TargetLink 2.0.6

Release Notes

TargetLink 2.0.6 – February 2005

dSPACE

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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.de/goto?support for software updates and patches.

Important Notice

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TargetLink 2.0.6 Release Notes

The TargetLink 2.0.6 Release Notes contain the following topics:

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Release Description

TargetLink 2.0.6 is the first patch for TargetLink Release 2.0. It includes all bug fixes of TargetLink Release 2.0 until Jan. 31, 2005 as well as the TargetLink MATLAB Compatibility Update for MATLAB R14.

For a description of additional or changed features in TargetLink 2.0.6, refer to *Changes in TargetLink 2.0.6 compared to TargetLink Release 2.0.5* on page 12 and *Changes in TargetLink 2.0.5 Compared to TargetLink Release 2.0* on page 19.

Compatibility Information

TargetLink 2.0.6 was tested and is compatible to the following MATLAB® environments:

- MATLAB R12.1 with Simulink 4.1.2 and Stateflow 4.2.1
- MATLAB R12.1 with Simulink 4.1.1 and Stateflow 4.2.1
- MATLAB R13.0.1 with Simulink 5.0.2 and Stateflow 5.1
- MATLAB R13SP1 with Simulink 5.1 and Stateflow 5.1.1
- MATLAB R13SP1+ with Simulink 5.1.1 and Stateflow 5.1.2
- MATLAB R13SP2 with Simulink 5.2 and Stateflow 5.1.2
- MATLAB R14 with Simulink 6.0 and Stateflow 6.0
- MATLAB R14SP1 with Simulink 6.1 and Stateflow 6.1

Supported Windows platforms

The supported Windows platforms are:

Win 98 / Me / NT 4.0 / 2000 / XP

Latest compatibility information

For the latest compatibility information, refer to the dSPACE web server

http://www.dspace.de/goto?version_info

http://www.dspace.de/goto?patchestl

TargetLink 2.0.6 Compatibilities

The table below shows you which installation orders (scenarios) will work respectively which restrictions apply:

	MATLAB Version	dSPACE Products	TargetLink 2.0.6 installation possible	Note / Limitation
Product dependencies (with regard to the active installation):				
		TargetLink 1.3	NO	-
		TargetLink 2.0 TargetLink 2.0.5	YES YES	-
		TargetLink Blockset 2.0 (stand-alone) TargetLink Blockset 2.0.5 (stand-alone)	NO NO	Update to TargetLink Blockset 2.0.6 (stand-alone) is possible; no installation of TargetLink 2.0.6 full-featured
		dSPACE Data Dictionary Manager 1.1	YES	-
		CalDesk 1.0.2	NO	You can install CalDesk 1.1.1 after installing TargetLink
		CalDesk 1.1.0 CalDesk 1.1.1	YES YES	- -
		CalDesk > 1.1.1	NO	-
Neither active dSPACE installation nor TargetLink 2.0 or 2.0.5 nor TargetLink Blockset (stand-alone)				
	< R12.1		NO	-
	<= R13SP2		YES	-
	R14, R14SP1		YES	-
	others		YES	For compatibility information, refer to http://www.dspace.de/goto?TL206
Solution for Control (SFC) and MATLAB dependencies:				
		Release < 3.4 Release > 4.1	NO NO	- -
	R12.1	Release 3.4 Release 3.4.1	YES YES	Only MATLAB R12.1 is supported; products dependent on MATLAB other than MATLAB R12.1 are disabled
		other Releases	YES	Products dependent on MATLAB are disabled
	R13	Release 3.4 + MLCU[1)] for R13 Release 3.5 Release 4.0 Release 4.0.1 Release 4.1	YES YES YES YES YES	Only MATLAB R13 is supported; products dependent on MATLAB other than MATLAB R13 are disabled
		other Releases	YES	Products dependent on MATLAB are disabled
	R13SP1	Release 4.0 + MLCU[1)] for R13SP1 Release 4.0.1 Release 4.1	YES YES YES	Only MATLAB R13SP1 is supported; products dependent on MATLAB other than MATLAB R13SP1 are disabled
		other Releases	YES	Products dependent on MATLAB are disabled
	R13SP2	Release 4.1 + MLCU[1)] for R13SP2 without TargetLink 2.0	NO	TargetLink 2.0 must be installed before MLCU
		Release 4.1 + MLCU[1)] for R13SP2 with TargetLink 2.0	YES	Only MATLAB R13SP2 is supported; products dependent on MATLAB other than MATLAB R13SP2 are disabled; if installed, MTest 1.2 is not disabled
		other Releases	YES	Products dependent on MATLAB are disabled

	MATLAB Version	dSPACE Products	TargetLink 2.0.6 installation possible	Note / Limitation
	R14	Release 4.1 + MLCU[1)] for R14 without TargetLink 2.0	NO	TargetLink 2.0 must be installed before MLCU
		Release 4.1 + MLCU[1)] for R14 with TargetLink 2.0	YES	Only MATLAB R14 is supported; products dependent on MATLAB other than MATLAB R14 are disabled; if installed, MTest 1.2 is not disabled
		other Releases	YES	Products dependent on MATLAB are disabled
	R14SP1	Release 4.1 + MLCU[1)] for R14SP1 without TargetLink 2.0	NO	TargetLink 2.0 must be installed before MLCU
		Release 4.1 + MLCU[1)] for R14SP1 with TargetLink 2.0	YES	Only MATLAB R14SP1 is supported; products dependent on MATLAB other than MATLAB R14SP1 are disabled
		other Releases	YES	Products dependent on MATLAB are disabled

1) MLCU stands for MATLAB Compatibility Update

For combinations that are not mentioned explicitly in the table, the installation of TargetLink 2.0.6 is not possible.

Download and Installation of TargetLink 2.0.6

The following instructions describe how to install TargetLink 2.0.6.

These Installation Notes also apply, if you use only the TargetLink Blockset (stand-alone).

Preconditions

- You need administrative privileges in order to run the installation program of TargetLink 2.0.6.
- You need a license key if you want to use TargetLink 2.0.6 together with R14 or R14SP1. The license key you received for the MATLAB Compatibility Update for TargetLink 2.0 is also valid for TargetLink 2.0.6.

Possible methods

There are the following ways to install TargetLink 2.0.6, depending on whether TargetLink 2.0 or TargetLink 2.0.5 is already installed or not:

- If TargetLink 2.0 or TargetLink 2.0.5 is installed, you can update it to TargetLink 2.0.6. Refer to *Method 1*.
- If TargetLink 2.0 is not yet installed, install TargetLink 2.0.6 from scratch. Refer to *Method 2*.
- If TargetLink 2.0 is installed with MATLAB R12.1, R13, or R13SP1, you can update it for MATLAB R14 or R14SP1 compatibility. Refer to *Method 3*.
- If you want to install TargetLink 2.0.6 in the same folder as another dSPACE product, for example, dSPACE Release or CalDesk (combined installation), refer to the table in *TargetLink 2.0.6 Compatibilities* on page 8 to check if the combination is possible. Choose a suitable installation method.

Method 1

To update TargetLink 2.0 or TargetLink 2.0.5 to TargetLink 2.0.6

1. Go to http://www.dspace.de/goto?patchestl and click **TargetLink 2.0.6**.
2. Click **Download**.

3 Start the installation program and select **Update existing TargetLink installation**.

4 Follow the instructions given by the installation program.

5 Reboot your operating system.

Method 2 **To install TargetLink 2.0.6 from scratch**

1 Go to http://www.dspace.de/goto?patchestl and click **TargetLink 2.0.6**.

2 Click **Download**.

3 Start the installation program and select **Install TargetLink and automatically update this installation after next reboot**.

As TargetLink 2.0.6 does not contain all the files of the dSPACE software, the installation program will prompt you to insert the TargetLink 2.0 CD during installation.

4 Follow the instructions given by the installation program.

5 Remove the TargetLink 2.0 CD when prompted to do so.

6 After the reboot, the installation program of TargetLink 2.0.6 starts again automatically and resumes installation by updating the previously installed TargetLink.

7 Follow the instructions given by the installation program.

Method 3 **To update TargetLink 2.0 for MATLAB R14 or R14SP1 compatibility**

1 Purchase a license key for using TargetLink 2.0.6 together with MATLAB R14 or R14SP1.

2 Install MATLAB R14 or R14SP1 on your host PC.

3 Start the TargetLink 2.0.6 installation program and select **Update existing TargetLink installation**.

4 Follow the instructions given by the installation program.

5 Insert the license key disk when prompted to do so.

6 Reboot your operating system.

Result TargetLink is now updated and ready to be started.

Changes in TargetLink 2.0.6 compared to TargetLink Release 2.0.5

There are the following changes in TargetLink 2.0.6:

- *$E Macro in Address Field* on page 12
- *Modified Conventions for File Names* on page 12
- *Imported Images in Generated Documentation* on page 13
- *Changes in DD Manager Dialogs* on page 13
- *New Module Templates* on page 14
- *Support for the Renesas SH7058 Target* on page 14
- *Support for the SH-2e Target* on page 14
- *Modifications in the XML Import / Export Module* on page 15
- *Modifications in the ASAM-MCD 2MC Import / Export Module* on page 16

$E Macro in Address Field

The $E name macro can be used in the Address field of TargetLink blocks.

Modified Conventions for File Names

TargetLink 2.0.6 introduces new conventions for the names of C files. C file names may now:

- Contain hyphens (-).
- Start with digits (0 … 9).

This does not apply to file names derived from the names of TargetLink subsystems because the names of TargetLink subsystems must be valid C identifiers.

Imported Images in Generated Documentation

TargetLink 2.0.6 introduces the `$insertimage` command which lets you insert any type of image file that is supported by the HTML browser into the generated documentation. You can enter the command via the AutoDoc Customization block or the `dsdoc` API command.

```
dsdoc('Printf','EmbeddedCommands','on',$insert:<filepath>;...)
```

If you use the $insertimage command, you have to make sure that the specified file is an image file.

Changes in DD Manager Dialogs

There changes in the following dialogs of the dSPACE Data Dictionary Manager:

- Plain Variable Dialog
- Struct Variable Dialog

Plain Variable Dialog

With TargetLink 2.0, the Open Stateflow Object button in the Plain Variable dialog had been introduced but the functionality had not been implemented. In TargetLink, the button has been removed from the Plain Variable dialog again.

Struct Variable Dialog

The Show dynamic components checkbox has been added to the Struct Variable dialog. It indicates whether a list of all dynamic components of the variable is displayed.

New Module Templates

TargetLink 2.0.6 introduces 2 new module templates.

Filter criteria for the `ModuleSpec` property of the `ModuleTemplate/Filter` DD object:

Usage	ModuleSpec Filter Criteria
Contains TargetLink-defined preprocessor macros like FX_GROUND, macros of variable classes with the UseName attribute and the log macro	tl_defines
Name of the header file of the math library	MathH [1)]

1) If a ModuleTemplate for MathH is specified in the Data Dictionary instead of a system include a user include is generated for the include of MathH. A ModuleTemplate for MathH affects generated files only.

Support for the Renesas SH7058 Target

A new Target Simulation Module (TSM) is available for the Renesas SH7058 processor with Hitachi Compiler Ver. 4.1 ... 8.0.

This new Target Simulation Module (TSM) for the Renesas SH7058 processor will only be installed if you have installed TargetLink 2.0 with the Target Simulation Module Hitachi SH-2e: Hitachi EVB7055 before.

Support for the SH-2e Target

The Hitachi 8.0 compiler is now supported for target simulation with the SH2eEVB evaluation boards.

If the SH2eEVB evaluation board is installed with at least 1 Hitachi Compiler Ver. 4.1 ... 7.0, the installation asks if you want to install the Target Simulation Module Hitachi SH-2e.

Modifications in the XML Import / Export Module

With TargetLink 2.0.6, there are changes in the behavior of the XML File Import and Export module:

- Schema or DTD file not found
- Exported elements not valid

Schema or DTD file not found

During the import or export process it is possible to validate the XML file against a DTD or schema specified within the XML file, or against a separate file.

With TargetLink 2.0.6, instead of aborting the import or export with an exception (even when validation is deactivated), a message informs you if the specified separate schema or DTD file cannot be found. So you can change the setting of the Validate options, to import the file in any case, or specify a different schema or DTD file.

This applies to both simple and extended mode.

Exported elements not valid

With TargetLink 2.0, no warning was issued when the extended XML Format was used for invalid DD files containing elements that were inconsistent with the dSPACE Data Dictionary Data Model. The exported XML files could not be reimported without reformatting or adapting the data automatically.

With TargetLink 2.0.6, warnings are issued when the exported data is not valid.

Modifications in the ASAM-MCD 2MC Import / Export Module

There are the following enhancements and modifications in the ASAP2 File Generator:

- *Export of Custom Properties* on page 16
- *Support of REF_CHARACTERISTIC Keyword* on page 16
- *Include Option for AML Files* on page 17
- *Modified IF_DATA Entry for CANAPE_EXT* on page 17
- *Renaming COMPU_METHOD Objects* on page 18

Export of Custom Properties

TargetLink 2.0.6 allows you to export custom properties set at variable objects to the A2L file.

To ensure that the custom property is exported, the property name has to begin with "A2L", for example, `A2LMyProperty`.

When calibration properties are converted to A2L, the custom properties are copied to the corresponding CHARACTERISTIC, MEASUREMENT, or AXIS_PTS objects in the //DD3 area, which is used to temporarily store the data to be exported. The subsequent style sheet transformation can use the custom properties to influence the A2L file output.

Support of REF_CHARACTERISTIC Keyword

For the structuring of the adjustable and measuring objects, functions (FUNCTION) are used within the generated A2L File. With the new version of the A2L Export module, besides DEF_CHARACTERISTIC also the REF_CHARACTERSITIC keyword is used to reference an adjustable object.

The following rule applies: if a calibratable variable is declared as extern, it will be referenced via the REF_CHARACTERISTIC keyword, otherwise via DEF_CHARACTERISTIC.

Include Option for AML Files

A new style sheet option lets you configure whether the AML file(s) containing the interface-specific parameters are to be inserted into the generated A2L file or included via the include mechanism.

The `IncludeAML` option must be set in the a2l_export_control.a2l style sheet controlling the layout of the generated A2L file:

IncludeAML option in style sheet	AML file(s) is (are) ...
`<xsl:variable name="includeAML">"no"</xsl:variable>`	inserted into the generated A2L file
`<xsl:variable name="includeAML">"yes"</xsl:variable>`	included into the generated A2L file

If the AML file(s) are included into the generated A2L file, it you have to ensure that they reside in the same folder as the A2L file.

Modified IF_DATA Entry for CANAPE_EXT

New properties of BLOB entry

There are 2 new properties of the BLOB entry at CHARACTERISTIC, MEASUREMENT, or AXIS_PTS objects in //DD3 (for example: CHARACTERISTIC/IF_DATA/DP_BLOB):

- `BaseAddress`
- `OffsetFromBaseAddress`

Additionally, the property `Name` is identical with the name of the variable for which the `BaseAddress` has been obtained.

Structure components With structure components, `BaseAddress` is the address of the root structure. `OffsetFromBaseAddress` is the offset which must be added to get the address of the structure component.

Vector elements With vector elements, `BaseAddress` if the address of the first vector element (index 0). `OffsetFromBaseAddress` is the offset which must be added to get the address of the vector's n-element.

Generation of IF_DATA entry

The generation of the IF_DATA entry for CANAPE_EXT has been modified.

- The name of the variable with the `BaseAddress` is generated as the 'segment name' property.
- Additional to the base address of the segment the offset of the segment address is generated:

With TargetLink 2.0, the CANAPE_EXT IF_DATA entry for the structure component input_struct.inp1 looked like:

```
/begin IF_DATA CANAPE_EXT
     100
     LINK_MAP "inp_struct.inp2" 0 0 0 0 0 0 0
/end IF_DATA
```

With TargetLink 2.0.6, the CANAPE_EXT IF_DATA entry looks like:

```
/begin IF_DATA CANAPE_EXT
     100
     LINK_MAP "inp_struct" 0x1006 0x0 0 0x0 0x02 0x0 0x0
/end IF_DATA
```

where 0x02 denotes the offset from the segment address.

Renaming COMPU_METHOD Objects

When exporting data of a model that contains several subsystem whose code is merged into 1 module, COMPU_METHOD objects with ambiguous names might be created. To avoid abiguities, the naming of COMPU_METHOD objects has been changed:

The first 24 objects are named by appending a letter [a … z], from the 25th object on they are named by appending a number [1, 2, …] to the object's name.

Changes in TargetLink 2.0.5 Compared to TargetLink Release 2.0

The MATLAB R14 Compatibility Update for TargetLink 2.0 (TargetLink 2.0.5) enables you to use TargetLink 2.0 together with MATLAB and Simulink on the basis of The MathWorks Release 14.

For a description a general changes, supported features, and known limitations in TargetLink 2.0.5, refer to the New Features and Migration document %DSPACE_ROOT%\Doc\Print\TLNewFeaturesAndMigration.pdf.

You can download the New Features and Migration document from http://www.dspace.de/goto?mlcu_tl_r14.

Known Limitations

When working with TargetLink 2.0.6, you should be aware of some limitations:

- Data Dictionary Manager and Property Manager with MATLAB R14SP1
- Plain Variable dialog
- Multiple function-call inputs
- Subsystem block
- Simulink.Parameter object in vector or matrix
- Bus Creator block
- Triggered and enabled subsystems
- D Flip-Flop block
- Saturation Block

Data Dictionary Manager and Property Manager with MATLAB R14SP1

There is one known problem when using TargetLink 2.0.6 together with MATLAB R14SP1:

When opened via the prompt of the MATLAB Command Window, the Data Dictionary Manager and Property Manager tools pop up in the background and have to be activated by the user.

Plain Variable dialog

In the Plain Variable dialog of the dSPACE Data Dictionary Manager, you can enter the LSB of a variable object only as a power-of-two number.

Multiple function-call inputs

In some cases, a model containing a TargetLink subsystem with multiple function-call inputs, for example, via nested function-call subsystems, cannot be initialized in SIL and PIL mode, although it can be initialized in MIL mode.

In these cases, Simulink cannot identify the order in which the nested function-call subsystems were originally executed in the S-function representing the TargetLink subsystem. Thus the initialization fails in SIL and PIL mode.

Subsystem block

The NoReadOrWrite setting for the `Read/Write permissions` property of the Subsystem block is not supported.

Simulink.Parameter object in vector or matrix

A Simulink.Parameter object is not supported as part of a vector or a matrix which is used as a parameter in a block.

If, for example, the vector `[Param 5]` is specified for the gain value of a Gain block, and the variable `Param` is specified as a Simulink.Parameter with the value 3, MIL Simulation works fine. But if you try to generated code, the code generation fails.

Simulink.Parameters are not supported in block parameter expressions either.

Bus Creator block

TargetLink 2.0.6 does not support the **Output as nonvirtual bus** option of the Bus Creator block.

Triggered and enabled subsystems

For a triggered and enabled subsystem the trigger input signal must have the following properties:

- The trigger input signal must be of unsigned data type.
- If the trigger type is either, the trigger signal must be scalar as well, and Show output port must not be selected.

To avoid problems with triggered and enabled subsystem, follow one of the following suggestions:

- Instead of a triggered and enabled subsystem use a triggered subsystem inside an enabled subsystem.
- Specify the trigger input signal as described above.

D Flip-Flop block

With the CLK input signal of the D Flip-Flop block, signed data types are not supported.

Select an unsigned data type at the source block(s) of the CLK signal(s).

Saturation Block

When TargetLink generates code for a saturation block all the parameters, i.e., input and limits, have to be of the same type and scaling. In some cases it is not possible to represent the initial values in that type and scaling calculated during code generation. In these cases rescaling is necessary.

Recommendations

There are the following recommendations concerning TargetLink 2.0.6:

- Subsystem ID for reused systems

Subsystem ID for reused systems

To avoid name ambiguities, you are recommended to specify a subsystem ID for reused systems (subsystems or charts). If for a reused subsystem no fixed subsystem ID is specified, a warning is thrown.

Known Problems List

You can download the updated Known Problems List from http://www.dspace.de/goto?problems_tl. Please check the support area of the dSPACE homepage regularly for the latest TargetLink news. If you encounter any problem when using TargetLink, please send an e-mail to support.tl@dspace.de.