Checking Used System Calls (SFC) in STEP 7 Projects for the Upgrade to the new SIMATIC S7-300 CPUs

S7-300 Upgrade Check

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Upgrade Check

S7-300 Upgrade Check

Automation Task

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1.1 Overview

1 Automation Task

1.1 Overview

Introduction

Due to their further development, the CPUs with MMC of the SIMATIC S7-300 automation platform exhibit a partially different system response in comparison with their predecessors. This manifests itself mainly in revised system calls (SFCs).

Definition of "new" and "old" S7-300 CPU

In the following text, the new generation S7-300 CPUs (with MMC and without backup battery) are referred to as "new S7-300 CPUs" and the old generation S7-300 CPUs (with MC card and backup battery) as "old S7-300 CPUs". The following list shows the CPUs that are affected.

"Old" SIMATIC modules (old S7-300 CPUs, product discontinuation in 2003): Table 1-1

Previous S7-300 CPUs	≤ FW x	Order no.
CPU312 IFM	1.2.1	6ES7312-5AC0x-0AB0
CPU 313	1.2.1	6ES7313-1AD0x-0AB0
CPU 314	1.2.1	6ES7314-1AE0x-0AB0
CPU 314 IFM	1.2.1	6ES7314-5AExx-0AB0
CPU 315	1.2.1	6ES7315-1AF0x-0AB0
CPU 315-2 DP	1.2.1	6ES7315-2AF0x-0AB0
CPU 316-2 DP	1.2.1	6ES7316-2AG00-0AB0
Previous interface modules	≤ FW x	Order no.
IM151-7	1.0.3	6ES7151-7AA00-0AB0

"New" SIMATIC modules (new S7-300 CPUs, delivery approval from 2002 onward):

All SIMATIC S7-300 CPUs with firmware revision level \geq 2.x, including CPU 314C-2DP, CPU 313C-2DP, CPU 313C-2PTP.

2 Automation Solution

2.1 Overview

Automation solution

S7-300 Upgrade Check provides you with optimum support when checking the compatibility of your STEP 7 program for the upgrade to a new SIMATIC S7-300 CPU. The tool searches the block folder of your program for used system calls (SFCs). The subsequently displayed test report can be saved as an HTML or .txt file.

Fields of application/customer benefits

S7-300 Upgrade Check offers you the following advantages:

- S7-300 Upgrade Check supports you in checking the compatibility of a STEP 7 program for the upgrade to a new SIMATIC S7-300 CPU.
- The generated test report can be saved for documentation purposes.
- Project Explorer enables the user to navigate through all local projects.
- S7-300 Upgrade Check can be performed in German and English. The language changes automatically when using Change Language in the SIMATIC Manager.

2.2 Usable hardware and software components

S7-300 Upgrade Check can be used with the following components:

Standard software components

Table 2-1

Component	Qty.	MLFB/order number	Note
SIMATIC STEP 7	1	6ES7810-4	Or higher
Version 5.3			

Additional software components

Operating S7-300 Upgrade Check requires that .NET Framework V2.0 be installed on your PG/PC.

.NET Framework V2.0 will be installed when installing STEP7 Version 5.4 or higher. If you are using STEP7 V5.3, you have to install .NET Framework V2.0 separately. To do so, please go to:

http://www.microsoft.com/downloads

2.2 Usable hardware and software components

Sample files and projects

The following list contains all files and projects that are used in this example. Table 2-2

Component	Note
13337010_S7-300_Upgrade_Check_CODE_v11.zip	S7-300 Upgrade Check
13337010_S7-300_Upgrade_Check_DOKU_V11_e.pdf	This document

3.1 Overview

3 Function Mechanisms of this Tool

3.1 Overview

The schematic overview below shows the basic process for checking a STEP7 project.

Figure 3-1



4.1 Installation of S7-300 Upgrade Check

4 Installation

4.1 Installation of S7-300 Upgrade Check

Software requirements

S7-300 Upgrade Check can be used with the following operating systems:

- MS Windows 7 Ultimate/Professional
- MS Windows XP Professional with SP2 or SP3
- MS Vista 32 bit Ultimate and Business with or without SP1
- MS Windows Server 2003 SP2 Standard Edition with or without R2 as workstation

Installation of S7-300 Upgrade Check

Unzip the 13337010_S7-300_Upgrade_Check_CODE_V11.zip file and run the setup. After installing, the tool is available in Start->SIMATIC.

Note S7-300 Upgrade Check works with STEP 7 projects. For this reason, STEP 7 must have been installed on the computer. If STEP 7 has not been installed, the installation of S7-300 Upgrade Check will be aborted.

5.1 Overview of the functions of S7-300 Upgrade Check

5 Operation of the Tool

5.1 Overview of the functions of S7-300 Upgrade Check

This chapter describes all functions of S7-300 Upgrade Check.

Generating a test report (analysis)

S7-300 Upgrade Check enables you to have a selected STEP 7 project analyzed. The analysis routine searches the selected project for used system calls (SFCs) and system calls that have been revised for the new CPUs. The test report lists all system calls (SFCs) that are not compatible with the new SIMATIC S7-300 CPUs. It additionally displays a description allowing the user to solve the compatibility problems that were found.

Saving the test report

S7-300 Upgrade Check allows you to save the generated test report if necessary. You can select either an HTML or .txt file.

Project Explorer

Project Explorer is available on the left side of the user interface.

Project Explorer lists all projects in the SIMATIC Manager in a tree view.

In this tree view, the user can navigate to any block folder and start the analysis.

5.2 General information on the user interface

The following sections describe the user interface of S7-300 Upgrade Check from an overall view.

Start screen form

Figure 5-1

Project Rep Project Explorer • 2Dv01_06_STEP7KOP_1+10 • 2Dv01_05_STEP7FUP_1+10 • 2Dv01_04_STEP7FUP_1+10 • 2Dv01_03_STEP7FUP_1+10 • 2Dv01_02_STEP7AWL_1+10 • 2Dv01_03_STEP7FUP_1+3 • 2Dv01_03_STEP7AWL_1+3 • PROJECT-FRHERNET_en • 2Evn01_06_STEP7LAD_1+10 • 2Evn01_06_STEP7FBD_1+10 • 2Evn01_06_STEP7FBD_1+10 • 2Evn01_06_STEP7FBD_1+10 • 2Evn01_02_STEP7STL_1+3 • 2Evn01_01_STEP7STL_1+3 • 2Dv05_01_STSCL_Messw06 • 2Dv02_02_STGRAPH_Waschen • 2Dv01_13_STEP7PID_Temp • 2Dv01_13_STEP7PD_Temp • 2Dv01_13_STEP7PD_Temp • 2Dv01_13_STEP7Com_SFC1 • 2Dv01_11_STEP7_Com_SFC1 • 2Dv01_11_STEP7_STL_1+3 • 2Dv01_11_STEP7_Com_SFC1 • 2Dv01_11_STEP7_STL_1+3 • 2Dv01_11_STEP7_Com_SFC1 • 2Dv01_11_STEP7_STL_1+3 • 2Dv	Ella Desiart Hala	
Project Explorer Project Explorer Dublic STEP7_KOP_1-10 Dublic STEP7_KOP_1-10 Dublic STEP7_FUP_1-10 Dublic STEP7_FUP_1-10 Dublic STEP7_FUP_1-10 Dublic STEP7_AWL_1-10 PROJECT-ETHERNET_en PROJECT-ETHERNET_en Definition STEP7_LAD_1-10 Definition STEP7_LAD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_FBD_1-10 Definition STEP7_STL_1-10 Definition STEP7_S		
Project Explorer		
 ⇒ Zbt01_06_STEP7_K0P_1.10 ⇒ Zbt01_05_STEP7_K0P_1.9 ⇒ Zbt01_03_STEP7_FUP_1.9 ⇒ Zbt01_02_STEP7_AWL_1.10 ⇒ Zbt01_02_STEP7_AWL_1.10 ⇒ Zbt01_05_STEP7_LAD_1.10 ⇒ Zbt01_05_STEP7_LAD_1.10 ⇒ Zbt01_05_STEP7_LAD_1.10 ⇒ Zbt01_05_STEP7_FBD_1.10 ⇒ Zbt01_05_STEP7_FBD_1.10 ⇒ Zbt01_03_STEP7_FBD_1.10 ⇒ Zbt01_03_STEP7_FBD_1.10 ⇒ Zbt01_03_STEP7_FBD_1.10 ⇒ Zbt01_05_STEP7_STL_1.19 ⇒ Zbt01_01_STEP7_STL_1.19 ⇒ Zbt01_01_STEP7_STL_1.19 ⇒ Zbt01_01_STEP7_STL_1.19 ⇒ Zbt01_01_STEP7_STL_1.19 ⇒ Zbt01_13_STEP7_PID-Temp ⇒ Zbt01_13_STEP7_Com_SFC2 ⇒ Zbt01_11_STEP7_Com_SFC2 	Project-Explorer	
Dt01_10_STEP7Com_SFB ZDt01_09_STEP7Zebra ZDt01_08_STEP7Mischen ZDt01_08_STEP7Mischen ZDt01_07_STEP7DezP_11 S7_Pro1 Z<<01_15_HSystem_RED_10 Z<<01_15_HSystem_S7400H ZEN05_01_S7SCLMeasv06 ZEN05_01_S7SCLMeasv06 ZEN05_02_S7GRAPH_Wash	2D:01_06_STEP7_K0P_1-10 2D:01_05_STEP7_K0P_1-9 2D:01_04_STEP7_FUP_1-10 2D:01_03_STEP7_FUP_1-10 2D:01_02_STEP7_K0P_1-9 2D:01_02_STEP7_AWL_1-10 2D:01_02_STEP7_AWL_1-10 2D:01_05_STEP7_LAD_1-10 2E:01_06_STEP7_LAD_1-10 2E:01_05_STEP7_LAD_1-10 2E:01_03_STEP7_FBD_1-9 2E:01_03_STEP7_FBD_1-9 2E:01_03_STEP7_FBD_1-9 2D:05_01_STSCH_Messw06 2D:02_02_STGRAPH_Waschen 2D:01_13_STEP7_Com_SFC2 2D:01_10_STEP7_Com_SFC2 2D:01_08_STEP7_Mischen 2D:01_08_STEP7_Mischen 2D:01_08_STEP7_Mischen 2D:01_08_STEP7_Mischen 2D:01_08_STEP7_Mischen 2D:01_14_STEP7_Mischen 2D:01_14_STEP7_Mischen 2D:01_14_STEP7_Mischen 2D:01_14_STEP7_Mischen 2D:01_14_STEP7_Mischen 2D:01_14_STEP7_Mischen 2D:01_12_STEP7_Mischen 2D:01_14_HSystem_RED_I0 2X<01_15_HSystem_RED_I0 2X<01_15_HSystem_RED_I0 2X<01_14_HSystem_S7400H 2E:00_02_STGRAPH_Wash	

Selecting a block folder

Figure 5-2



In Project Explorer, a block folder of a STEP7 project must be selected for the analysis.

Starting the analysis

Figure 5-3



To start the analysis, use the icon in the toolbar or select the "Project" -> "Analyse" menu option.

Displaying the test report

File Droject Help			
Project-Explorer			
Test_OPC Test_OPC Test_MEC O_Test_IdentWizard ODK_Test MOBY F845 SQL_TEst SDK_Baugruppen_Test Tank_WinDCFlex_15inch SMARE	Test started generated on 27.01 Programmversion V Report was generat PN/DP\\$7-Program General Information	rt 2011 13:05:11 1.1 ed from: testtest\SIMATIC 30 am(4)\Bausteine to bear in mind	0(1)\CPU 319F-3
SMX_Start SignappEmbeddedDemo AC	adapt	exact Location	Solution
T_stellersEndeddeddento_AC TestEC31_F Tank_VB Control Pariset	Call RD_DPARM	Module OB 1, Network 1, Line 11	detailed description
Lopied_Project O_Empty Leeres_Projekt	Call WR_DPARM	Module OB 1, Network 1, Line 18	detailed description
- testtest - SIMATIC 300(1)	Call PARM_MOD	Module OB 1, Network 1, Line 26	detailed description
	Call GADR_LGC	Module OB 1, Network 1, Line 33	detailed description
	Call LGC_GADR	Module OB 1, Network 1, Line 43	detailed description
 B MOBY FB45 Wizard B Lauflicht B Test_eMC 	Call D_ACT_DP	Module OB 1, Network 1, Line 53	detailed description
	C. 11	MALLODINE 12	4

After the analysis, the test report is displayed in the right browser.

Saving the test report

Figure 5-5

S7-300 Upgra	de Check V1.1						_ 0	×
File Project	Help							
								1.000
Project-Explorer								^
Test_OPC	Save As					? 🛛		
Test_mEC Test_Ide	Save in:	🞯 Desktop		~	3 🕸 📂 🖽-			
 ● ODK_Test ● MOBY FB4 ● SQL_TEst ● SDK_Baug 	D Recent	My Documer My Compute My Network	nts er Places				F-3	
	Desktop							
 Tank_VB Copied_Pro 00_Empty Leeres_Pro 	My Documents						—	
 Project_em testtest SIMAT S7- 	My Computer							
⊕-S7-Pro		File name:			~	Save		
	My Network	Save as type:	HTML Files (*.htm	Ŋ	~	Cancel		
 	Wizard		Call D_ACT_DP	Module OB Line 53	1, Network 1,	detailed description		
		×	Call	Module OR	1 Network 3	detailed		~
Saving								

To save the test report, select the "Project" -> "Save" menu option or use the "Save" toolbar icon.

6 Related Literature

6.1 Internet links

This list is by no means complete and only presents a selection of appropriate information.

Table 6-1

	Торіс	Title
\1\	New S7-300 CPUs	http://support.automation.siemens.com/WW/view/en/13406642

7 History

Table 7-1

Version	Date	Modification
V1.1	01/17/11	First edition