former version: Brake Hydraulics Variant_5_0 (🕮 ASM Environment Reference).
BRAKE_PNEUMATICS_ VARIANT	This block is obsolete. During the migration, the links to the BRAKE_PNEUMATICS_VARIANT block are changed to the former version: Brake Pneumatics Variant_4_0 (🕮 ASM Environment Reference).
V_ROAD_REF	Six new inports have been added. The dimensions of two inports as well as one outport have been changed. During the migration, these changes are compensated so that the old block behavior remains unchanged.
LATERAL_CONTROL1	The upper limit saturation of the cornering stiffness is reduced.
ROAD	Seven new inports and one new outport have been added. The dimensions of three inports and one outport have been changed. During the migration, these changes are compensated so that the old block behavior remains unchanged.
BASIC_ROADS	The dimensions of one inport and one outport have been changed. During the migration, these changes are compensated so that the old block behavior remains unchanged.
LANESENSOR_PARAMETERS	During the migration, the links to the LANESENSOR_PARAMETERS block are changed to the former version: Lane Sensor Parameters (🕮 ASM Environment Reference).
LANESENSOR_ENABLE	During the migration, the links to the LANESENSOR_ENABLE block are changed to the former version: Lane Sensor Enable (🕮 ASM Environment Reference).

MANEUVER_SCHEDULER

The ASM maneuver scheduler is automatically migrated to support the new ModelDesk Scenario Editor. The number of inports and outports of the ASM maneuver scheduler block is the same. However, the content of some signals has changed. The ExternalSignals, LastValue and ManualControl inports, which are all vector signals, expect one additional signal at the end of the vector: the selector lever position. The Info outport contains the additional CurrentSequence[] signal. The ModeSignals outport contains the new SelectorLever_Mode[1Stim|2Driver] signal. This signal controls whether the selector lever position is a stimulus signal or controlled by the driver. The RefSignals outport contains the new SelectorLever_Maneuver[] signal.

Note

ModelDesk features two different modes for working with maneuvers:

- Default Maneuver Mode (recommended). This mode supports maneuvers in the ModelDesk Scenario Editor.
- Compatibility Mode (recommended only if the migration of the maneuver automation is to be postponed). This mode supports maneuvers in the ModelDeskManeuver Editor, as in Release 2017-B and earlier.

The maneuver compatibility mode offers the same ModelDesk user interface and automation API for maneuvers as earlier dSPACE Releases. With the new ModelDesk Scenario Editor, which is the default editor for specifying maneuvers as of Release 2018-A, the ModelDesk automation API for maneuvers has changed. Therefore, you have to adapt all existing maneuver automation scripts if you use the new ModelDesk Scenario Editor for maneuver creation. However, if ModelDesk's maneuver compatibility mode is active, you can continue to use the existing automation scripts. The compatibility mode was introduced to let you determine when to perform the migration to the default maneuver mode and, subsequently, the migration of legacy maneuver automation scripts.

Note

- The maneuver compatibility mode will exist only for a limited time. The last dSPACE Release to support this mode is Release 2019-B.
- With dSPACE Releases that do not feature the compatibility mode anymore (Release 2020-A and later), it will not be possible to migrate ModelDesk maneuvers from the compatibility mode to the new ModelDesk **Scenario Editor**. Therefore, you must migrate maneuvers with dSPACE Releases earlier than Release 2020-A.
- Up to and including Release 2019-B, you can easily switch between the maneuver compatibility mode and the new **Scenario Editor** ModelDesk. However, you have to manually adapt the ASM model if you use the compatibility mode. If the model was prepared for the maneuver compatibility mode and you want to use the default maneuver mode, you have to adapt the ASM model again. For instructions, refer to How to Prepare the ASM Model for the ModelDesk Maneuver Compatibility Mode (🕮 ASM Environment Reference) and How to Change an ASM Model from the Compatibility Mode to the Default Maneuver Mode (🕮 ASM Environment Reference).
- All new maneuver features are based on the new ModelDesk **Scenario Editor**. In addition, the new maneuver features stated above for Release 2018-A have been implemented for the maneuver compatibility mode.

Related topics

Basics

Migrating ASM Models (🕮 ASM User Guide)

ASM Gasoline Engine Basic Blockset

Where to go from here

Information in this section

New Features of ASM Gasoline Engine Basic Blockset 2.2.1

COMBUSTION_TORQUE_SI

- A sum of mdot_Inj is created before adding it to mdot_In_Engine for mass balance.
- A unit calculation bug has been fixed: [kg|s] was used instead of [kg|h] but was labeled as [kg|h].
- The output temperature now is now an engine-specific vector instead of a cylinder-specific vector.

FRICTION_TORQUE

In the SignalCollector, the Trq_Engine_MeanFric[Nm] signal was renamed to Trq_MeanFric_Engine[Nm].

Changes in the ASM Engine Gasoline Basic Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. Refer to Driver (🕮 ASM Environment Reference).

Migrating to ASM Gasoline Engine Basic Blockset 2.2.1

COMBUSTION_TORQUE_SI_9_0

During the migration, the library links of the COMBUSTION_TORQUE_SI block are changed to the former version: COMBUSTION_TORQUE_SI_9_0

SWITCHES_TRQ_COMB_ MODE_1_0	During the migration, the library links of the SWITCHES_TRQ_COMB_MODE block are changed to the former version: SWITCHES_TRQ_COMB_MODE_1_0.

Related topics

Basics

Migrating ASM Models (🕮 ASM User Guide)

ASM Gasoline Engine Blockset

Where to go from here

Information in this section

New Features of ASM Gasoline Engine Blockset 4.0.1

Variable valve train

The demo models contains a blockset for simulating variable valve actuation. The camshaft phase can be adjusted by a cam phaser block. In the **EngineGasoline** model, this does not affect the engine output. The blockset consists of mechanical models for simulating the change rate of the camshaft offset. There are also control blocks for controlling the camshaft phaser. The control algorithm is based on the operatign point of the engine.

The following blocks are added to the library:

- CAM_PHASER_INTAKE_CONTROL
- CAM_PHASER_INTAKE
- CAM_PHASER_EXHAUST_CONTROL
- CAM_PHASER EXHAUST

Reset

All blocks that contain integrators and memory blocks are reset at the same time when the reset is active. Even if the simulation contains an NaN or Inf value, the simulation is restored when you click the **Reset** button in the ControlDesk layout.

Changes in the ASM Engine Gasoline Demo Model

HighPressureSystem

The original **HighPressurePump** system of **FuelSystem** was renamed to **HighPressureSystem**. **HighPressureSystem** includes components for generating (regulating) pressure in the rail.

The current-based **HighPressureSystem** system contains the current-based high-pressure pump (**HIGH_PRESSURE_PUMP**) and the pressure control valve, which is not required for the crank-angle-based high-pressure pump

	(HPP_CRANKBASED). If the crank-angle-based HighPressureSystem is selected, the model does not contain PRESSURE_CONTROL_VALVE block.
ASM Driver	A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. Refer to Driver (🕮 ASM Environment Reference).

Migrating to ASM Gasoline Engine Blockset 4.0.1

PRESSURE_CONTROL_VALVE	The Sw_PresCtrlValve[1On|2Off] inport was removed. Instead, there is a new parameter: Sw_PresCtrlValve. In previous versions, the parameter was located in an external SWITCHES_PRES_CTRL_VALVE block, which does not exist anymore. There are former versions of the two new blocks: SWITCHES_PRES_CTRL_VALVE_2_0 and PRESSURE_CONTROL_VALVE_4_0.
PRESSURE_CONTROL_VALVE_4_0	There is a former version of the PRESSURE_CONTROL_VALVE block. During migration, the library link of the PRESSURE_CONTROL_VALVE block is changed to the PRESSURE_CONTROL_VALVE_4_0 block.
SWITCHES_PRES_CTRL_VALVE_2_0	There is a former version of the SWITCHES_PRES_CTRL_VALVE block. During migration, the library link of the SWITCHES_PRES_CTRL_VALVE block is changed to the SWITCHES_PRES_CTRL_VALVE _2_0 block. The SWITCHES_PRES_CTRL_VALVE block is discontinued, i.e., it does not exist in the current Release.
Integrators	The continuous integrators are replaced by discrete integrators. The affected ASM blocks are: ▪ CATALYST ▪ COOLER ▪ LAMBDA_SENSOR ▪ FUELTANK ▪ RAIL ▪ CNG_HIGH_PRESSURE_LINE ▪ CNG_PRESSURE_REGULATOR ▪ CNG_RAIL ▪ CNG_SHUTOFF_VALVE ▪ CNG_TANK

RAIL_CONTROL_CRANKBASED	There is a new inport: phi_CamShaft_Offset_Exhaust[deg]. The phi_CamShaft_Offset[deg] inport has been renamed to phi_CamShaft_Offset_Intake[deg].
CATALYST	The Forward Euler block from the ASM Utils library had a fixed sample time of 0.001 seconds. The integrator of the Forward Euler block was replaced by a discrete integrator with inherited sample time.
Reset	The Reset inport has been added. The affected ASM blocks are: ▪ CYLINDER_INLET ▪ PUMP_TORQUE ▪ DIRECTINJECTOR ▪ CATALYST ▪ IGNITION_SET ▪ INJECTOR_MODE ▪ PORTINJECTOR_TIMING ▪ RAIL_CONTROL ▪ TRIGGER_INJ_UPDATE ▪ ENGINE_OPERATION ▪ DIRECTINJECTOR_TIMING ▪ EGR_RATE_CONTROL ▪ RAIL_CONTROL_CRANKBASED
Related topics	Basics Migrating ASM Models (🕮 ASM User Guide)

ASM Gasoline InCylinder Blockset

Where to go from here

Information in this section

Changes in the ASM Gasoline InCylinder Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. Refer to Driver (📖 ASM Environment Reference).

CAM_PHASER

The demo is extended to support engine configurations including cam phaser actuators.

Migrating to ASM Gasoline InCylinder Blockset 2.5.1

PORTINJECTOR

In previous versions, the t_inj input signal was included directly in the ASMSignalBus. As a consequence, the t_inj signal was also updated during active injections. If fewer injections occurred in the active event capture window, injection durations of the previous event capture window were still included.

If the Sw_HwType inport is now set to SCALEXIO, the t_inj[µs] signal in the ASMSignalBus contains the values of the active event capture window only. The behavior is the same as if Sw_HwType were set to PHS.

Related topics

Basics

Migrating ASM Models (📖 ASM User Guide)

ASM Traffic Blockset

Where to go from here

Information in this section

New Features of ASM Traffic Blockset 3.8

TRAFFIC_SCHEDULER

The TRAFFIC_SCHEDULER block lets you use tables for specifying fellow movement and user signal values.

The TRAFFIC_SCHEDULER block lets you specify the route and direction of a fellow vehicle by means of two additional Simulink inports.

OBJECT_SENSOR_3D_GEOMETRY_PARAMETERS

The OBJECT_SENSOR_3D_GEOMETRY_PARAMETERS block has a new parameter, Sw_Occlusion_Mode, which is used to enable occlusion calculation by the OBJECT_SENSOR_3D_CALCULATION block for a sensor instance.

OBJECT_SENSOR_3D_PARAMETERS

The OBJECT_SENSOR_3D_PARAMETERS block has a new parameter, Sw_Occlusion_Mode, which is used to enable occlusion calculation by the OBJECT_SENSOR_3D_CALCULATION block for a sensor instance.

OBJECT_SENSOR_3D_CALCULATION

The OBJECT_SENSOR_3D_CALCULATION block calculates the occlusion of static objects and fellows for all sensor instances whose parameter occlusion mode is set to 2 (basic 3-D occlusion).

Related topics

Basics

Changes in the ASM Traffic Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. The driver model also adapts the vehicle velocity to the road height profile. This ensures a stable vehicle guidance when driving uphill and downhill without losing road contact. Refer to Driver (🕮 ASM Environment Reference).

ASM Road

The LANE_SENSOR block was replaced with a new LANE_SENSOR_DYNAMIC block. The new block has several new features, such as:

- Configurable interpretation of lane borders.
- Detection of virtual lanes on junctions.
- Configurable measurement points on the vehicle from which the distances to the lane markings are accurately measured.

The new blockalso lets you specify the number of lanes to the left and to the right of the current lane that are to be considered by the lane sensor.

ASM Traffic Scheduler

The ASM Traffic Scheduler has two additional inports, which let you specify the route and route direction.

Migrating to ASM Traffic Blockset 3.8

TRAFFIC_SCHEDULER

The block has two new inports:

- RouteID_External[]
- RouteDirection_External[]

Each inport has the width of the maximum number of fellow vehicles.

These new inports can be used to set the route and route direction of the fellows. During the migration, these changes are compensated so that the old block behavior remains unchanged.

Related topics

Basics

Migrating ASM Models (🕮 ASM User Guide)

ASM Trailer Blockset

Changes in the ASM Trailer Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. The driver model also adapts the vehicle velocity to the road height profile. This ensures a stable vehicle guidance when driving uphill and downhill without losing road contact. Refer to Driver (🕮 ASM Environment Reference).

ASM Road

The LANE_SENSOR block was replaced with a new LANE_SENSOR_DYNAMIC block. The new block has several new features, such as:

- Configurable interpretation of lane borders.
- Detection of virtual lanes on junctions.
- Configurable measurement points on the vehicle from which the distances to the lane markings are accurately measured.

The new blockalso lets you specify the number of lanes to the left and to the right of the current lane that are to be considered by the lane sensor.

ASM Truck Blockset

Where to go from here

Information in this section

Changes in the ASM Truck Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. The driver model also adapts the vehicle velocity to the road height profile. This ensures a stable vehicle guidance when driving uphill and downhill without losing road contact. Refer to Driver (🕮 ASM Environment Reference).

ASM Road

The LANE_SENSOR block was replaced with a new LANE_SENSOR_DYNAMIC block. The new block has several new features, such as:

- Configurable interpretation of lane borders.
- Detection of virtual lanes on junctions.
- Configurable measurement points on the vehicle from which the distances to the lane markings are accurately measured.

The new block also lets you specify the number of lanes to the left and to the right of the current lane that are to be considered by the lane sensor.

Migrating to ASM Truck Blockset 3.0.3

SUSKIN_RIGID_TRUCK_REAR_*

A problem with the linked subsystem in the ASM operator version has been resolved.

Related topics

Basics

Migrating ASM Models (🕮 ASM User Guide)

ASM Turbocharger Blockset

Where to go from here

Information in this section

New Features of ASM Turbocharger Blockset 3.2.2

Reset

All Blocks that contain integrators and memory blocks are reset at the same time when the reset is active. Even if the simulation contains an NaN or Inf value, the simulation is restored when you click the **Reset** button in the ControlDesk layout.

Migrating to ASM Turbocharger Blockset 3.2.2

Reset

The Reset port has been added as an inport to the following ASM blocks:

- TURBINE
- TURBINE_HP
- SHAFT_TC
- SHAFT_TC_HP
- TURBO_BASIC_2STAGE
- TURBO_CONTROL_MODE

Related topics

Basics

Migrating ASM Models (📖 ASM User Guide)

ASM Utils Blockset

Migrating ASM Utils

asm_proc	The internal storing of parameters has changed. Now, the results are rounded with the same precision which is used by ModelDesk (currently 6 digits). The result of executing multiple functions at once or executing each function individually is now the same. The changes can lead to slightly different results compared to previous Releases if multiple functions are executed at once.
asm_tablegenerator	The internal map update handling has changed. In previous releases, the exact values set with theoptions xv_set, yv_set, and xyv_set are not always achieved if further extrapolation steps are performed. This issue is now resolved. The changes can lead to slightly different results compared to previous Releases.

ASM Vehicle Dynamics Blockset

Where to go from here

Information in this section

New Features of ASM Vehicle Dynamics Blockset 4.0.1

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. The driver model also adapts the vehicle velocity to the road height profile. This ensures a stable vehicle guidance when driving uphill and downhill without losing road contact. Refer to Driver (🕮 ASM Environment Reference).

ASM Road

The LANE_SENSOR block was replaced with a new LANE_SENSOR_DYNAMIC block. The new block has several new features, such as:

- Configurable interpretation of lane borders.
- Detection of virtual lanes on junctions.
- Configurable measurement points on the vehicle from which the distances to the lane markings are accurately measured.

The new block also lets you specify the number of lanes to the left and to the right of the current lane that are to be considered by the lane sensor.

Changes in the ASM Vehicle Dynamics Demo Model

ASM Driver

A new longitudinal driver model based on a different control strategy is introduced. The new model simulates a more realistic pedal actuation. The driver model also adapts the vehicle velocity to the road height profile. This ensures a stable vehicle guidance when driving uphill and downhill without losing road contact. Refer to Driver (🕮 ASM Environment Reference).

ASM Road	The LANE_SENSOR block was replaced with a new LANE_SENSOR_DYNAMIC block. The new block has several new features, such as: ▪ Configurable interpretation of lane borders. ▪ Detection of virtual lanes on junctions. ▪ Configurable measurement points on the vehicle from which the distances to the lane markings are accurately measured. The new blockalso lets you specify the number of lanes to the left and to the right of the current lane that are to be considered by the lane sensor.

Migrating to ASM Vehicle Dynamics Blockset 4.0.1

CLUTCH_ENGAGEMENT_CONTROL	A problem with the block not passing reverse gears has been resolved.
SUBFRAME	A problem with the linked subsystem in the ASM operator version fixed.
TIRE_MF	All internal memories are reset during reset or in disabled state.
STEERING_3DOF_VARIABLE_RATIO	The possibility to simulate variable steering column stiffness has been added.

Related topics

Basics

Migrating ASM Models (🕮 ASM User Guide)

Bus Manager (Stand-Alone)

Where to go from here

Information in this section

Features of the Bus Manager (Stand-Alone) 6.1

FIBEX 4.1.2 support

The Bus Manager (stand-alone) now supports FIBEX files based on FIBEX 4.1.2 as communication matrices.

Manipulating bus communication

The Bus Manager (stand-alone) now lets you manipulate the bus communication of communication clusters. You can manipulate the bus communication independently from the involved ECUs and separately for each cluster and channel. To configure bus communication for manipulation purposes, bus configurations provide a new **Manipulation** bus configuration part. You can assign communication matrix elements to this bus configuration part and configure the bus communication to be manipulated independently from the bus communication that you want to simulate and/or inspect. For more information, refer to Basics on Bus Configurations (🕮 Bus Manager (Stand-Alone) Implementation Guide).

Manipulating bus communication requires an additional license. For more information, refer to Basics on Licenses for Working with the Bus Manager (Stand-Alone) (🕮 Bus Manager (Stand-Alone) Implementation Guide).

New bus configuration features

The Bus Manager (stand-alone) now provides additional bus configuration features. The following table provides an overview of the new bus configuration

features and the bus configuration parts (**Simulated ECUs**, **Inspection**, **Manipulation**) for which they are available.

Bus Configuration Feature	Available for Bus Configuration Part	Purpose
Bus Configuration Enable	-	Lets you enable and disable bus configurations at run time. This allows you to configure and include different bus configurations in an executable application, for example. At run time, you can work with a subset of the available bus configurations.
LIN Wake-Up	Simulated ECUs	Lets you send wake-up signals via LIN communication clusters and wake-up clusters that are in sleep mode.
Frame Access	Simulated ECUs	Lets you access various settings of CAN frames. You can change the frame triggering or frame length at run time, access the frame's payload in raw data format, or trigger the transmission of the frame, for example.
Counter Signal	Simulated ECUs	Lets you configure ISignals as counter signals. This allows you to transmit and receive PDUs with a dynamic counter value. You can configure various counter settings to specify the counter behavior.
PDU Raw Data	Inspection	Lets you inspect the payload of PDUs in raw data format.
Suspend Frame Transmission	Manipulation	Lets you suspend the transmission of frames. You can suspend the transmission temporarily or permanently, and change the specified settings at run time.
ISignal Overwrite Value	Manipulation	Lets you overwrite the values of ISignals with user-defined values. You can overwrite the ISignal values temporarily or permanently, and change the specified settings at run time.
ISignal Offset Value	Manipulation	Lets you add offset values to the values of ISignals and transmit the ISignals including the offset values. You can add the offset values temporarily or permanently, and change the specified settings at run time.

For more information, refer to Working with Bus Configuration Features (🕮 Bus Manager (Stand-Alone) Implementation Guide).

Bus Manager demo

The Bus Manager (stand-alone) now provides a Bus Manager demo. The Bus Manager demo uses a simple restbus simulation to introduce you to the basic steps of working with the Bus Manager. To use the Bus Manager demo, you must run the `BusManagerDemo.py` Python script. The Python script automates the steps required to set up the bus communication with the Bus Manager and to generate bus simulation containers.

For more information, refer to Working with the Bus Manager Demo (🕮 Bus Manager (Stand-Alone) Implementation Guide).

Select related elements

Several communication matrix and bus configuration elements now provide commands that let you select their related elements. Depending on the actual element, related elements can be instances of the element or higher-level elements. For example, if you select an IPDU in the **Buses Browser**, you can select all its instances in all bus configurations via one command.

Migrating to Bus Manager (Stand-Alone) 6.1

Changes to the tool automation interface

Changes have been made to the tool automation interface. Some of these changes affect the data model and can cause code from previous Releases to malfunction. For details, refer to Changes to the Automation Interface for Release 2018-A (🕮 ConfigurationDesk Automating Tool Handling).

Changes in TRC file for Bus Manager elements

The paths of Bus Manager elements in the TRC file have changed from Bus Manager (stand-alone) 6.0 to Bus Manager (stand-alone) 6.1. When you generate bus simulation containers with Bus Manager (stand-alone) 6.1, you might have to adapt projects that use the generated TRC file (e.g., generate new instrument layouts in ControlDesk).

ConfigurationDesk

Two variants for different use scenarios

ConfigurationDesk is provided in two variants that are useful for different use scenarios. You can use ConfigurationDesk - Implementation Version to implement real-time applications. You can use ConfigurationDesk - Configuration Version to configure dSPACE RapidPro hardware.

ConfigurationDesk - Implementation Version

Where to go from here

Information in this section

New Features of ConfigurationDesk 6.1 (Implementation Version)

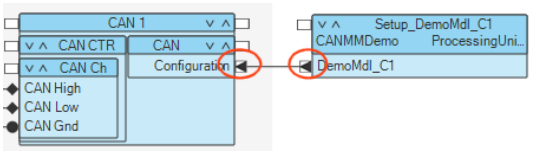
Support of multiple Simulink behavior models and SIC files per application process

ConfigurationDesk now lets you assign multiple Simulink behavior models and SIC files to one application process. You can create preconfigured application processes that have multiple Simulink models or SIC files assigned, or you can add Simulink models or SIC files to existing application processes. Combinations of Simulink models, SIC files, and FMUs within an application process are also supported. This means that multiple model implementations can be calculated on one core of the processing unit. ConfigurationDesk provides an option that lets you automatically optimize the configuration of application processes, that have multiple model implementations assigned. The new **Execution Order** property indicates the execution order of runnable functions within a task. Refer to Using Multiple Model Implementations in the Same Application Process (🕮 ConfigurationDesk Real-Time Implementation Guide).

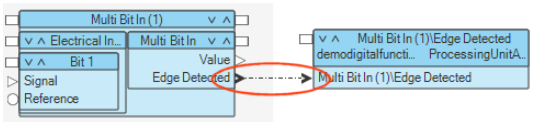
Graphical improvements in the signal chain

For a better overview, the following graphical representations have changed in the signal chain:

- Configuration ports are now represented by a port symbol in a square:



- Connections between event ports and runnable function ports are now represented by a dot-dash line:



Supported SIC file versions

ConfigurationDesk 6.1 supports SIC file versions as listed below:

SIC Files Created with Model Interface Package for Simulink of ...	SIC Version
dSPACE Release 2018-A (Model Interface Package for Simulink 3.6)	1.4
dSPACE Release 2017-B (Model Interface Package for Simulink 3.5)	1.3
dSPACE Release 2017-A (Model Interface Package for Simulink 3.4)	1.2.1
dSPACE Release 2016-B (Model Interface Package for Simulink 3.3)	1.2

Supported V-ECU implementation container versions

ConfigurationDesk 6.1 supports V-ECU implementation container versions as listed below:

V-ECU Implementations Created With...	V-ECU Implementation Version
dSPACE Release 2018-A: ▪ SystemDesk 5.1	2.7[1)]
dSPACE Release 2017-B: ▪ SystemDesk 5.0 ▪ TargetLink 4.3	2.6[1)]
dSPACE Release 2017-A: ▪ SystemDesk 4.8	2.5[1)]
dSPACE Release 2016-B: ▪ SystemDesk 4.7 ▪ TargetLink 4.2	2.4.1[1)]

[1)] There is a migration issue for VEOS if the container file to be imported contains static libraries. For details, refer to Migrating from VEOS 4.1 to 4.2 (🕮 VEOS Manual).

New function block types

Angular Wavetable (Voltage Out, Digital Out) The Angular Wavetable function blocks output a signal sequence by looking up a table with angular-coded values.

For more information, refer to Angular Wavetable (Voltage Out, Digital Out) (🕮 ConfigurationDesk I/O Function Implementation Guide).

TCP The TCP function block type can transmit and receive data bytes via TCP messages. The access to the Ethernet adapter must be provided by an Ethernet Setup function block.

For more information, refer to TCP (🕮 ConfigurationDesk I/O Function Implementation Guide).

Power On Signal In The Power On Signal In function block type monitors the On/Off button of the SCALEXIO LabBox with a DS6001 Processor Board installed. The request state can be provided to the behavior model and/or can be accessed in the experiment software.

For more information, refer to Power On Signal In (🕮 ConfigurationDesk I/O Function Implementation Guide).

System Shutdown The System Shutdown function block type lets you control the shutdown of a SCALEXIO LabBox with a DS6001 Processor Board installed from within the behavior model and/or the experiment software. Power off requests, e.g., from the On/Off push button of the SCALEXIO LabBox, can be ignored or delayed.

For more information, refer to System Shutdown (🕮 ConfigurationDesk I/O Function Implementation Guide).

Enhanced function block types

Enhanced use of trigger sources The use of trigger sources is added or enhanced for the following function block types:

- The trigger sources for **Multi Bit In** function blocks can now use trigger functions as trigger source. Refer to Configuring the Basic Functionality (Multi Bit In) (🕮 ConfigurationDesk I/O Function Implementation Guide).
- The wavetable execution of the **Wavetable Current Sink**, **Wavetable Voltage Out**, and **Wavetable Digital Out** function blocks can now be triggered by an assigned master APU provider or by a trigger function. Refer to Configuring the Basic Functionality (Wavetable Out) (🕮 ConfigurationDesk I/O Function Implementation Guide).
- The trigger sources for **Waveform Current Sink**, **Waveform Voltage Out**, and **Waveform Digital Out** function blocks can now use trigger functions as trigger source. Refer to Configuring the Basic Functionality (Waveform Out) (🕮 ConfigurationDesk I/O Function Implementation Guide).
- The sequence trigger sources for **Current Signal Capture** function blocks can now use trigger functions as trigger source. Refer to Configuring Trigger Functionality (Current Signal Capture) (🕮 ConfigurationDesk I/O Function Implementation Guide).

Trigger In The Trigger In function block type now supports the following hardware resources:

- DS2601 Signal Measurement Board (**Flexible In 1** channel type)
- DS2680 I/O Unit (**Digital In 1** and **Flexible In 2** channel types)
- DS6101 Multi-I/O Board (**Digital In 3** and **Flexible In 3** channel types)
- DS6241 D/A Board (**Trigger In 2** channel type)

Refer to Hardware Dependencies (Trigger In) (🕮 ConfigurationDesk I/O Function Implementation Guide).

Current In The Current In function block type now supports the following new features:

- Use of trigger functions as trigger source.
- Provides an I/O event each time the current measurement is completed.

Refer to Configuring the Basic Functionality (Current In) (🕮 ConfigurationDesk I/O Function Implementation Guide).

Digital Pulse Capture The Digital Pulse Capture function block type now supports the following new features:

- Capturing of angle positions and providing them to the behavior model via a specific function port. The angle position values are captured synchronously to the captured edges.

Refer to Configuring the Basic Functionality (Digital Pulse Capture) (🕮 ConfigurationDesk I/O Function Implementation Guide).

New documentation of I/O function blocks

The ConfigurationDesk I/O Function Implementation Guide now includes the documentation of the following I/O function blocks, which are introduced with Release 2017-B.

UDP Receive The UDP Receive function block type receives data bytes via UDP messages. The access to the Ethernet adapter must be provided by an Ethernet Setup function block.

For more information, refer to UDP Receive (🕮 ConfigurationDesk I/O Function Implementation Guide).

UDP Transmit The UDP Transmit function block type transmits data bytes via UDP messages. The access to the Ethernet adapter must be provided by an Ethernet Setup function block.

For more information, refer to UDP Transmit (🕮 ConfigurationDesk I/O Function Implementation Guide).

New features of the ECU interfacing support

ConfigurationDesk now lets you implement data accesses in a real-time application that are executed synchronously to the related variables of the ECU. Each data access that is configured as *ECU-synchronous data access* in the ECU Interface Manager provides an event port when you import the related EIC file to an ECU Interface Configuration function block. In your behavior model, you can use the event that is provided by the event port to trigger the execution of the related variables.

For more information, refer to ECU Interface Configuration (🕮 ConfigurationDesk I/O Function Implementation Guide).

New features of the Bus Manager

FIBEX 4.1.2 support The Bus Manager now supports FIBEX files based on FIBEX 4.1.2 as communication matrices.

Manipulating bus communication The Bus Manager now lets you manipulate the bus communication of communication clusters. You can manipulate the bus communication independently from the involved ECUs and separately for each cluster and channel. To configure bus communication for manipulation purposes, bus configurations provide a new Manipulation bus configuration part. You can assign communication matrix elements to this bus configuration part and configure the bus communication to be manipulated independently from the bus communication that you want to simulate and/or inspect. For more information, refer to Basics on Bus Configurations (🕮 ConfigurationDesk Bus Manager Implementation Guide).

Manipulating bus communication requires an additional license. For more information, refer to Overview of Licenses (🕮 ConfigurationDesk Real-Time Implementation Guide).

New bus configuration features The Bus Manager now provides additional bus configuration features. The following table provides an overview of the new bus configuration features and the bus configuration parts (**Simulated ECUs**, **Inspection**, **Manipulation**) for which they are available.

Bus Configuration Feature	Available for Bus Configuration Part	Purpose
Bus Configuration Enable	-	Lets you enable and disable bus configurations at run time. This allows you to configure and include different bus configurations in an executable application, for example. At run time, you can work with a subset of the available bus configurations.
LIN Wake-Up	Simulated ECUs	Lets you send wake-up signals via LIN communication clusters and wake-up clusters that are in sleep mode.
Frame Access	Simulated ECUs	Lets you access various settings of CAN frames. You can change the frame triggering or frame length at run time, access the frame's payload in raw data format, or trigger the transmission of the frame, for example.
Counter Signal	Simulated ECUs	Lets you configure ISignals as counter signals. This allows you to transmit and receive PDUs with a dynamic counter value. You can configure various counter settings to specify the counter behavior.
PDU Raw Data	Inspection	Lets you inspect the payload of PDUs in raw data format.
Suspend Frame Transmission	Manipulation	Lets you suspend the transmission of frames. You can suspend the transmission temporarily or permanently, and change the specified settings at run time.
ISignal Overwrite Value	Manipulation	Lets you overwrite the values of ISignals with user-defined values. You can overwrite the ISignal values temporarily or permanently, and change the specified settings at run time.
ISignal Offset Value	Manipulation	Lets you add offset values to the values of ISignals and transmit the ISignals including the offset values. You can add the offset values temporarily or permanently, and change the specified settings at run time.

For more information, refer to Working with Bus Configuration Features (🕮 ConfigurationDesk Bus Manager Implementation Guide).

Bus Manager demo The Bus Manager now provides a Bus Manager demo. The Bus Manager demo uses a simple restbus simulation to introduce you to the basic steps of working with the Bus Manager. To use the Bus Manager demo, you must run the `BusManagerDemo.py` Python script. The Python script automates the steps required to set up the bus communication with the Bus Manager and to build a real-time application.

For more information, refer to Working with the Bus Manager Demo (🕮 ConfigurationDesk Bus Manager Implementation Guide).

Select related elements Several communication matrix and bus configuration elements now provide commands that let you select their related elements. Depending on the actual element, related elements can be instances of the element or higher-level elements. For example, if you select an IPDU in the **Buses Browser**, you can select all its instances in all bus configurations via one command.

New features concerning hardware support

ConfigurationDesk supports the following new SCALEXIO hardware:

- DS6241 D/A Board

  The DS6241 D/A Board is a 1-slot standard SCALEXIO I/O board that provides 20 DAC channels with analog voltage output for signal generation and 4 additional trigger inputs for connecting external trigger sources.

Exporting hardware topology parts and merging hardware topologies

You can now export a selected system or rack and all its subelements from the hardware topology to an HTFX file for reuse in other ConfigurationDesk applications.

During import, you can merge a hardware topology from an HTFX file with the one in the active ConfigurationDesk application.

New features of the tool automation interface

ConfigurationDesk's automation interface supports additional features of ConfigurationDesk. For more information, refer to Changes to the Automation Interface for Release 2018-A (🕮 ConfigurationDesk Automating Tool Handling).

Migrating to ConfigurationDesk 6.1

Inconsistence with Ethernet adapters

When you migrate a project of dSPACE Release 2016-A or earlier, the migration process adds the Ethernet adapter of the SCALEXIO Real-Time PC to the hardware topologies of the migrated project. The default name of the added Ethernet adapter might not match the Ethernet adapter name of the accessible platforms. Therefore, the status bar shows the status "No matching platform connected". This status prevents the automatic download of the real-time application after the build. However, you can build the real-time application and manually download it to the hardware.

To resolve the inconsistency, specify an identical name for the Ethernet adapter of the SCALEXIO Real-Time PC in the **Hardware Resource Browser** and in the **Platform Manager**, e.g., by replacing the hardware topology.

Changes regarding the Bus Manager

Changes to the tool automation interface Changes have been made to the tool automation interface. Some of these changes affect the data model regarding Bus Manager elements and can cause code from previous Releases to malfunction. For more information, refer to Changes to the Automation Interface for Release 2018-A (🕮 ConfigurationDesk Automating Tool Handling).

Changes in the TRC file The paths of Bus Manager elements in the TRC file have changed from ConfigurationDesk 6.0 to ConfigurationDesk 6.1. When you build a real-time application or generate bus simulation containers with ConfigurationDesk 6.1, you might have to adapt projects that use the generated TRC file (e.g., generate new instrument layouts in ControlDesk).

ControlDesk

Where to go from here

Information in this section

New Features of ControlDesk 6.3

Where to go from here

Information in this section

New Features of Platform Management and Platforms/Devices (ControlDesk 6.3)

Video capturing in combination with Windows 10

Video capturing now is possible in combination with Windows 10.

SCALEXIO: DS6241 support

ControlDesk now supports the new DS6241 D/A Board.

SCALEXIO: Support of multiple Simulink behavior models and SIC files per application process

ControlDesk supports multiple Simulink behavior models and SIC files per application process in SCALEXIO real-time applications. For more information, refer to New Features of ConfigurationDesk 6.1 (Implementation Version) on page 68.

New Instrument Features (ControlDesk 6.3)

Table Editor: Support for multiple working points

The Table Editor in ControlDesk 6.3 now supports multiple working points. You can use measurement arrays and value blocks as the input quantities of a Table Editor for this purpose.

Refer to Basics of Handling the Table Editor (🕮 ControlDesk Instrument Handling).

Adding variables to instruments via instrument context menu

ControlDesk 6.3 now lets you add variables to one or more instruments via the context menu of the instruments.

Refer to Variable(s) - Add (🕮 ControlDesk Instrument Handling).

Copying variable values visualized in instruments and instrument cells

ControlDesk 6.3 now lets you copy the current value of a variable that is visualized in an instrument or in an instrument cell.

Refer to Copy Value (Instruments) (🕮 ControlDesk Instrument Handling).

New Measurement and Recording Features (ControlDesk 6.3)

Improved export and saving of large MF4 files

ControlDesk 6.3 now supports *incremental saving* of MF4 files, which reduces memory consumption especially in connection with large ASAM MDF 4.x files.

The improvements apply to the following actions:

- Export measurement data
- Save measurement data
- Save displayed data

Measurement signal list: Alternating row colors

The measurement signal list now supports alternating row colors as specified on the Variables page of ControlDesk's Options dialog.

Refer to Variables Page (🕮 ControlDesk Variable Management).

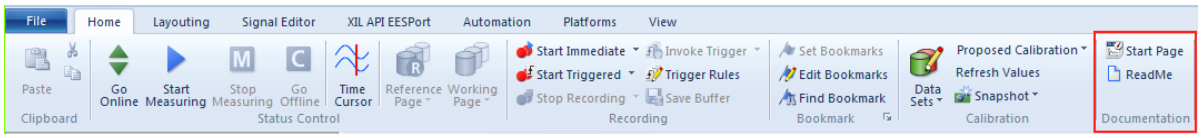
New User Interface Handling Features (ControlDesk 6.3)

Customizing ribbons

The ControlDesk user interface now lets you customize the ribbon in the following ways:

- You can add new ribbon tabs.
- You can add new ribbon groups to existing or new ribbon tabs.
- You can add existing ribbon commands to new ribbon groups.

The following illustration shows the ControlDesk **Home** ribbon. The **Documentation** custom ribbon group has been added as an example.



Refer to Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands (🕮 ControlDesk User Interface Handling).

New Bus Navigator Features (ControlDesk 6.3)

Bus communication manipulation support

For bus communication modeled with the Bus Manager, ControlDesk now supports the manipulation of the bus communication of communication clusters. If configured in the bus configuration, you can use the ControlDesk Bus Navigator to manipulate the bus communication independently from the involved ECUs and for each cluster and channel separately.

ControlDesk provides new Bus instruments for bus manipulation.

For more information, refer to:

- Bus Instrument (Manipulation Type for CAN) (🕮 ControlDesk Bus Navigator)
- Bus Instrument (Manipulation Type for LIN) (🕮 ControlDesk Bus Navigator)

Bus configuration enable support

The Bus Manager now lets you configure and include different bus configurations in an executable application. For these applications, the ControlDesk Bus Navigator now lets you enable and disable bus configurations during run time, so you can work with a subset of the available bus configurations.

ControlDesk provides a new Bus instrument for enabling and disabling bus configurations.

For more information, refer to Bus Instrument (Global Layout Type) (🕮 ControlDesk Bus Navigator).

Bus instrument (TX status type for LIN): Support for LIN network node wake-up

For bus communication modeled with the Bus Manager, ControlDesk now lets you send wake-up signals via LIN communication clusters and wake-up clusters that are in sleep mode.

For more information, refer to Bus Instrument (TX Status Type for LIN) (🕮 ControlDesk Bus Navigator).

Bus instrument (Inspection type for CAN), Bus instrument (Inspection type for LIN): Support for PDU raw data inspection

For bus communication modeled with the Bus Manager, ControlDesk now lets you display the payload of RX PDUs in raw data format configured for inspection purposes.

For more information, refer to:

- Bus Instrument (Inspection Type for CAN) (🕮 ControlDesk Bus Navigator)
- Bus Instrument (Inspection Type for LIN) (🕮 ControlDesk Bus Navigator)

Bus instrument (RX type for CAN), Bus instrument (RX type for LIN): Support for counter signals

For bus communication modeled with the Bus Manager, ControlDesk now lets you receive PDUs with a dynamic counter value.

For more information, refer to:

- Bus Instrument (RX Type for CAN) (🕮 ControlDesk Bus Navigator)
- Bus Instrument (RX Type for LIN) (🕮 ControlDesk Bus Navigator)

Bus instrument (TX type for CAN), Bus instrument (RX type for CAN): Support for CAN frame access

For bus communication modeled with the Bus Manager, ControlDesk now lets you access various settings of CAN frames. You can change the frame triggering or frame length at run time, access the payload of the frame in raw data format, or trigger the transmission of the frame, for example.

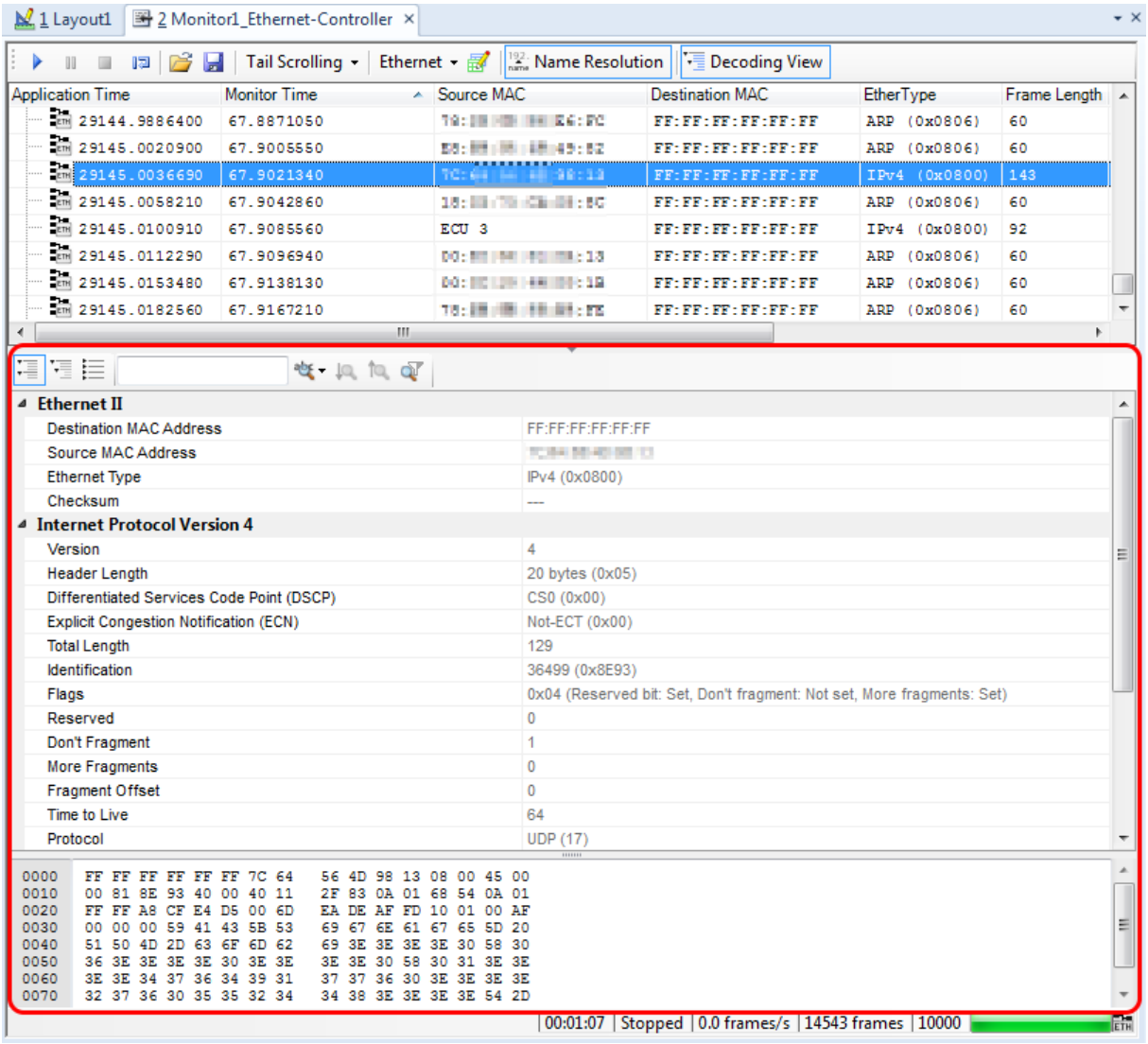
For more information, refer to:

- Bus Instrument (TX Type for CAN) (🕮 ControlDesk Bus Navigator)
- Bus Instrument (RX Type for CAN) (🕮 ControlDesk Bus Navigator)

Ethernet monitoring: Decoding view

ControlDesk's monitoring list now provides a *decoding view* that displays protocol data for the Ethernet frame selected in the monitoring list. In addition, Ethernet II raw data is displayed at the bottom of the decoding view.

The following illustration shows the monitoring list with enabled decoding view:



For details, refer to Monitoring List (🕮 ControlDesk Bus Navigator).

Ethernet monitoring: Display of ECU names instead of MAC/IP addresses in the monitoring list

In the monitoring list, you can now display ECU names instead of MAC/IP addresses. This makes the monitoring list more readable.

To display ECU names instead of MAC/IP addresses, you have to specify a mapping file in the **Add/Edit Monitor Dialog** (🕮 ControlDesk Bus Navigator). In the toolbar of the monitoring list, you can toggle the display via . Refer to Monitoring List (🕮 ControlDesk Bus Navigator).

New Electrical Error Simulation Features (ControlDesk 6.3)

Error configuration commands also available in full-screen mode

Error configuration commands now are available also in full-screen mode.

EESPort creation based on non-dSPACE EESPort implementations

You can now create an EESPort based on a non-dSPACE EESPort implementation.

For instructions, refer to How to Create a New EESPort (🕮 ControlDesk Electrical Error Simulation via XIL API EESPort).

Support of Ethernet-to-RS232 converters to control dSPACE failure simulation hardware

ControlDesk now lets you use Ethernet-to-RS232 converters to control dSPACE failure simulation hardware.

Refer to Electrical Error Simulation with a Discrete FIU (🕮 ControlDesk Electrical Error Simulation via XIL API EESPort).

New tutorial videos

There are new tutorial videos available that show you:

- Basics on electrical error simulation
- How to monitor the switching behavior of discrete failure simulation hardware.
- How to monitor the switching behavior of SCALEXIO failure simulation hardware.
- How to use software triggers for electrical error simulation.

Refer to https://www.dspace.com/go/tutorial_cd_el_err_sim.

New Signal Editor Features (ControlDesk 6.3)

Specifying general Signal Editor settings

You can now specify general Signal Editor settings such as display settings for signal descriptions and default properties for segments to be created.

For details, refer to Signal Editor Page (🕮 ControlDesk Signal Editor).

Enhanced zooming signals

ControlDesk now lets you zoom signal axes individually.

For instructions, refer to How to Stretch or Compress the Axes (🕮 ControlDesk Signal Editor).

New Automation Features (ControlDesk 6.3)

Importing/exporting the recent platform configuration	The ControlDesk tool automation interface now lets you import/export the recent platform configuration. For details, refer to RecentPlatformConfiguration / IPmRecentPlatformConfiguration <<Collection>> (🕮 ControlDesk Automation).
PlugState property available for SCALEXIO	The ControlDesk tool automation interface now also supports the `PlugState` property for the SCALEXIO platform. For details, refer to PlugState <<Enumeration>> (🕮 ControlDesk Automation).
AutomaticReconnectBehavior property available for SCALEXIO	The ControlDesk tool automation interface now also supports the `AutomaticReconnectBehavior` property for the SCALEXIO platform. For details, refer to AutomaticReconnectBehavior <<Enumeration>> (🕮 ControlDesk Automation).

Migrating to ControlDesk 6.3

Where to go from here

Information in this section

Discontinuations in ControlDesk

Discontinuations as of ControlDesk 6.3

Third-party PC-based interfaces As of ControlDesk 6.3, the following third-party PC-based interfaces are no longer supported:

Supplier	Interface
CAN[1)]	
Vector Informatik	▪ CANcardXL ▪ CANcardXLe
Kvaser	▪ LAPcan ▪ LAPcan II
Eberspächer Electronics	▪ FlexCard Cyclone II ▪ FlexCard Cyclone II SE ▪ FlexCard USB
LIN[2)]	
Vector Informatik	▪ CANcardXL ▪ CANcardXLe
Kvaser	▪ LAPcan ▪ LAPcan II
FlexRay[3)]	
Eberspächer Electronics	▪ FlexCard Cyclone II ▪ FlexCard Cyclone II SE ▪ FlexCard USB

1) For a list of CAN interfaces supported by ControlDesk, refer to Supported CAN Interfaces (🕮 ControlDesk Platform Management).
2) For a list of LIN interfaces supported by ControlDesk, refer to Supported LIN Interfaces (🕮 ControlDesk Platform Management).
3) For a list of FlexRay interfaces supported by ControlDesk, refer to Supported FlexRay Interfaces (🕮 ControlDesk Platform Management).

Migrating to ControlDesk 6.3

Introduction

To migrate from ControlDesk 6.2 to ControlDesk 6.3 and reuse existing experiments, you might have to carry out the following migration steps.

Note

To migrate to ControlDesk 6.3 from versions previous to 6.2, you might also have to perform the migration steps of the intervening ControlDesk versions.

Where to go from here

Information in this topic

Tool automation changes

Change to the interfaces accessing platforms/devices in an experiment In ControlDesk 6.3, using the `IsAssignable` property of the interfaces that access platforms and devices in an experiment returns an exception. Do not use the property any longer.

This applies to the following interfaces:

- `IPmCANMonitoringPlatform` (refer to `CANMonitoringPlatform / IPmCANMonitoringPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmCCPPlatform` (refer to `CCPPlatform / IPmCCPPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmDS1005Platform` (refer to `DS1005Platform / IPmDS1005Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmDS1006Platform` (refer to `DS1006Platform / IPmDS1006Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmDS1007Platform` (refer to `DS1007Platform / IPmDS1007Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmDS1103Platform` (refer to `DS1103Platform / IPmDS1103Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmDS1104Platform` (refer to `DS1104Platform / IPmDS1104Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmDS1202Platform` (refer to `DS1202Platform / IPmDS1202Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmECUDiagnostics2Platform` (refer to `ECUDiagnostics2Platform / IPmECUDiagnostics2Platform <<Interface>>` (📖 ControlDesk Automation))

- `IPmECUDiagnosticsPlatform` (refer to `ECUDiagnosticsPlatform / IPmECUDiagnosticsPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmFlexRayMonitoringPlatform` (refer to `FlexRayMonitoringPlatform / IPmFlexRayMonitoringPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmGSI2Platform` (refer to `GSI2Platform / IPmGSI2Platform <<Interface>>` (📖 ControlDesk Automation))
- `IPmGSIPlatform` (refer to `GSIPlatform / IPmGSIPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmIPEPlatform` (refer to `IPEPlatform / IPmIPEPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmLINMonitoringPlatform` (refer to `LINMonitoringPlatform / IPmLINMonitoringPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmMABXPlatform` (refer to `MABXPlatform / IPmMABXPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmMultiProcessorPlatform` (refer to `MultiProcessorPlatform / IPmMultiProcessorPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmSCALEXIOPlatform` (refer to `SCALEXIOPlatform / IPmSCALEXIOPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmVEOSPlatform` (refer to `VEOSPlatform / IPmVEOSPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmVideoCapturingPlatform` (refer to `VideoCapturingPlatform / IPmVideoCapturingPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmXCPonCANPlatform` (refer to `XCPonCANPlatform / IPmXCPonCANPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmXCPonEthernetPlatform` (refer to `XCPonEthernetPlatform / IPmXCPonEthernetPlatform <<Interface>>` (📖 ControlDesk Automation))
- `IPmXCPonFlexRayPlatform` (refer to `XCPonFlexRayPlatform / IPmXCPonFlexRayPlatform <<Interface>>` (📖 ControlDesk Automation))

Migrating from prior ControlDesk versions

To migrate from prior ControlDesk versions and reuse existing experiments, you might have to carry out additional migration steps. For more information on the migration steps, refer to Migrating from Prior Versions of ControlDesk (📖 ControlDesk Introduction and Overview).

Related topics

Basics

Basics on Migrating from Prior Versions of ControlDesk (📖 ControlDesk Introduction and Overview)

DCI Configuration Tool

New Features of the DCI Configuration Tool 3.9

Firmware versions for DCI-GSI1 and DCI-GSI2 interfaces

The following firmware versions for the DCI-GSI1 and DCI-GSI2 interfaces are delivered with the DCI Configuration Tool 3.9:

- DCI-GSI1 firmware version 1.6.8
- DCI-GSI2 firmware version 1.4.12

Note

The firmware version delivered with the DCI Configuration Tool is not always the latest firmware version available. If you encounter problems, contact dSPACE Support to check if a later firmware version is available.

dSPACE CAN API Package

New Features of dSPACE CAN API Package 3.0.3

New functions to convert baud rates to bit timing parameters

The dSPACE CAN API 2.0 included in dSPACE CAN API Package 3.0.3 provides two new functions to convert baud rates to bit timing parameters:

- DSCAN_ConvertBaudratesToBitTimingParameters (📖 dSPACE CAN API 2.0 C Reference)
- DSCAN_ConvertBaudrateToBitTimingParametersWithSameSPAndBRP (📖 dSPACE CAN API 2.0 C Reference)

Related topics

References

DSCAN_ConvertBaudratesToBitTimingParameters (📖 dSPACE CAN API 2.0 C Reference)
DSCAN_ConvertBaudrateToBitTimingParametersWithSameSPAndBRP (📖 dSPACE CAN API 2.0 C Reference)

dSPACE ECU Flash Programming Tool

Discontinuations in the dSPACE ECU Flash Programming Tool

Discontinuations as of dSPACE ECU Flash Programming Tool 2.5

Third-party CAN interfaces As of dSPACE ECU Flash Programming Tool 2.5, the following third-party CAN interfaces are no longer supported:

Supplier	Interface
Vector Informatik	▪ CANcardXL ▪ CANcardXLe
Kvaser	▪ LAPcan ▪ LAPcan II
Eberspächer Electronics	▪ FlexCard Cyclone II ▪ FlexCard Cyclone II SE ▪ FlexCard USB

For a list of the interfaces supported by the dSPACE ECU Flash Programming Tool, refer to Supported ECU Interface Types (🕮 ECU Flash Programming).

dSPACE XIL API .NET

New Features of dSPACE XIL API .NET 2018-A

Enhanced MAPort functionality	The dSPACE MAPort implementation supports multiple Simulink behavior models and SIC files per application process in a ConfigurationDesk application. For more information, refer to New Features of ConfigurationDesk 6.1 (Implementation Version) on page 68.
Enhanced EESPort functionality	You can now use Ethernet-to-RS232 converters to control dSPACE failure simulation hardware. For more information, refer to Implementing an EESPort Client Application (🕮 dSPACE XIL API Implementation Guide).

ECU Interface Manager

Where to go from here

Information in this section

New Features of ECU Interface Manager 2.3

Support for the Infineon AURIX 2G microcontroller family

The ECU Interface Manager 2.3 now supports binary code analysis and modifications for ECU applications for the Infineon AURIX 2G microcontroller family.

Refer to Supported Microcontrollers (🕮 ECU Interface Manager Manual).

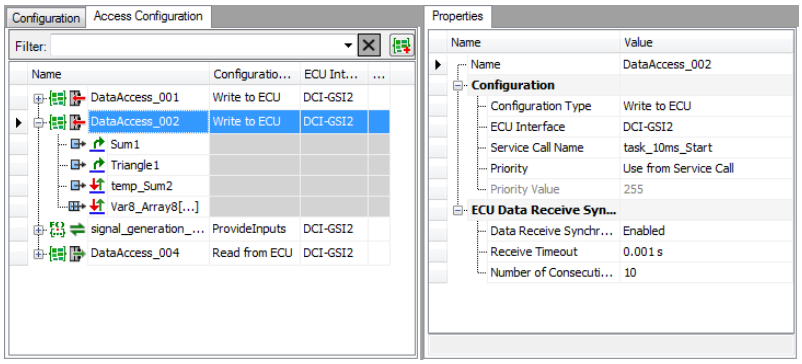
Configuration of variable-based ECU-synchronous data access

The ECU Interface Manager 2.2 introduced *ECU-asynchronous data access*, which allows you to freely select variables that you want to access. ECU-asynchronous data access is based on the *upload/download of ECU variables*.

The ECU Interface Manager 2.3 extends this feature by *ECU-synchronous data access*.

ECU-synchronous data access means that ECU variable values are read from/written to the ECU *using ECU service calls*. Data access is therefore synchronously to the ECU application. ECU-synchronous data access is based on the *measurement and stimulation of variables*.

The following illustration shows an example of ECU-synchronous data access:



The ECU Interface Manager lets you access ECU variables in connection with ConfigurationDesk/SCALEXIO.

For details, refer to Basics on Configuring Data Accesses (🕮 ECU Interface Manager Manual).

Improved variable-based ECU-asynchronous data access

In connection with the ECU-asynchronous data access to ECU variables, the ECU Interface Manager 2.3 now supports 1,000 scalar variables or arrays with an overall amount of 3,000 array elements per data access.

Up to and including ECU Interface Manager 2.2, ECU-asynchronous data access to ECU variables was limited to 255 variables per data access.

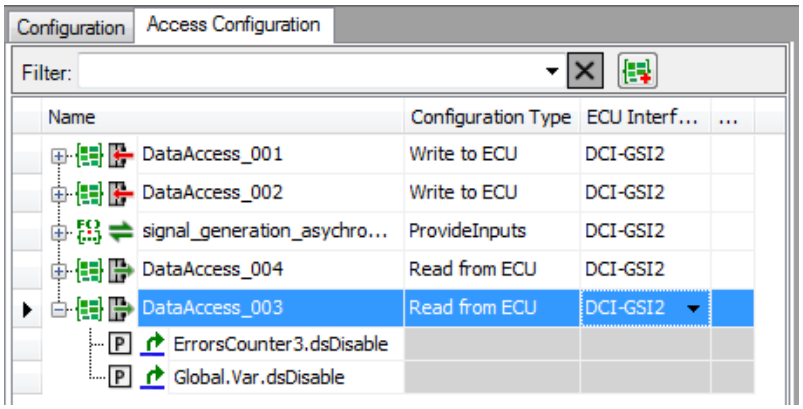
Refer to Basics on Configuring Data Accesses (🕮 ECU Interface Manager Manual).

Improvements for control variables of control execution

The ECU Interface Manager 2.3 provides the following improvements for control variables of control executions:

Data access configuration also for control variables of control executions The ECU Interface Manager 2.3 now lets you configure data access for control variables of control executions. You can use them to control the execution of function calls and variable write accesses of an ECU application.

The following illustration shows an example of data access to two control variables of a control execution:



Up to and including ECU Interface Manager 2.2, changing the value of control variables during run time of the ECU application was possible only if you used an external measurement and calibration tool such as ControlDesk.

As of ECU Interface Manager 2.3, changing the value of control variables during run time of the ECU application is also possible via the connected real-time application if data access for the control variables is configured.

- For information on configuring data access, refer to Basics on Configuring Data Accesses (🕮 ECU Interface Manager Manual).
- For information on controlling the execution of function calls and variable write accesses of an ECU application, refer to Controlling the Execution of Code Items (🕮 ECU Interface Manager Manual).

Renaming control variables individually As of ECU Interface Manager 2.3, you can rename the global and local control variables individually for each control execution. For example, this allows you to control the execution of function groups by using group-specific control variables.

Refer to Renaming control variables (🕮 ECU Interface Manager Manual).

Mapping control variables to existing A2L file variables As of ECU Interface Manager 2.3, the ECU Interface Manager can map control variables to existing A2L file variables.

Refer to Renaming control variables (🕮 ECU Interface Manager Manual).

Import of A2L files with XCPplus interface description data of XCP 1.3 and 1.4

The ECU Interface Manager 2.3 now supports the import of A2L files containing `XCPplus` interface description data (`IF_DATA`) of XCP version 1.3 and 1.4.

Note

The ECU Interface Manager supports the import only. However, support for the new features introduced with XCP version 1.3 and 1.4 is not yet implemented in the ECU Interface Manager.

Related topics

Basics

Basics on Configuring Data Accesses (ECU Interface Manager Manual)

Compatibility of ECU Interface Manager 2.3

Compatibility in general

dSPACE recommends using only software products from the same dSPACE Release. This ensures maximum run-time compatibility.

Compatibility between EIC files and ConfigurationDesk

The following table shows the compatibility between EIC files and ConfigurationDesk:

	EIC Files Created With ...			
	ECU Interface Manager 2.0p1[1]	ECU Interface Manager 2.1[2]	ECU Interface Manager 2.2[3]	ECU Interface Manager 2.3[4]
ConfigurationDesk 6.1[4]	✓	✓	✓	✓
ConfigurationDesk 6.0[3]	✓	✓	✓	–
ConfigurationDesk 5.7[2]	✓	✓	–	–
ConfigurationDesk 5.6 SP1[1]	✓	✓	–	–

1) dSPACE Release 2016-B
2) dSPACE Release 2017-A
3) dSPACE Release 2017-B
4) dSPACE Release 2018-A

Migrating to ECU Interface Manager 2.3

Automatic migration of projects

You can reuse projects in ECU Interface Manager 2.3 if the projects were last saved with ECU Interface Manager 2.0 p1 or later.

When you open the projects in ECU Interface Manager 2.3, they are migrated automatically.

Note

In ECU Interface Manager 2.3, you cannot reuse projects that were last saved with ECU Interface Manager 2.0 or earlier.

Additional migration steps in some cases

To migrate to ECU Interface Manager 2.3 from versions previous to ECU Interface Manager 2.2, you might also have to perform the migration steps of the intervening ECU Interface Manager versions.

Firmware Manager

New Features of Firmware Manager 2.5

Enhanced platform support

The Firmware Manager supports the following new SCALEXIO hardware:

- DS6241 D/A Board

ModelDesk

Where to go from here

Information in this section

New Features of ModelDesk 4.7

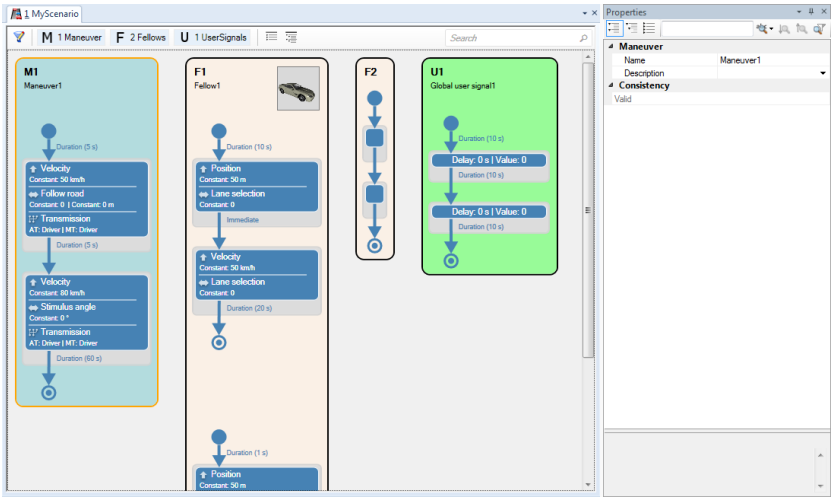
Support of multiple ASMs per application process

ConfigurationDesk now lets you assign multiple Simulink behavior models to one application process. Refer to New Features of ConfigurationDesk 6.1 (Implementation Version) on page 68.

This feature can also be used for ASMs. ModelDesk can parameterize this type of application process.

Scenario Editor

Now the **Traffic Editor** can specify the movement and control of the ASM vehicle, the maneuver. The **Traffic Editor** is therefore renamed to **Scenario Editor**. You can specify traffic scenarios and maneuvers in one component. The following illustration displays the graphical user interface of the **Scenario Editor**.



Road creation

The Road Generator is improved:

- The maximum of number of lanes is increased to 100.
- You can specify whether a lane is drivable.
- The alias support lets you define and manage alias names for scalar road parameters for easier access.

Controlling maneuvers and driving cycles

You can use ModelDesk to control (start, stop, reset) maneuvers for vehicle dynamics tests and driving cycles for engine tests. You can now use this feature in Simulink simulation.

Related topics

Basics

Controlling Maneuvers and Driving Cycles (ModelDesk Scenario Creation)
Creating Maneuvers (ModelDesk Scenario Creation)
Modifying Properties of Alias Variables Using Tool Automation (ModelDesk Automation)

Migration to ModelDesk 4.7

Maneuver Editor

As of ModelDesk 4.7, the Maneuver Editor is obsolete. You can specify maneuvers using the Scenario Editor. Maneuvers specified with the Maneuver Editor are automatically migrated to scenarios for the Scenario Editor. However, scripts that use the tool automation of the Maneuver Editor can not be migrated. If you want to use such scripts, you must activate the Maneuver Editor using the Maneuver Compatibility command.

Note

When you enable the maneuver compatibility, manual modifications of the simulation model might be necessary to allow a proper usage of the maneuver definition of the **Maneuver Editor**.

Tool automation for plotting

As of ModelDesk 4.4, ModelDesk has new plotters and the tool automation for plotting was changed. To reuse scripts for plotting, you must adapt scripts written for ModelDesk 4.3 and earlier.

Triggering of plots

As of ModelDesk 4.6, the plotting is triggered by the simulation model. Before that, ModelDesk triggered the plotting. Normally, the plots are equal, but may differ in some cases.

Tip

To compare measurements, it is useful to use the XY Plotter and use the maneuver time as a signal for the x-axis.

Related topics

References

Maneuver Compatibility (📖 ModelDesk Scenario Creation)

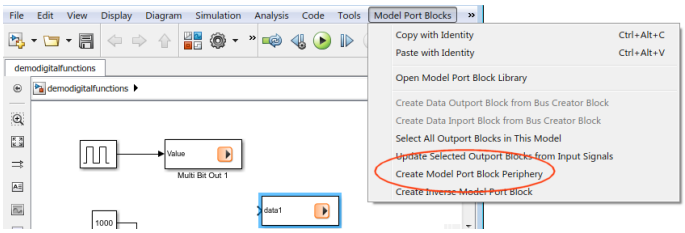
Model Interface Package for Simulink

New Features of the Model Interface Package for Simulink 3.6

New command for the creation of model port block periphery

The Model Interface Package for Simulink now provides methods that let you automatically create suitable Simulink blocks that are connected to the selected model port blocks. You can execute the related commands as follows:

- You can use the **Create Model Port Block Periphery** command in the **Model Port Blocks** menu in the model window.



- You can execute the **dsmpb_createmodelportblockperiphery** API function via the MATLAB Command Window.

Refer to Creating a Suitable Simulink Block Periphery for Unconnected Model Ports (📖 Model Interface Package for Simulink - Modeling Guide).

Unsupported new features of MATLAB R2018a

The following new features introduced with MATLAB R2018a are not supported by the Model Interface Package for Simulink:

- Simulink signals support the string data type. A string signal can be used for modeling, but it does not appear in the generated TRC file, and can therefore not be accessed, e.g., for experimenting in ControlDesk.
- You can define a Simulink parameter with a dependency to another Simulink parameter. For example, you can define the Simulink parameter **myParamPlusOne** with the value `myParam + 1`. However, due to a Simulink Coder limitation, the generated code does not preserve the dependency between the parameters. The generated TRC file therefore contains separate entries for these parameters, which can be modified without having an effect on each other.

- Simulink Coder provides the new `ObfuscateCode` option. This option is not supported by Model Interface Package for Simulink.

MotionDesk

Where to go from here

Information in this section

New Features of MotionDesk 4.2

Terrain generation

A feature of MotionDesk that provides an environment for a large 3-D world. It generates a 3-D object for the ground that can be based on measured or artificial data. MotionDesk provides the following features:

- You can use measured data to specify the height map of the terrain. MotionDesk can evaluate the GPS data.
- You can use a simple gray-scale bitmap to specify the height map of the terrain. In this case, the resolution as well as minimum and maximum height must also be specified.
- You can use a satellite image as texture for the terrain.
- You can use a bitmap as texture for the terrain and stretch it over the entire terrain or use it for tiling.
- You can use land class images as texture for the terrain. A land class contains multiple images. Each of them is used as texture for a certain altitude range, i.e., when the terrain is generated, the images are used depending on the height of the terrain.
- You can define a subregion that is used for the terrain generation, so only the required area is used.
- You can assign a road model to the terrain configuration. The **Terrain Generator** deforms the terrain so that there is a smooth transition between road and terrain.

The following illustration displays an example of a terrain.

Demo You can download a demo, refer to http://www.dspace.com/go/mdterrain.

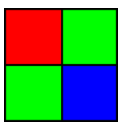
Visualization

Large world support MotionDesk can now generate large road networks as well as the associated scenery. To do this, the scene is separated into parts using the quadtree technique. MotionDesk loads only the parts that are in the vicinity of the active observer. The geometries that are in the nearest vicinity are displayed in more detail than geometries that are farther away.

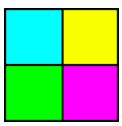
Hardware instancing Performance is improved by using the hardware-instancing technique for often used 3-D objects, for example, trees and houses that are used in the scene generation. This accelerates the rendering of the 3-D objects.

Camera sensor

2 × 2 patterns and high dynamic range It is possible to display the raw data of single-chip sensors. Instead of the regular output of the camera image, you can display 2 × 2 patterns in the high dynamic range (12-bit or 24-bit length) for the camera sensor. You can specify the intensity of each pixel of the pattern. So you can specify different kinds of patterns, for example, the Bayer pattern or patterns with a CYGM filter.



Bayer pattern



CYGM filter

Shared memory access MotionDesk can copy the sensor composite to a shared memory for analyzing and processing the data, for example, for software-in-the-loop use cases. You can read the data using an API interface.

Hide sensor meta data The first line of the image in the composition window contains metadata. MotionDesk can hide this first line.

3-D object library	The ASM Coupe 3-D object has taillights to better support night-driving environments.
Related topics	Basics Basics of Terrain Generation (📖 MotionDesk Terrain Generation)

Migrating to MotionDesk 4.2

Using endless ground plate and horizon	In MotionDesk 4.0 and earlier, the virtual world of a scene was built using ground plate and dome 3-D objects. If you want to use the endless ground plate and sky, such 3-D objects are obsolete. When you use an old scene, delete these objects before activating the endless ground and sky.
Using advanced lighting mode	In advanced lighting mode, the static objects used for domes are not suitable for building the virtual world. Use the endless horizon of the environment instead.
Migrating 3-D custom objects	If you want to use 3-D custom objects in VRML2 format that you used in MotionDesk 2.2.1 or earlier, you have to convert the VRML2 files into COLLADA format files. You can convert the files at any time using the 3-D Library Manager.
Migrating from MotionDesk version 2.2.1 and earlier	The current MotionDesk version cannot read old MotionDesk experiments in the MDX file format (used in MotionDesk 2.1.6 and earlier) or scenes stored in ESD format (used in MotionDesk 2.2.1 and earlier). It is therefore not possible to migrate from MotionDesk projects and experiments of these versions. If you want to use older projects and experiments, you can migrate them by using MotionDesk 3.0 up to MotionDesk 3.6 and then open them in the current MotionDesk version.

Real-Time Testing

Where to go from here

Information in this section

New Features of Real-Time Testing 3.4

New module: dsethernetapilib

You can transmit and receive frames via Ethernet in RTT sequences on a SCALEXIO platform.

The `dsethernetapilib` module provides classes and methods to use Ethernet interface of the real-time platform:

- You can register, initialize, and activate the Ethernet interfaces.
- You can read all the information on the Ethernet interfaces.
- You can transmit frames in raw format via the Ethernet interface.
- You can receive frames in raw format via the Ethernet interface.

Printing messages

You can print message of different severity level (info, warning, or error) to the standard output or the dSPACE log file.

Related topics

Basics

Implementing Communication via Ethernet (Real-Time Testing Guide)
Printing Messages in the dSPACE Log from an RTT Sequence (Real-Time Testing Guide)

Migrating to Real-Time Testing 3.4

Incompatible BCG files

The BCG files generated with Real-Time Testing 2.6 or earlier cannot be used for Real-Time Testing 3.4. You must create the BCG file of the Real-Time Testing sequence again. Refer to Creating and Starting RTT Sequences in Python Scripts (🕮 Real-Time Testing Guide).

RTI/RTI-MP and RTLib

Where to go from here

Information in this section

New Features of RTI/RTI-MP and RTLib

New features in RTI/RTI-MP

The TaskConfiguration API provides two new methods:

- `GetTaskSampleTime`
  To get the sample times of the specified tasks.
- `IsTaskConfigurationChanged`
  To check whether there was a modification in the model that affects its tasks.

Unsupported new features of MATLAB R2018a

The following new features introduced with MATLAB R2018a are not supported by RTI/RTI-MP:

- Simulink signals support the string data type. A string signal can be used for modeling, but it does not appear in the generated TRC file, and can therefore not be accessed, e.g., for experimenting in ControlDesk.
- You can define a Simulink parameter with a dependency to another Simulink parameter. For example, you can define the Simulink parameter myParamPlusOne with the value `myParam + 1`. However, due to a Simulink Coder limitation, the generated code does not preserve the dependency between the parameters. The generated TRC file therefore contains separate entries for these parameters, which can be modified without having an effect on each other.
- Simulink Coder provides the new `ObfuscateCode` option. This option is not supported by RTI and RTI-MP.

- In Simulink, protected models can contain other protected referenced models. Nested protected models are not supported.

Installing Texas Instruments compiler

As of Release 2017-B, the environment variables for the installed compiler are not automatically set during setup.

After you install a TI compiler, you have to configure the installation path. You can call `DsConfigTiEnv` in the Command Prompt for dSPACE RCP and HIL to open a dialog for entering the values of the environment variables `TI_ROOT` and `C2X_ROOT`.

For more information, refer to How to Set the Compiler Path (DS2210 RTLib Reference), How to Set the Compiler Path (DS2211 RTLib Reference), How to Set the Compiler Path (DS2302 DSP Programming), or How to Set the Compiler Path (DS1103 RTLib Reference).

Migration Aspects of RTI/RTI-MP and RTLib

Modified features in later MATLAB versions

Switching to a later MATLAB version If you install a new MATLAB version, some settings are adopted from previously installed MATLAB versions. To prevent unexpected behavior of your Simulink models when switching to a later MATLAB version or dSPACE Release, always reset the MATLAB and Simulink preferences to their defaults before you start using them.

Changed setting for incremental encoder interface of MicroAutoBox

The implemented range of the *noise filter sampling rate* for the incremental encoder interface of MicroAutoBox 1401/1511 (Digital I/O Unit Type 3) and MicroAutoBox 1401/1513 (Digital I/O Unit Type 4) was always 312.5 kHz … 20 MHz. However, the settings in both the related RTI blocks and the user documentation showed the different range of 78.125 kHZ … 10 MHz.

There is no automatic migration because the range is not only shifted but also reduced from 8 intervals to 7 intervals.

- When you use RTI, you have to adapt the Noise filter setting of the DIO_TYPE3_ENC_BLx and DIO_TYPE4_ENC_BLx blocks.
- When you use RTLib, you have to adapt the `NoisePrescaler` parameter of the `dio_tp3_enc_init` and `dio_tp4_enc_init` functions.

For more information on the noise filter sampling rate, refer to Incremental Encoder Interface on the DIO Type 3 Unit (MicroAutoBox Features) or Incremental Encoder Interface on the DIO Type 4 Unit (MicroAutoBox Features).

RTI Bypass Blockset

Where to go from here

Information in this section

New Features of the RTI Bypass Blockset 3.10

RTI Bypass Blockset

Support of Infineon AURIX 2G microcontroller family for on-target bypassing The RTI Bypass Blockset now supports on-target bypassing for the Infineon AURIX 2G microcontroller family.

Support of X86 target when using TargetLink Code Generator For on-target bypassing, the RTI Bypass Blockset now also supports the X86 target (V-ECU on VEOS) when the TargetLink Code Generator is used for code generation.

Import of A2L files with XCPplus interface description data of XCP 1.3 and 1.4 The RTI Bypass Blockset supports the import of A2L files containing `XCPplus` interface description data (`IF_DATA`) of XCP version 1.3 and 1.4.

Note

The RTI Bypass Blockset supports the import only. Support for the new features introduced with XCP version 1.3 and 1.4 is not implemented yet in the RTI Bypass Blockset.

RTI Bypass Blockset MATLAB API

Support of enhancements to RTI Bypass Blockset The RTI Bypass Blockset MATLAB API supports the enhancements to the RTI Bypass Blockset.

Refer to the 🕮 RTI Bypass Blockset MATLAB API Reference.

Migrating to RTI Bypass Blockset 3.10

Working with models from earlier RTI Bypass Blockset versions 3.x and 2.x

The current Release contains RTI Bypass Blockset 3.10, which is compatible with earlier blockset versions 3.x and 2.x. However, there are some points to note:

- *Working with models from RTI Bypass Blockset 2.5 or earlier*

  Data management was changed in comparison to the prior RTI Bypass Blockset versions. If you have a Simulink model built with RTI Bypass Blockset 2.5 or earlier and you open it with RTI Bypass Blockset 3.10, the old Data Dictionary file (with the file name extension .dd) is replaced by a new Data Dictionary file (.vdb) using the information stored in the Setup block. This happens as soon as you open and close the Setup block dialog by clicking **OK**, or you open the Read, Write, Upload, or Download block dialog and click **Fill Variable Selector** on the Variables page.

  If you have a model that was saved with RTI Bypass Blockset 3.9 and want to use it with RTI Bypass Blockset 2.5 or earlier, the model's Data Dictionary file required for blockset version 2.5 or earlier (file name extension .dd) is created. This happens when you update the A2L files in the Setup block, or you open the Read, Write, Upload, or Download block and click **Fill Variable Selector** on the Variables page. The Data Dictionary file created under RTI Bypass Blockset 3.10 (.vdb) remains on the disk.

  To enable the RTI Bypass Blockset to recreate the Data Dictionary, the database files specified in the Setup block must be accessible at the specified location and must be unchanged.

- *Working with models from RTI Bypass Blockset 2.6 up to and including RTI Bypass Blockset 3.9*

  If a Simulink model was built with RTI Bypass Blockset 2.6 up to RTI Bypass Blockset 3.9, and you open it with RTI Bypass Blockset 3.10, the old Data Dictionary file is replaced by a new Data Dictionary file. However, the new Data Dictionary file cannot be used in earlier RTI Bypass Blockset versions. If you want to reuse the model with RTI Bypass Blockset 2.6 up to RTI Bypass Blockset 3.9, you have to create a suitable database in the earlier RTI Bypass Blockset version by reimporting the database files (A2L files) specified in the Setup block.

RTI CAN MultiMessage Blockset

Where to go from here

Information in this section

New Features of the RTI CAN MultiMessage Blockset 5.0

Support of CAN FD for SCALEXIO systems with a DS2672 Bus Module

The RTI CAN MultiMessage Blockset now supports working with CAN FD messages for SCALEXIO systems with a DS2672 Bus Module.

Refer to Basics on Working with CAN FD (📖 RTI CAN MultiMessage Blockset Reference).

Migrating to RTI CAN MultiMessage Blockset 5.0

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 RTICANMM blocks and save the model before modifying the CAN configuration.

To create new S-functions for all the RTICANMM blocks in your model in one step, you can perform one of the following actions after opening the model:

- In the MATLAB Command Window, enter `rtimmsu_update('System', bdroot)`.

  For more information on the command and its options, enter `help rtimmsu_update` in the MATLAB Command Window.

- Select the **Create S-Function for all CAN Blocks** command from the **Options** menu of the RTICANMM GeneralSetup block.

For more information, refer to Limitations with RTICANMM (📖 RTI CAN MultiMessage Blockset Reference).

Compiler messages when using code generated by an RTI CAN MultiMessage Blockset version < 4.0

If you use code that was generated by an RTI CAN MultiMessage Blockset version < 4.0, several compiler warning messages that contain the phrase `<<argument of type "can_tp1_canChannel *" is incompatible with parameter of type "DsTCanCh">>` will be displayed during the build process of your simulation model. This is due to a modified data type. These warnings can be ignored and disappear after you use the current blockset version to generate the RTICANMM code again.

Using existing checksum algorithms

Checksum algorithms that were originally developed for an application and contain CAN messages cannot be reused for applications that contain CAN FD messages, because CAN FD includes new message types and longer data fields. Existing checksum algorithms can still be used for applications that contain only classic CAN messages. For CAN FD applications, you must adapt the checksum algorithms.

RTI FPGA Programming Blockset

Where to go from here

Information in this section

New Features of the RTI FPGA Programming Blockset 3.5

Extended Xilinx® support

The RTI FPGA Programming Blockset now supports the following products and versions of the Xilinx design tools:

Xilinx Design Tools Version	MATLAB Version [1]	Operating System
Vivado 2017.4	▪ MATLAB R2016b ▪ MATLAB R2017a ▪ MATLAB R2017b	All PC operating systems that are supported by RCP and HIL software of dSPACE Release 2018-A. Refer to Operating System on page 164.

[1] The Processor Interface sublibrary of the RTI FPGA Programming Blockset also supports MATLAB R2018a.

Enhancements to the DS1202 FPGA I/O Type 1 framework

The framework for MicroLabBox provides the following enhancement.

Tuning of FPGA constants You can add tunable FPGA constants to your FPGA application and adjust them with your experiment software.

For more information, refer to Adjusting Values of FPGA Constants (RTI FPGA Programming Blockset Guide).

Support of FPGA test access and scaling You can enable that FPGA applications support FPGA test access and the scaling of I/O signals with your experiment software.

FPGA test access enables intervention points for the experiment software. The intervention points let you set values for the I/O interface and for data values that are exchanged with the processor interface.

The scaling of I/O signals includes the scaling, saturating, and inverting of I/O signals.

For more information, refer to Enabling the FPGA Test Access and Scaling (🕮 RTI FPGA Programming Blockset Guide).

Enhancements to the frameworks of the DS2655 FPGA Base Board

FPGA applications that are modeled with function blocks for the DS2655 FPGA Base Board and for the I/O modules provide the following enhancements.

Support of I/O signal scaling You can enable that FPGA applications support the scaling of I/O signals with your experiment software.

The scaling of I/O signals includes the scaling, saturating, and inverting of I/O signals.

For more information, refer to Enabling the FPGA Test Access and Scaling (🕮 RTI FPGA Programming Blockset Guide).

Import of parameter settings You can import parameter settings of FPGA custom function blocks to the FPGA model to update your FPGA model with optimized settings from ConfigurationDesk, for example. Refer to How to Update FPGA Models with Imported Parameter Settings (🕮 RTI FPGA Programming Blockset Guide).

Enhancements to the script interface

New script function The script interface is enhanced with a script function to get all Simulink block handles of the specified block type. Refer to GetFPGABlocks (🕮 RTI FPGA Programming Blockset Script Interface Reference).

Centralized documentation of the script interface All functions of the script interface are documented in one document. Refer to 🕮 RTI FPGA Programming Blockset Script Interface Reference.

Related topics

Basics

Migrating to RTI FPGA Programming Blockset 3.5 122

Migrating to RTI FPGA Programming Blockset 3.5

Introduction

There are various ways to migrate an existing model, depending on the blockset version used.

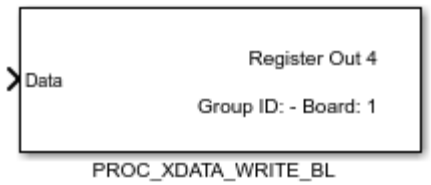
Migrating from RTI FPGA Programming Blockset 1.1 and higher to 3.5

If you implemented your FPGA application with RTI FPGA Programming Blockset Version 1.1 and later and want to use it with RTI FPGA Programming Blockset 3.5, the framework automatically updates itself to the current framework version.

The update handles all the subsystems in the model/subsystem. The parameters of the blocks stay the same after updating to the current framework version.

Appearance of migrated processor interfaces with 'Goto' and 'From' blocks With RTI FPGA Programming Blockset 3.1 ... 3.3 you modeled the processor interface of a SCALEXIO system with Simulink Goto and From blocks.

If you migrate a model with Goto and From blocks, the update process migrates these blocks to the processor interface blocks of the Processor Interface sublibrary. The migration process does not change the size of the origin blocks to beware the block arrangement of your model. Therefore, the appearance of the migrated blocks is different to the default appearance of processor interface blocks. The following illustrations gives you an example.

Appearance after the migration	Default appearance
	

ConfigurationDesk custom functions incompatible with dSPACE Release 2018-A

Note

Relevant for SCALEXIO systems with a DS2655 FPGA Base Board and a DS2655M1 Multi-I/O Module

An FPGA custom function block generated with RTI FPGA Programming Blockset 2.5 from dSPACE Release 2013-A and the real-time applications (*.rta) containing the FPGA custom function block are incompatible with the current dSPACE Release. To produce a usable custom function, you have to rebuild the FPGA model by using the current RTI FPGA Blockset.

Using different dSPACE hardware

Using an FPGA model on different dSPACE hardware requires some model modifications. Refer to Migrating to Another dSPACE Hardware (RTI FPGA Programming Blockset Guide).

RTI LIN MultiMessage Blockset

Migrating to RTI LIN MultiMessage Blockset 3.0

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 RTILINMM blocks and save the model before modifying the LIN configuration.

To create new S-functions for all the RTILINMM blocks in your model in one step, you can perform one of the following actions after opening the model:

- In the MATLAB Command Window, enter `rtimmsu_update('System', bdroot)`.

  For more information on the command and its options, enter `help rtimmsu_update` in the MATLAB Command Window.
- Select the **Create S-Function for all LIN Blocks** command from the **Options** menu of the RTILINMM GeneralSetup block.

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

SCALEXIO Firmware

New Features of the SCALEXIO Firmware 4.2

New supported hardware

The SCALEXIO firmware supports the following new hardware:

- DS6241 D/A Board

  A standard SCALEXIO I/O board that provides 20 analog I/O channels for signal generation (channel type: Analog Out 10) and 4 trigger inputs (channel type: Trigger In 2).

  You can use the Analog Out 10 channels type for Voltage Out, Wavetable Voltage Out, Angular Wavetable Voltage Out, and Waveform voltage Out I/O functions.

  You can use the Trigger In 2 channel type for the Trigger In I/O function.

SYNECT

Where to go from here

Information in this section

New Features of SYNECT 2.5

Where to go from here

Information in this section

New General Features of SYNECT

Introduction

SYNECT provides the following new general features.

Checkpoints

SYNECT now creates checkpoints when you release items.

A checkpoint is a list of item versions that lets you access the item versions that were released in one operation.

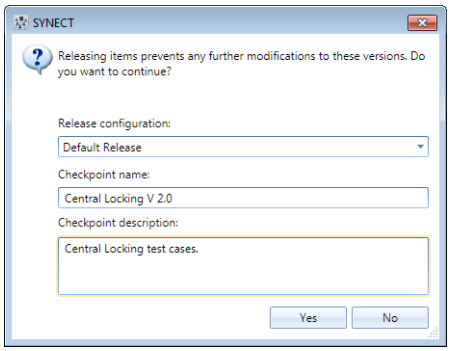
This allows you to analyze release operations.

A checkpoint contains the following information:

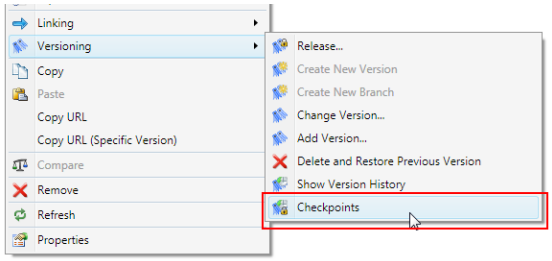
- The time when the checkpoint was created.
- The user who created the checkpoint.
- The items that were selected for releasing items.
- The items that were released in the release operation.

Creating checkpoints SYNECT creates checkpoints when you release items. You can specify a checkpoint name and a description.

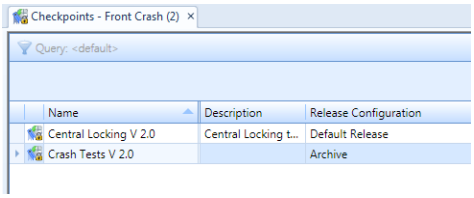
SYNECT specifies a time stamp as the default checkpoint name when you release items.



Accessing checkpoints Each item version provides a list of the checkpoints to which it belongs. You can access this list via the context menu of each item.



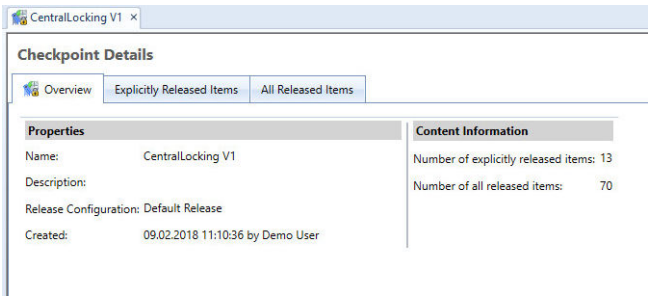
The following illustration shows a list of checkpoints.



Accessing the items of a checkpoint A checkpoint provides the following lists of item versions:

- The explicitly-released items, i.e., the items that you selected for release.
- All the items that were released in the release operation.

  SYNECT uses release configurations to identify the set of all the items that are to be released in addition to the explicitly-released items.

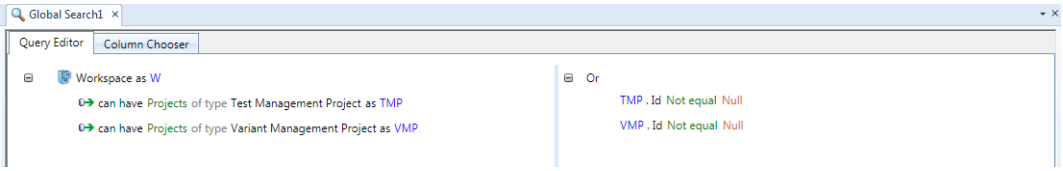


Queries

The following improvements were made:

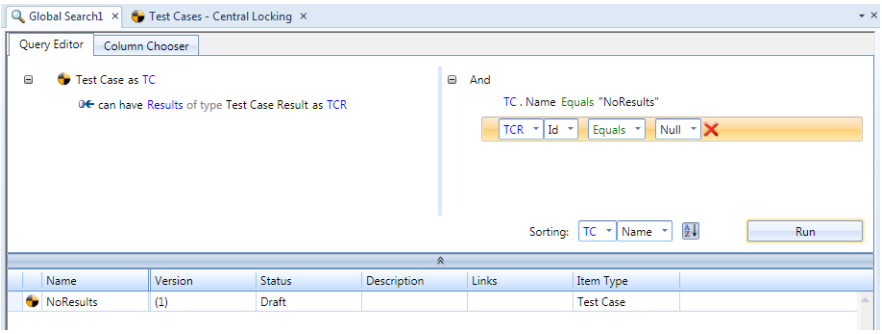
- You can now search for items that can have certain referenced items.

  The following illustration shows searching for workspaces that either have a test management project or have a variant management project.



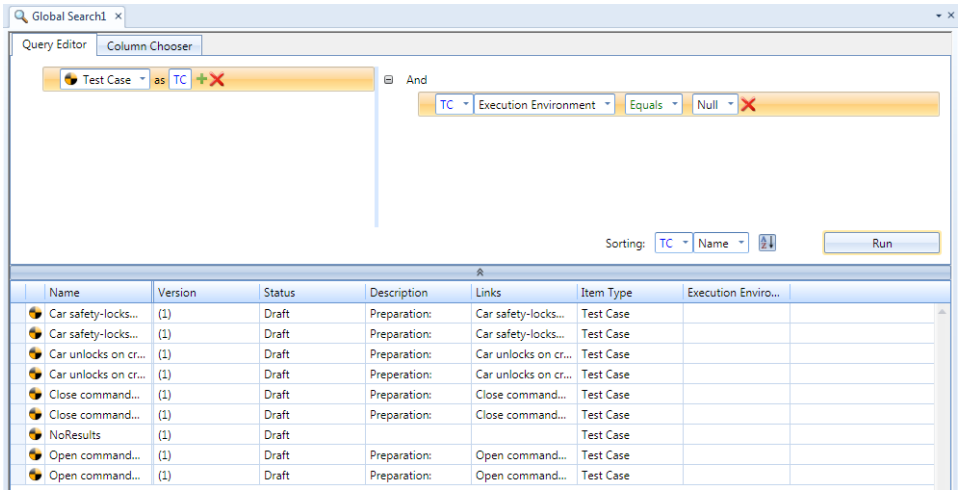
- You can use the **Null** value to search for items that must not have certain references.

  The following illustration shows an exemplary search for test cases that must not have test case results.



- You can use the **Null** value to search for items with an unspecified enumeration value.

  The following illustration shows an exemplary search for test cases with an unspecified **Execution Environment**.

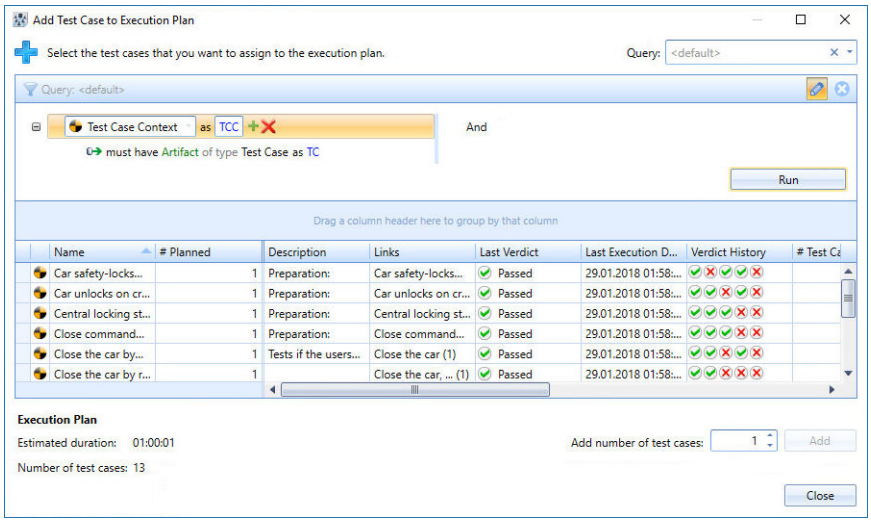


New Features of Test Management

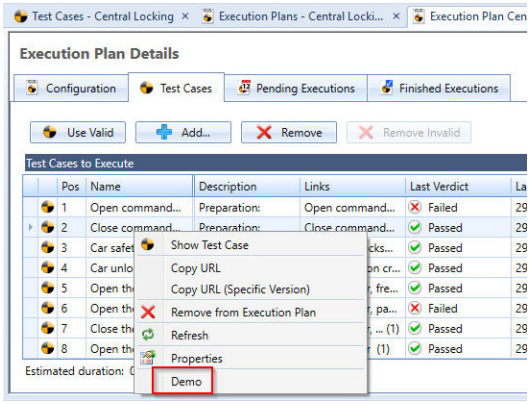
Improvements

The following improvements have been made for test management:

- You can now use queries to filter test cases to add them to execution plans.



- The client API now allows you to access the active tabbed page of the Execution Plan Details grid and selected elements on this page.
- You can now extend the context menus of test cases and executions in the Execution Plan Details grid.



New Features of Requirements Management

Introduction

The following improvements have been made for requirements management.

Managing versions

You can now manage versions of requirements document and requirement content items.

This lets you archive complete requirements documents as a baseline or share requirements documents between requirements management projects.

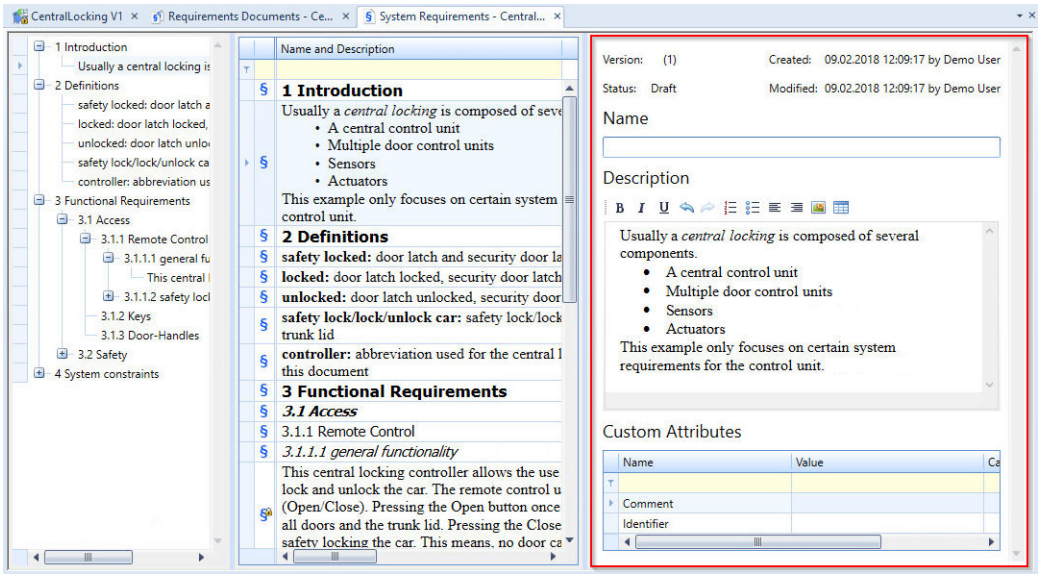
Editing requirement content items

Editing the attributes of requirement content items has been improved.

You can now use rich text editing features such as the following for the description attribute of the items:

- Bold, italic, and underline font options
- Ordered and unordered lists
- Images
- Tables

The following illustration shows an example from the Central Locking demo.



New Features of Model, Signal & Parameter Management

Introduction

The following improvements have been made for model, signal & parameter management.

Model, signal & parameter management

Creating new versions during import SYNECT now lets you automatically create new item versions if you import model implementations, signals & parameters.

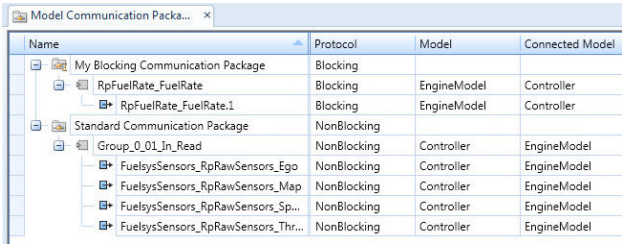
This simplifies the import behavior of SYNECT if you released items before the import of new item versions. SYNECT creates new item versions and updates references on demand, i.e., if an item that is to be updated is in the released state.

Creating new item versions on demand is activated by default. You can configure the behavior in the ECXML file that is used by the import plug-in.

Model communication packages You can now specify whether the communication of submodels in a system model is non-blocking or blocking. Model communication packages let you configure the communication between submodels of a system model in VEOS simulation.

By default all the communication is assigned to the `Standard Communication Package` with non-blocking communication.

You can create model communication packages and select non-blocking or blocking as required.



System model integration

Exchanging data Exchanging data for integrating system models via model management container files (MMZ) has been improved. The container import is now easier to use. Required workspaces or projects are now created automatically when you import MMZ files.

The MMZ containers contain all the data from model management, signal & parameter management, and workflow management projects that are related to exchanging system models.

This lets you exchange system model data with SYNECT users across SYNECT databases.

Importing container files System model integration now provides improved support for importing changed model container files to implementations.

This supports workflows where a model is changed and then exported to a model container for system model integration in SYNECT.

SYNECT provides improved support for the following use cases:

- The model container file is updated to a new file version.

  SYNECT lets you import the model container from the working folder of the selected implementation. The related model is updated as required.

- The model container file is replaced. This addresses use cases such as the change from a soft ECU modeled in Simulink to a V-ECU generated with SystemDesk.

  SYNECT lets you select a new model container file and replaces the implementation working folder. The related model is changed as required.

New Features of Workflow Management

Introduction	The following improvements have been made for workflow management.
Scheduled jobs	You can now repeat scheduled jobs for a time period.
New add-ons	SYNECT now provides the following add-ons for workflow management: ▪ The WFM Python API add-on that lets you program workflows in Python. ▪ The WFM MATLAB API add-on that lets you manage MATLAB workflows. You can install the add-ons via **Database – Extensions – Add-Ons**. Refer to Basics on Managing Add-Ons (🕮 SYNECT Guide).
Add-ons for download	You can now download the following add-ons for workflow management: ▪ Workflow management demo add-ons. ▪ An add-on that lets you migrate Python scripts and configurations to be used with SYNECT's script sequencer to workflows.

Migrating to SYNECT 2.5

Where to go from here

Information in this section

Migrating Databases

Introduction

To use the data from previous SYNECT versions with SYNECT 2.5, you have to migrate SYNECT's database.

To migrate databases for SYNECT Versions 2.0 - 2.4 to SYNECT 2.5, SYNECT 2.5 provides the **Database Migrator**.

Note

Contact dSPACE Support if you want to migrate SYNECT versions prior to SYNECT 2.0.

For basic information and instructions on migrating databases, refer to Migrating Databases from Previous SYNECT Versions (🕮 The SYNECT Server Guide).

Migrating Server Scripts

Introduction

The server API has been changed to support version management for requirements documents.

The following classes of the `dSPACE.Synect.Server.Extension.RequirementsManagement` namespace were changed:

- Changes of the Document class (1)
- Changes of the Document class (2)
- Changes of the RequirementsManagement Project class
- Changes of the ContentContext class

Changes of the Document class (1)

A requirements document can now be part of several requirements management projects. Use the `FindReferencingProjects()` method instead of the `DocumentOwner` property.

Script to be migrated

```
project = Document.DocumentOwner
print project.Name
```

Migrated script

```
projects = Document.FindReferencingProjects()
for project in projects:
   print project.Name
```

For reference information, refer to Document (🕮 SYNECT Server API Reference).

Changes of the Document class (2)

You cannot delete items that support version management. However, you can remove them.

Script to be migrated

```
Document.Delete()
```

Migrated script

```
Document.Remove()
```

For reference information, refer to Document (🕮 SYNECT Server API Reference).

Changes of the RequirementsManagement Project class

You now reference variant management projects at requirements documents instead of referencing variant management projects at requirements management projects.

Script to be migrated

```
requirementsManagementProject.VMProject = variantManagementProject
```

Migrated script

```
documents = requirementsManagementProject.Documents
for document in documents:
   document.VMProject = variantManagementProject
```

For reference information, refer to RequirementsManagementProject (📖 SYNECT Server API Reference).

Changes of the ContentContext class

Requirements project and document base now have the same item type. This leads to a semantical change of the `OwnerProject` property of the `ContentContext` class.

Script to be migrated

```
Parent = ContentContext.OwnerProject
# Parent is the RM project of the content's RM document.
```

Migrated script

```
Parent = ContentContext.OwnerProject
# Parent is the RM document of the content.
# You can also use the ContentContext.OwnerDocument property
instead.
```

For reference information, refer to ContentContext (📖 SYNECT Server API Reference).

Migration Scenarios Related to Data Model Changes

Introduction

You have to migrate work products that use the SYNECT data model because of changes introduced with SYNECT 2.5.

For an overview of data model changes, refer to Data Model Changes From SYNECT 2.4 to SYNECT 2.5 on page 140.

Migrating queries

You have to migrate queries that use changed parts of the SYNECT data model, such as item types or references that were deleted.

Data Model Changes From SYNECT 2.4 to SYNECT 2.5

Introduction

Some points of the SYNECT data model have been changed from SYNECT 2.4 to SYNECT 2.5.

Deleted items

The following item types have been deleted:

- *Project Base*
- *Sub Project*

Deleted attributes

Attributes have not been deleted.

Deleted references

The following references have been deleted:

Incoming references

Name	Target	Source
Parent Project	*Sub Project*	Domain Project (🕮 SYNECT Data Model Reference)
Associating Projects	Artifact Context (🕮 SYNECT Data Model Reference)	*Project Base*
Project	Artifact Context (🕮 SYNECT Data Model Reference)	*Project Base*
Associating Projects	*Project Base*	*Project Base*

Outgoing references

Name	Source	Target
Sub Projects	Domain Project (🕮 SYNECT Data Model Reference)	*Sub Project*
Associated Artifact Contexts	*Project Base*	Artifact Context (🕮 SYNECT Data Model Reference)
Artifact Contexts	*Project Base*	Artifact Context (🕮 SYNECT Data Model Reference)
Associated Projects	*Project Base*	*Project Base*

Changed base items types

The following item types are now derived from a new item type:

Item Type	New Base Item Type	Old Base Item Type
Project (🕮 SYNECT Data Model Reference)	Item (🕮 SYNECT Data Model Reference)	*Project Base*

Item Type	New Base Item Type	Old Base Item Type
Document Base (📖 SYNECT Data Model Reference)	Domain Project (📖 SYNECT Data Model Reference)	*Sub Project*
Requirements Management Project (📖 SYNECT Data Model Reference)	Project (📖 SYNECT Data Model Reference)	Domain Project (📖 SYNECT Data Model Reference)

New item types

The following item types have been added to the SYNECT data model:

- Checkpoint (📖 SYNECT Data Model Reference)
- Link Release Info (📖 SYNECT Data Model Reference)
- Reference Release Info (📖 SYNECT Data Model Reference)
- Release Configuration (📖 SYNECT Data Model Reference)

New attributes

The following attributes have been added to the SYNECT data model:

Item Type	Attributes
Release Configuration (📖 SYNECT Data Model Reference)	▪ Is Active ▪ Applicable Item Type Id ▪ Default Reference Behavior ▪ Default Link Behavior
Reference Release Info (📖 SYNECT Data Model Reference)	▪ Reference Type Id ▪ Is Release Relevant
Link Release Info (📖 SYNECT Data Model Reference)	▪ Link Type Id ▪ Is Release Relevant

New references

The following references have been added to the SYNECT data model:

Incoming references

Name	Target	Source
Checkpoints	Release Configuration (📖 SYNECT Data Model Reference)	Checkpoint (📖 SYNECT Data Model Reference)
Checkpoints (Explicitly Released)	Item (📖 SYNECT Data Model Reference)	Checkpoint (📖 SYNECT Data Model Reference)
Checkpoints (All Released)	Item (📖 SYNECT Data Model Reference)	Checkpoint (📖 SYNECT Data Model Reference)
Release Configuration	Reference Release Info (📖 SYNECT Data Model Reference)	Release Configuration (📖 SYNECT Data Model Reference)
Release Configuration	Link Release Info (📖 SYNECT Data Model Reference)	Release Configuration (📖 SYNECT Data Model Reference)

Name	Target	Source
Project	Artifact Context (📖 SYNECT Data Model Reference)	Domain Project (📖 SYNECT Data Model Reference)
Associating Projects	Project (📖 SYNECT Data Model Reference)	Project (📖 SYNECT Data Model Reference)
Requirements Management Projects	Document Base (📖 SYNECT Data Model Reference)	Requirements Management Project (📖 SYNECT Data Model Reference)
Referencing Execution Plans (Test Item)	Variant Configuration (📖 SYNECT Data Model Reference)	Execution Plan (📖 SYNECT Data Model Reference)
Referencing Execution Plans (Test Environment)	Variant Configuration (📖 SYNECT Data Model Reference)	Execution Plan (📖 SYNECT Data Model Reference)

Outgoing references

Name	Source	Target
Release Configuration	Checkpoint (📖 SYNECT Data Model Reference)	Release Configuration (📖 SYNECT Data Model Reference)
Explicitly Released Items	Checkpoint (📖 SYNECT Data Model Reference)	Item (📖 SYNECT Data Model Reference)
All Released Items	Checkpoint (📖 SYNECT Data Model Reference)	Item (📖 SYNECT Data Model Reference)
Reference Exceptions	Release Configuration (📖 SYNECT Data Model Reference)	Reference Release Info (📖 SYNECT Data Model Reference)
Link Exceptions	Release Configuration (📖 SYNECT Data Model Reference)	Link Release Info (📖 SYNECT Data Model Reference)
Artifact Contexts	Domain Project (📖 SYNECT Data Model Reference)	Artifact Context (📖 SYNECT Data Model Reference)
Associated Projects	Project (📖 SYNECT Data Model Reference)	Project (📖 SYNECT Data Model Reference)
Documents	Requirements Management Project (📖 SYNECT Data Model Reference)	Document Base (📖 SYNECT Data Model Reference)
Test Item Variant Configurations	Execution Plan (📖 SYNECT Data Model Reference)	Variant Configuration (📖 SYNECT Data Model Reference)
Test Environment Variant Configurations	Execution Plan (📖 SYNECT Data Model Reference)	Variant Configuration (📖 SYNECT Data Model Reference)

Renamed item types

The following item types have been renamed:

Item Type	Old Name
Artifact (📖 SYNECT Data Model Reference)	*Artifact Old*

Renamed attributes

The following attributes have been renamed:

Item Type	Attribute Name	Old Name
Item (📖 SYNECT Data Model Reference)	Release Comment	Release Comment Old

Renamed references

The following references have been renamed:

Outgoing references

Name	Old Name	Source	Target
Outgoing Links	Outgoing Links Old	Item (📖 SYNECT Data Model Reference)	Link (📖 SYNECT Data Model Reference)

SystemDesk

Where to go from here

Information in this section

New Features of SystemDesk 5.1

Where to go from here

Information in this section

New General Features

AUTOSAR releases supported by SystemDesk 5.1

SystemDesk now supports AUTOSAR Release 4.3.1. The supported AUTOSAR releases are:

AUTOSAR release for modeling SystemDesk lets you model software and system architectures with a data model according to the AUTOSAR 4.3.1 Release. However, SystemDesk lets you exchange data according to other AUTOSAR releases as well.

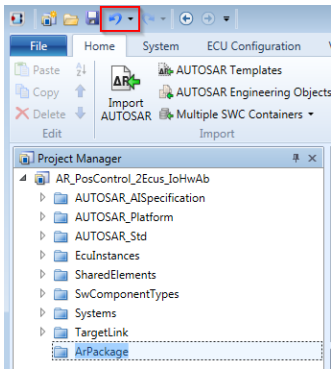
Data exchange support SystemDesk supports AUTOSAR 4.3.1, 4.3.0, 4.2.2, 4.2.1, 4.1.3, 4.1.2, 4.1.1, 4.0.3, and 4.0.2 for data exchange.

Undoing and redoing actions

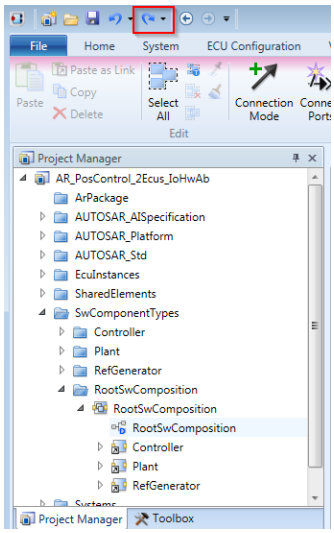
You can now undo and redo actions. This lets you restore an open project to the state it was in before an action was performed so you can correct faulty input or accidentally performed actions.

You can undo and redo all the actions that change a SystemDesk project.

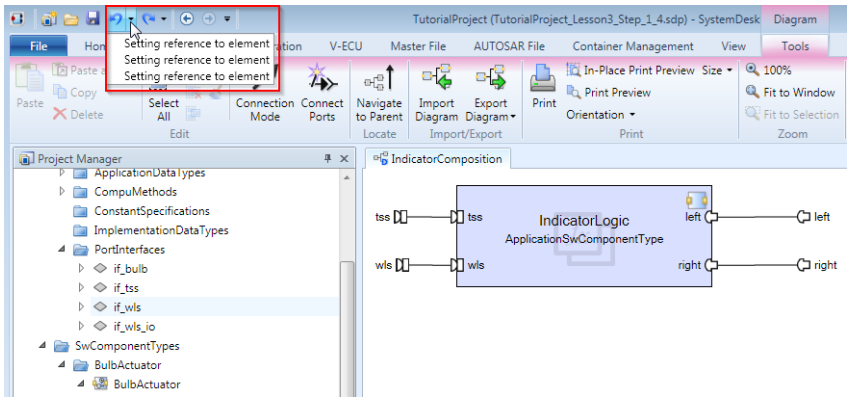
Undo and Redo commands The Undo command is available when you performed actions, such as editing or deleting elements.



SystemDesk provides the Redo command if you undid an action.



The Undo and Redo commands provide a list of recent actions.



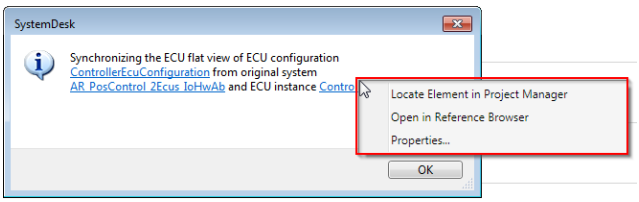
The **Ctrl+z** and **Ctrl+y** keyboard shortcuts let you undo and redo the last recent action.

Further reading Refer to Basics on Undoing Element Changes (🕮 SystemDesk Manual).

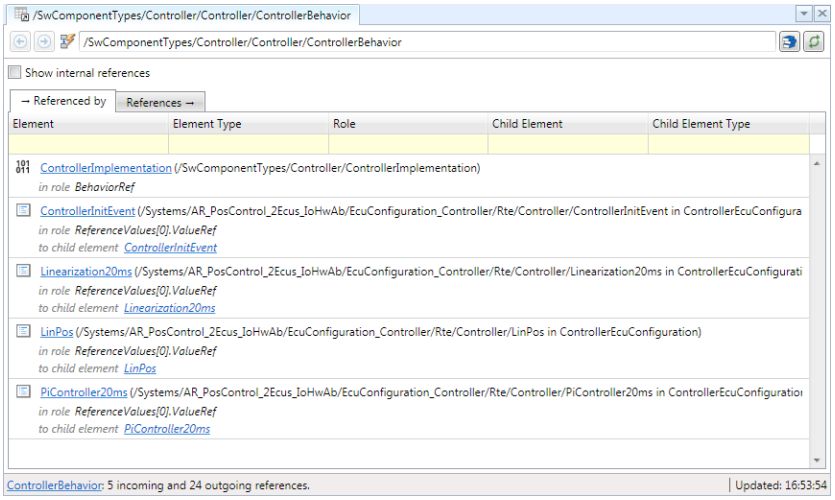
Navigating the references of an element

With this version, the following improvements for navigating element references have been made:

- You can navigate elements in the **Reference Browser**. This lets you open the elements that are referenced by an element and the elements that reference an element in the **Reference Browser**.
- You can use the context menu of an element reference in the **Reference Browser** to open the Properties dialog of an element or to locate an element in a manager such as the **Project Manager**.
- You can navigate the history of the elements that you opened in the **Reference Browser**.
- You can filter element references in the **Reference Browser** by properties such as the element type, child elements, etc.
- You can select elements from a project to open them in the **Reference Browser**. You can also specify the AUTOSAR path of an element to open it.
- Messages let you open an element in the **Reference Browser**.



The following illustration shows an internal behavior in the **Reference Browser**.

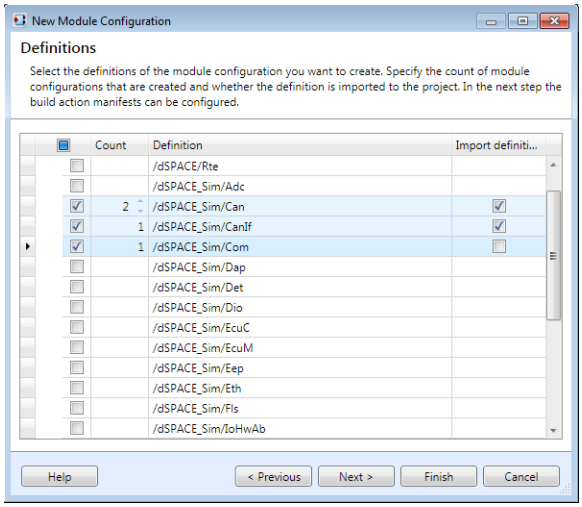


Configuring ECUs

Creating BSW module configurations

Creating BSW module configurations of an ECU configuration has been improved in the following points:

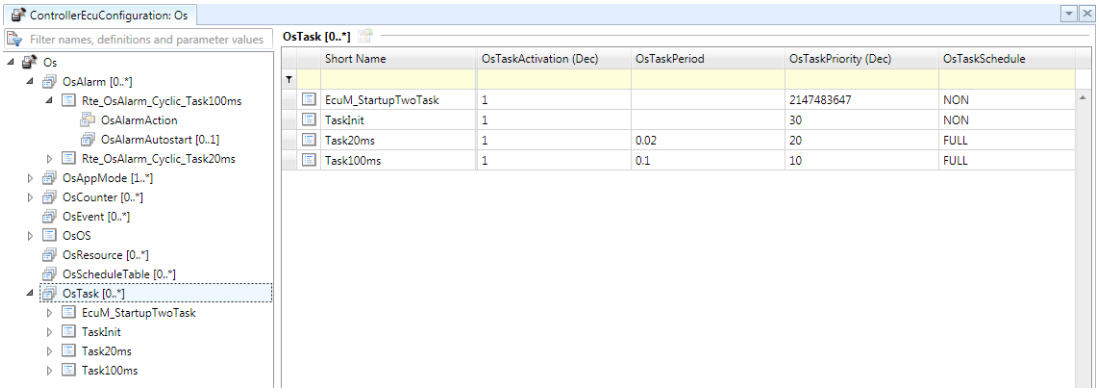
- You can now add multiple module configurations in one step.
- SystemDesk now provides a wizard that provides a better overview and guidance when you create BSW module configurations.



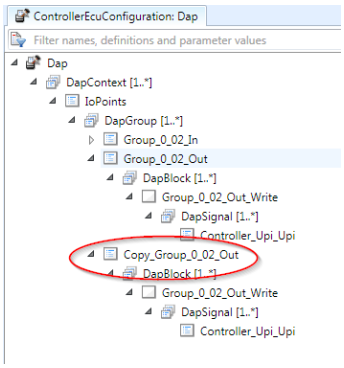
Configuring BSW modules

With this version, the following points of the BSW Module Editor have been improved:

- You can now edit elements of a module configuration container in a table.



- You can now copy & paste containers of module configuration parameters.



- The handling of references has been improved.

Further reading

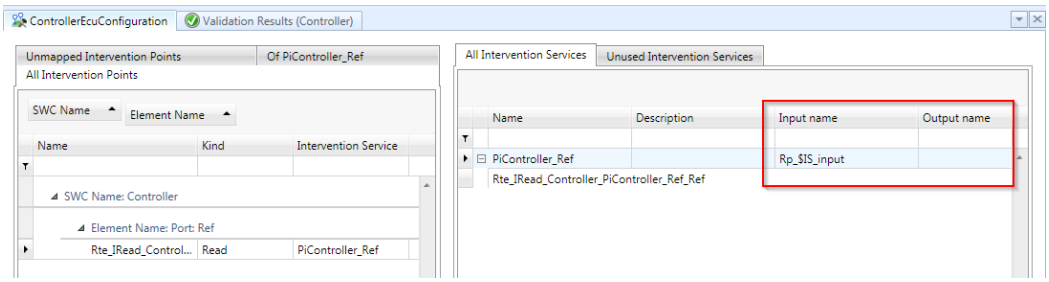
Refer to Configuring ECUs (🕮 SystemDesk Manual).

Accessing RTE interventions

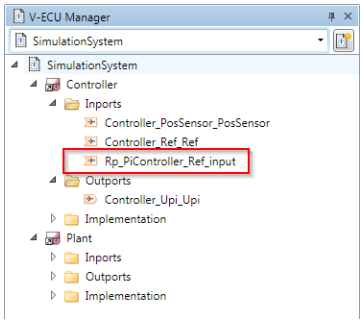
RTE interventions are additional insertions in the original RTE code that let you access and overwrite the communication of software components during simulation run time. For example, you can perform stimulation or error injection for software component tests.

You can now specify the names of the ports that allow accessing RTE interventions in the **RTE Intervention Editor**. This makes it easier to identify the ports and to connect the ports with ports of environment models in VEOS Player.

The following illustration shows specifying port names.



The V-ECU-internal RTE service ports or V-ECU-external ports are named accordingly. The following illustration shows V-ECU-external ports in the **V-ECU Manager**.



Further reading Refer to Basics on Accessing RTE Interventions (📖 SystemDesk Manual).

Managing V-ECUs

Generating adaptive V-ECUs according to the AUTOSAR Adaptive Platform

SystemDesk now supports the following tasks for generating adaptive V-ECUs:

- Creating adaptive V-ECUs in a simulation system with the V-ECU Manager
- Adding external archives with adaptive applications and middleware to adaptive V-ECUs
- Exporting V-ECU implementation containers for adaptive V-ECUs

With this dSPACE Release, you can build and simulate adaptive V-ECUs in conjunction with VEOS.

Further reading

Refer to Creating Simulation Systems for Virtual Validation (📖 SystemDesk Manual).

Process Support With AUTOSAR Master Files

Selecting the AUTOSAR Release of master files

You can now select the AUTOSAR Schema version of master files. In addition to the AUTOSAR Release of the SystemDesk data model, you can now use all the AUTOSAR Releases that SystemDesk supports for data exchange.

This supports scenarios such as the following:

- You can use identical master files with different SystemDesk versions, even if the SystemDesk versions follow different AUTOSAR Releases for modeling.
- You can use AUTOSAR files as master files that are not set up according to the AUTOSAR Release of the SystemDesk data model.
- You can use AUTOSAR files from different sources as master files in one SystemDesk project, even if the provided files do not follow identical AUTOSAR Releases.

However, you have to keep in mind that lossless transformation of data between AUTOSAR Releases is impossible. SystemDesk assists you by indicating inconsistencies or loss of data when you read or write master files.

Further reading

For more information, refer to Assigning AUTOSAR Elements to Master Files (🕮 SystemDesk Manual).

Migrating to SystemDesk 5.1

Migrating to SystemDesk 5.1

Automatic migration

SystemDesk 5.1 automatically migrates SystemDesk 4.8, and 5.0 SDP project files during the loading process.

Note

You are recommended to install the most recent patch for SystemDesk 4.8 or 5.0. Then, save the SDP project files you want to migrate before opening them in SystemDesk 5.1.

Migrating from SystemDesk 5.0

Migrating scripts for automating SystemDesk The SystemDesk API was changed with SystemDesk 5.1. Some interfaces were added with respect to SystemDesk 5.0. A number of interfaces were changed as well.

For information, refer to API Changes from SystemDesk 5.0 to SystemDesk 5.1 (🕮 SystemDesk API Reference).

VEOS

Where to go from here

Information in this section

New Features of VEOS 4.2

Integration and simulation of V-ECUs according to the AUTOSAR Adaptive Platform

VEOS now supports the integration and simulation of *adaptive V-ECUs*. An adaptive V-ECU is a V-ECU according to the AUTOSAR Adaptive Platform, which is a standardized ECU software architecture for ECUs that handle complex tasks.

For details, refer to Basics on Importing V-ECU Implementations (🕮 VEOS Manual).

Support of Ethernet communication simulation

VEOS now supports the simulation of Ethernet communication. This lets you simulate communication between classic and adaptive V-ECUs, for example.

For details, refer to Bus Communication Features for Virtual Validation (🕮 VEOS Manual).

Building 64-bit VPUs from SIC and FMU files

VEOS now lets you build 64-bit VPUs from SIC and FMU files. This allows you to integrate SIC and FMU files that contain 64-bit libraries.

Refer to Simulation Target Manager (📖 VEOS Manual).

Note

However, VPU variables of a 64-bit application cannot be measured nor calibrated.

Export of SMC files

VEOS Player now supports the export of system model container (SMC) files.

An SMC file is a file archive that contains an arbitrary number of containers, e.g., V-ECU implementation containers and Simulink implementation containers that belong to a specific system model. An SMC file also contains the description of the data flow connections between the components of the system model.

For instructions, refer to How to Export System Model Containers (📖 VEOS Manual).

Improved debugging information

VEOS now provides improved debugging information:

- Improved display of stack traces for VPU exceptions.
- In the case of a stack overflow exception, the entire stack trace is retained and the simulation is aborted appropriately.
- Each V-ECU task now has its own thread, which improves V-ECU debugging.

For more information, refer to Basics on Debugging Source Code in an Offline Simulation (📖 VEOS Manual).

Related topics

HowTos

How to Export System Model Containers (📖 VEOS Manual)

Compatibility of VEOS 4.2

Where to go from here

Information in this topic

Compatibility overview

Compatibility in general dSPACE recommends using only software products from the same dSPACE Release. This ensures maximum run-time compatibility.

Supported compiler versions For information on supported compiler versions, refer to Basics on Integrating the Simulation System (🕮 VEOS Manual).

BSC compatibility VEOS 4.2 is compatible with bus simulation container (BSC) files created with the Bus Manager of dSPACE Release 2018-A (BSC version 1.4).

CTLGZ compatibility The following table shows the compatibility between VEOS 4.2 and CTLGZ files (V-ECU implementations):

V-ECU Implementations Created With...	V-ECU Implementation Version
dSPACE Release 2018-A: ▪ SystemDesk 5.1	2.7[1)]
dSPACE Release 2017-B: ▪ SystemDesk 5.0 ▪ TargetLink 4.3	2.6[1)]
dSPACE Release 2017-A: ▪ SystemDesk 4.8	2.5[1)]
dSPACE Release 2016-B: ▪ SystemDesk 4.7 ▪ TargetLink 4.2	2.4.1[1)]

1) There is a migration issue for VEOS if the container file to be imported contains static libraries. For details, refer to Migrating from VEOS 4.1 to 4.2 (🕮 VEOS Manual).

FMU compatibility VEOS supports:

- Functional Mock-up Units (FMUs) that comply with the FMI 2.0 standard
- Only the FMI for Co-Simulation interface, but not the FMI for Model Exchange interface

For detailed and up-to-date compatibility information on dSPACE's FMI support, refer to:

http://www.dspace.com/go/FMI-Compatibility.

OSA compatibility The following table shows the compatibility between VEOS 4.2 and offline simulation application (OSA) files:

OSA Files Created with Products Of ...	OSA Version
dSPACE Release 2018-A	4.2[1)]
dSPACE Release 2017-B	4.1[2)]
dSPACE Release 2017-A	4.0[2)]
dSPACE Release 2016-B	3.7[2)]

1) OSA files created or modified with VEOS 4.2 cannot be loaded in earlier VEOS versions.

2) You cannot modify the properties of VPUs contained in an OSA file if you open the OSA file in a later VEOS version than the version with which the OSA file was originally created. However, port and network connections can be edited. As a consequence, it is recommended to rebuild the binary OSA files from existing model implementation container files (CTLGZ, SIC, BSC, FMU) when you migrate from one VEOS version to another.

Real-Time Testing compatibility To use RTT in connection with VEOS and ControlDesk, the Real-Time Testing (RTT) version used by the VEOS Simulator that runs the simulation system and the RTT version that is active on the PC must be identical.

The following table shows the VEOS Simulator version and the corresponding RTT version:

VEOS Simulator	Real-Time Testing Version
... from VEOS 4.2	Real-Time Testing Version 3.4
... from VEOS 4.1	Real-Time Testing Version 3.3
... from VEOS 4.0	Real-Time Testing Version 3.2
... from VEOS 3.7	Real-Time Testing Version 3.1
... from VEOS 3.6	Real-Time Testing Version 3.0

ControlDesk 6.3 automatically uses the VEOS Simulator from VEOS 4.2. You can therefore use RTT in connection with VEOS and ControlDesk if RTT 3.4 is active on the PC.

SIC compatibility The following table shows the compatibility between VEOS 4.2 and Simulink implementation container (SIC) files:

SIC Files Created With Model Interface Package for Simulink of ...	SIC Version
dSPACE Release 2018-A (Model Interface Package for Simulink 3.6)	1.4[1)]
dSPACE Release 2017-B (Model Interface Package for Simulink 3.5)	1.3[1), 2)]
dSPACE Release 2017-A (Model Interface Package for Simulink 3.4)	1.2.1[1), 2)]

SIC Files Created With Model Interface Package for Simulink of ...	SIC Version
dSPACE Release 2016-B (Model Interface Package for Simulink 3.3)	1.2[1), 2)]

1) There is a migration issue for VEOS if the container file to be imported contains static libraries. For details, refer to Migrating from VEOS 4.1 to 4.2 (VEOS Manual).
2) If the SIC file is created with a previous dSPACE Release and if the SIC file contains an ASM model, you cannot simulate the model in VEOS 4.2 (dSPACE Release 2018-A). For more information, refer to Migrating ASM models on page 161.

SMC compatibility The following table shows the compatibility between VEOS 4.2 and system model container (SMC) files:

SMC Files Created With ...	SMC Version
dSPACE Release 2018-A: ▪ SYNECT 2.5 ▪ VEOS 4.2	1.1
dSPACE Release 2017-B: ▪ SYNECT 2.4	1.0

You also have to consider the following compatibility restrictions of the individual container files contained in the SMC file to be imported: If the SMC file contains a container of an unsupported version, VEOS 4.2 imports neither the unsupported container nor the connections to the application process based on the unsupported container.

Migrating to VEOS 4.2

Introduction

To migrate from VEOS 4.1 to VEOS 4.2, you might have to carry out the following migration steps.

Note

To migrate to VEOS 4.2 from versions earlier than 4.1, you might also have to perform the migration steps of the intervening VEOS versions.

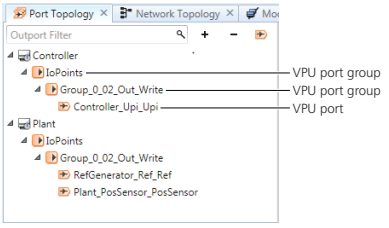
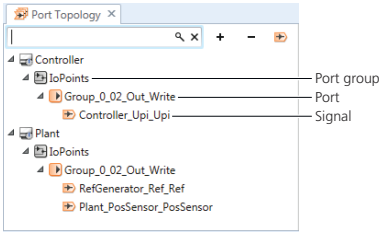
Changed hierarchy of VPU connections

VEOS Player's Port Topology controlbar lets you connect the VPUs of an offline simulation application to establish inter-VPU communication.

The hierarchy of VPU subelements such as VPU ports used to establish inter-VPU communication has been changed from VEOS 4.1 to VEOS 4.2 as described in the following table:

Up to and Including VEOS 4.1	As of VEOS 4.2
VPU port group	One of the following: ▪ Port group (if the original VPU port group had a subordinate VPU port group) ▪ Port (if the original VPU port group had no subordinate VPU port group)
VPU port structure	Signal group
VPU port	One of the following: ▪ Port and signal (both have the same name) (if the original VPU port was located directly below the VPU or contained in a VPU port group) ▪ Signal (if the original VPU port was not contained in a VPU port group)

Example As an example, the following illustrations show the Port Topology controlbar with the child elements of two VPUs in VEOS 4.1 and in VEOS 4.2:

Port Topology Controlbar in VEOS 4.1	Port Topology Controlbar in VEOS 4.2
	

Automatic migration In VEOS Player (VEOS 4.2), when you open an offline simulation application last saved with VEOS 4.1 or earlier, the VPU subelements are automatically migrated as described in the table above. All the connections between VPUs are kept during migration so that you do not have to carry out any migration step.

Connecting VPUs via automation You can also connect VPUs via the VEOS Player automation interface. Unlike the graphical user interface that was changed as described above, the automation interface was not changed from VEOS 4.1 to VEOS 4.2. As a consequence, you do not have to migrate existing automation scripts.

For details, refer to Automating the Connection of VPUs (VEOS Manual).

Migration issue when importing container files with static libraries compiled with VEOS 4.1 or earlier

You have to consider the following migration issue when you import a CTLGZ or SIC container file containing static libraries to VEOS 4.2.

Problem When you import a container file containing static libraries compiled with VEOS 4.1 or earlier to VEOS 4.2, VEOS 4.2 can link the libraries and build an application successfully, without build warnings. However, the download of the offline simulation application might fail, or the results of the simulation might be incorrect. The simulation might even crash.

Description The VEOS default compiler settings used for struct alignment were changed in VEOS 4.2 according to the compiler default settings.

Solution To import a container file that contains static libraries with the compiler settings of VEOS 4.2, you have to also recompile these libraries also with VEOS 4.2.

Migrating ASM models

You cannot simulate an ASM model on VEOS 4.2 (dSPACE Release 2018-A) if the model is contained in an OSA or SIC file created with a previous dSPACE Release.

To simulate an ASM model that was last saved with a dSPACE Release earlier than Release 2018-A on VEOS 4.2, perform the following steps:

1. Migrate the ASM model to dSPACE Release 2018-A.

   For information on migrating ASM models, refer to Migrating ASM Models (🕮 ASM User Guide).
2. Generate a Simulink implementation container (SIC) file on the basis of the ASM model by using the *Model Interface Package for Simulink*.

   For instructions, refer to Generating Simulink Implementation Containers (🕮 Model Interface Package for Simulink - Modeling Guide).
3. Import the SIC file to the VEOS Player of VEOS 4.2.

   For instructions, refer to How to Import Simulink Implementations (🕮 VEOS Manual).

Migrating from prior VEOS versions

To migrate from prior VEOS versions and reuse existing offline simulation applications, you might have to carry out additional migration steps. For more information on the migration steps, refer to Migrating from Prior Versions of VEOS (🕮 VEOS Manual).

Discontinuations in VEOS

Discontinuations as of VEOS 4.2

Discontinuation of the XCP buffer size setting As of dSPACE Release 2018-A, VEOS no longer supports the **XCP buffer size** setting.

Up to and including VEOS 4.1, the setting was used in connection with the import of CTLGZ files, and available on the **XCP Service** page of the VEOS **Import** dialog.

The relevant `XcpBufferSize` property of the `IImportSettings` automation interface is deprecated.

Compatibility Information

Where to go from here

Information in this section

Supported MATLAB Releases

MATLAB®/Simulink®

Working with various dSPACE products requires that MATLAB is installed on your host PC.

Tip

For system requirements of MathWorks® software, refer to http://www.mathworks.com/support/sysreq.html.

MATLAB Release...	...Is Supported by dSPACE Release 2018-A					
	RCP and HIL Software [1), 2), 3)]	AutomationDesk 5.6 [4)]	TargetLink 4.3	Model Compare 2.8	dSPACE Python Extensions 2.5 [5)]	XIL API .NET MAPort 2018-A
R2018a	✓ [6)]	✓	–	–	✓	✓
R2017b	✓	✓	✓	✓	✓	✓
R2017a	✓	✓	✓	✓	✓	✓
R2016b	✓	✓	✓	✓	✓	✓
R2016a	–	–	✓	✓	–	–

1) 'RCP and HIL software' is a generic term for a software package containing several dSPACE software products, for example, ASM, RTI, ConfigurationDesk, MotionDesk and ModelDesk. These software products are installed in a common folder.
2) MATLAB/Simulink Student Suite does not support Automotive Simulation Models (ASM).
3) ASM does not support Simulink's Rapid Accelerator Simulation Mode
4) The AutomationDesk MATLAB Access library requires MATLAB.
5) matlablib2 of dSPACE Python Extensions requires MATLAB.
6) R2018a is not supported by the RTI FPGA Programming Blockset – FPGA Interface.

For up-to-date information on additional MATLAB releases that can be used in combination with dSPACE software, refer to http://www.dspace.com/go/MATLABCompatibility.

Operating System

Operating system on host PC

The dSPACE products of dSPACE Release 2018-A support the following operating systems:

- Windows 7 Professional, Ultimate, and Enterprise with Service Pack 1 (64-bit versions)

  Only the listed editions are supported. The Windows 7 Home and Starter editions are not supported.
- The following editions, channels and servicing options of Windows 10:
  - Windows 10 Professional, Education, and Enterprise (64-bit versions)

The Windows 10 Home, Mobile, and Windows 10 S editions are not supported.

- Long-Term Servicing Branch: LTSB 2016
- Semi Annual Channel (formerly known as Current Branch (CB)): The compatibility statement of Microsoft applies. This means that newer versions released in this channel should be compatible with all previous versions. dSPACE used the 1709 version of the Semi Annual Channel for testing.

Some limitations apply when you use dSPACE software in conjunction with features of Windows. Refer to Limitations for Using Windows Features on page 167.

Using MicroAutoBox Embedded PC as host PC

ControlDesk can also be installed on:

- MicroAutoBox Embedded PC 3rd Gen. Intel® Core™ i7-3517UE Processor, running on Windows 7 Professional, Ultimate, and Enterprise, 64-bit version
- MicroAutoBox Embedded PC 6th Gen. Intel® Core™ i7-6822EQ Processor, running on Windows 10 IOT Enterprise, LTSB 2016, 64-bit version

Operating system on SYNECT server

The SYNECT server supports the following operating systems:

- The same operating systems as listed above for all dSPACE products of dSPACE Release 2018-A.
- In addition, the 64-bit versions of Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2 and Windows Server 2016. The Windows Server Semi Annual Channel versions are not supported.

Note

Do not install the SYNECT client on a Windows server operating system, such as Windows Server 2016.

Operating system on server for floating network licenses

If you purchased floating network licenses, you have to specify one of the network PCs as a license server. Every PC with CodeMeter Runtime software can be used as a license server.

Valid for servers without dSPACE software dSPACE only tests license servers with Microsoft Windows operating systems in combination with protected dSPACE software.

Note

Non-Windows operating systems, such as Ubuntu Linux, are not tested. You can use them at your own risk. dSPACE does not provide support in this case.

Valid for servers with dSPACE Installation Manager dSPACE Installation Manager supports the same operating systems as the other dSPACE software products described above.

Allowing communication

Installing of additional firewall rules Additional Windows firewall rules are installed during the installation of various dSPACE software products. For example, one rule allows communication with a dSPACE expansion box, such as AutoBox. Another rule allows MotionDesk to receive motion data from a network channel. These example rules are created by the following commands:

- `netsh 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."`
- `netsh advfirewall firewall add rule name="dSPACE MotionDesk" program=<main installation path>\dSPACERCPHIL2018-A\MotionDesk\Bin\MotionDesk.exe" dir=in action=allow profile=any description="Allow dSPACE MotionDesk to receive motion data via network."`

Required open TCP/IP network ports If you are using third-party firewall software on your host PC, ensure that the TCP/IP communication of dSPACE software is not blocked:

- VEOS requires the following open TCP/IP network ports: 111 (TCP and UDP), 3702 (UDP), 7214 (TCP and TCP6), 9923 (UDP), 15000 (UDP), 49152 ... 65535 (TCP, TCP6 and UDP)
- dSPACE Installation Manager and CodeMeter licensing software require the following open TCP/IP network port if communication in a LAN network is necessary: 22350 (TCP and UDP), if not changed from the default setting.
- dSPACE Help requires an open TCP/IP network port for interprocess communication between its components. The default port number is 11000. If this port number is already in use, another free port is used automatically. The related processes can be identified via the following prefixes: `HelpApsLayer<xxx>`, `HelpInstaller<xxx>`.

Run-Time Compatibility of dSPACE Software

Definition

Run-time compatibility means that:

- dSPACE products can be used in parallel after software installation, even if they are installed in different folders.
- dSPACE products without interaction can run independently of each other.

Compatibility of products in dSPACE Release 2018-A

dSPACE recommends using only software products from the same dSPACE Release. This ensures maximum run-time compatibility.

Observe the following points:

- Limitations regarding run-time compatibility in the dSPACE tool chain might occur if products from different dSPACE Releases are mixed.

If dSPACE products interact directly (through automation interfaces) or indirectly (through common file types like A2L), limitations might apply. For minor limitations, refer to the relevant product documentation. The major limitations are described in the following.

In rare cases, an additional patch must be installed for a product to achieve run-time compatibility. For more information on the patch and whether a patch is necessary, refer to http://www.dspace.com/go/CompPatch.

- RCP and HIL software products (of Release 2018-A) cannot be used in combination with RCP and HIL software products from earlier dSPACE Releases.

Major limitation for working with a SCALEXIO system The products for working with a SCALEXIO system must be compatible. This is guaranteed only for products delivered with the same dSPACE Release. Contact dSPACE for more information if you have any questions.

Compatibility of real-time applications loaded to a DS1005, DS1006, DS1103, DS1104 or MicroAutoBox platform If a real-time application is loaded to one of these platforms with a software product of dSPACE Release 2016-B or later, software products of dSPACE Release 2016-A (and earlier) do not detect that the loaded real-time application is the same as the real-time application stored on your host PC. In this case, you cannot work with the related software product without restrictions.

This also applies if you load a real-time application with a software product of dSPACE Release 2016-A or earlier and use software products of dSPACE Release 2016-B or later, for example, for experimenting.

Combining dSPACE products from earlier Releases

For more information and notes on the combined use of different products from and with earlier Releases, refer to http://www.dspace.com/go/ds_sw_combi.

Limitations for Using Windows Features

Motivation

Some limitations apply using dSPACE software in conjunction with features of Windows.

Fast user switching not supported

dSPACE software does not support the fast user switching feature of Windows.

Closing dSPACE software before PC shutdown

The shutdown process of Windows operating systems might cause some required processes to be aborted although they are still being used by dSPACE software. To avoid a loss of data, it is recommended to close the dSPACE software manually before shutting down the PC.

User Account Control

It is recommended to disable the Windows User Account Control (UAC) during the installation of dSPACE software. If you cannot disable UAC, note the following Windows behavior: If UAC is enabled, the setup programs use the administrator account instead of the user account. Therefore, it is important that the administrator account has access to the required drives, particularly the required network drives.

USB devices

If you connect dSPACE USB devices that use cables with optoisolation to the PC for the first time, there might be a message that the device driver software was not installed successfully. However, the dSPACE device will work properly later on.

FIPS support

dSPACE software was not developed for or tested against the FIPS PUB 140-2 U.S. government computer security standard (Security Requirements for Cryptographic Modules). Therefore, dSPACE products are not guaranteed to work if the respective setting is enabled in Windows. By default, the setting is disabled. For more information on FIPS, refer to https://technet.microsoft.com/en-us/library/security/cc750357.aspx.

Long paths

dSPACE software does not support the long path syntax of the Windows API. If a path that exceeds 260 characters is used directly or indirectly, the behavior of the dSPACE software is not defined.

Enabling Windows 8dot3name creation option

Note

It is strongly recommended that the Windows 8dot3name creation option is enabled for all drives (drives used for installation and drives used for work) before you install third-party software, such as MATLAB®/Simulink®, and the dSPACE software.

If the option is disabled during software installation, serious errors can occur when you run the dSPACE software. For example, the build process might be aborted. To repair an installation that was installed while the 8dot3name creation option was disabled, you have to install dSPACE software and required third-party software again.

For instructions on checking the setting and enabling the option, refer to http://www.dspace.com/faq?346 or to the Microsoft Windows documentation.

Settings in Windows for user locale and system locale must match

MATLAB reads the user locale and system locale settings that are specified in Windows operating systems. The user locale and the system locale must match. If these settings are not the same, the system might not behave as expected when working with MATLAB and dSPACE software.

For instructions on checking and changing the settings, refer to https://www.mathworks.com/help/matlab/matlab_env/setting-locale-on-windows-platforms.html?s_tid=gn_loc_drop.

This affects all MATLAB versions and all Windows operating systems, that are supported by dSPACE.